STAFF REPORT

Coos County Planning
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Coquille, OR 97423
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I. MATTER DETAILS – AGENDA ITEM A

FILE NUMBERS: **AM-22-002/RZ-22-001**

APPLICANT: Lance Morgan, County Forester
250 N. Baxter St
Coquille, OR 97423

CONSULTANT:

Shoji Planning, LLC
Crystal Shoji, AICP, Planner
PO Box 462
Coos Bay, OR 97420

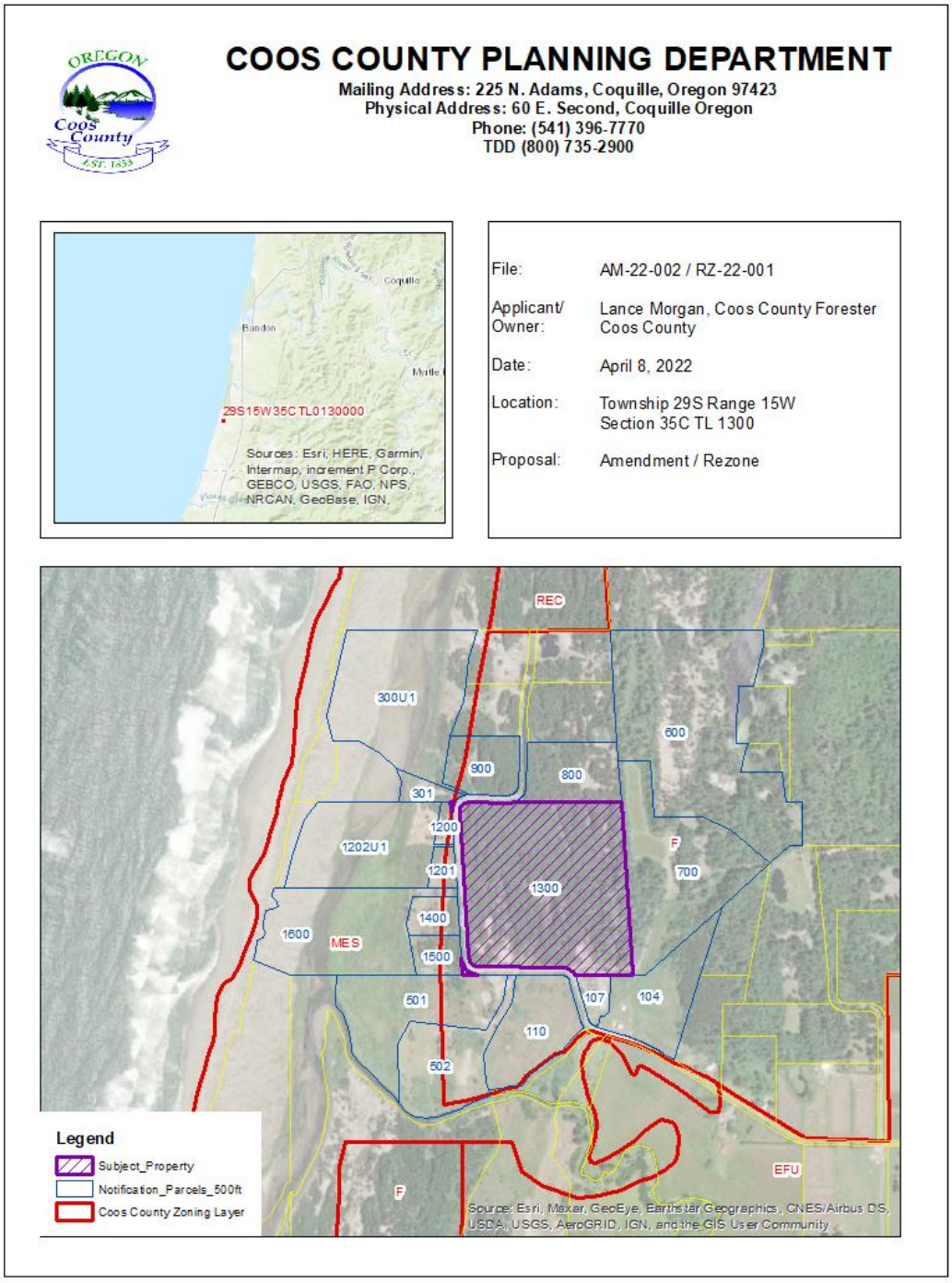
Farm Environmental Services LLC
dba Farm Unlimited
Eric Farm, PE, ACF
PO Box 761
North Bend, OR 97459

STAFF CONTACT(S): Chris MacWhorter, Contract Planner
Jill Rolfe, Planning Director
planning@co.coos.or.us

SUMMARY PROPOSAL:
The proposal is to the rezone the subject property (29S-15W-35C-TL1300) from Forest with a Mixed Use overlay to Qualified – Rural Residential-5 zoning district. There is no other request at this time.

PUBLIC HEARING:
The time and place for the Coos County Planning Commission to review this matter in a public hearing is June 1, 2022, at 1:30 P.M. in the Owen Building, 201 N. Adams Street, Coquille Oregon

LOCATION OF PROPOSAL: The subject property is approximately 38.17 acres and identified as Tax lot 1300 in Sections 35C of Township 29 South, Range 15 West. This property is located south of the City of Bandon, off Lower Fourmile Lane.



Map is not to scale.

i. **Notice Requirement:** This application is a Plan Map Amendment/Rezone governed by CCZLDO Section 5.0.900.3. The notice of Post Acknowledge Plan Amendment notice was provided 35 days prior to the Planning Commission meeting to meet the requirements of ORS 197.610. The hearing notice was published in accordance with ORS 197.732.

Notice was mailed to property owners in compliance with CCZLDO Section 5.0.900.1 Notice of Public Hearings.

ii. **REVIEW PERIOD:** This application was originally submitted on March 4, 2022. Pursuant to ORS 215.427 this application is not subject timelines as it is application for a zone change filed concurrently and considered jointly with a plan amendment.

II. STAFF REPORT – WITH RECOMMENDATIONS AND PROPOSED FINDINGS

A. SUBJECT PROPERTY DETAILS AND BACKGROUND:

The subject property is located approximately 7 miles southwest of the City of Bandon. The Assessor's map identifies the site of the subject property as located in Sections 35C of Township 29 South, Range 15 West, in Coos County, Oregon.

The subject property is zoned as Forest with a Mixed-Use overlay. There are Beaches and Dunes with Limited Suitability, Floodplain, Natural Hazards Wind Erosion, Natural Hazard – Earthquake – Liquefaction Potential, Natural Hazard – Tsunamis overlay zone.

There was a previous amendment and rezone application (AM-17-006 / RZ-17-004) submitted on July 24, 2017; however, it was held to allow for additional information to be obtained. At the County's request this was withdrawn and replaced with the current application. At that time the Board of Commission acted within their authority to allow the County Land Agent to move forward with an application to amend the land use zoning. Furthermore, the Board voted in a regular scheduled Board of Commissioners meeting to hire Crystal Shoji, Shoji Planning to comply the application on behalf of the County Forestry Department and submit to the County Planning Department for full review.

B. SURROUNDING LAND USES: There are smaller 4 to 7 acre parcels located north of the subject property. These parcels are zoned Forest and fully developed with single family dwellings.

There are four smaller 0.9 to 2.7-acre parcels located immediately west of the subject property with scatter residential development. These parcels are zoned a sliver of Forest zoning and mostly Minor Estuary & Shorelands zoning. Between the subject property and these parcels is Lower Fourmile Ln.

South of the subject property are 2 to 11 acre parcels that are either developed or have been approved for forest template dwellings in the past. These lands zoned Forest and the is a little Minor Estuary & Shorelands zoning districts. Between the subject property and these parcels is Lower Fourmile Ln.

There is a large 60 acre tract of land located east of the subject. Based on aerial photos, this property is open and has some timber that appears to be similar to the subject property, but it does contain dwellings. There is also a couple of developed cranberry bogs located immediately east of the subject property. The tract also has several developed residential structures. The property is surrounded by Forest and Minor Estuary Zones.

C. BACKGROUND: There has been no activity on this property. The process for rezone was started in 2017 but due to the lack of findings at the time it was held until such time a consultant could be hired to complete the process. The file number was mark as void and new one issued when the updated application was submitted to alleviate any confusion.

D. COMMENTS:

i. PUBLIC AGENCY:
Staff requested comment from Oregon State Forester on April 8, 2022. There has not been any response received. There have been no other public agency comments received on the proposal.

ii. PUBLIC COMMENTS: A notice of hearing was mailed and there was one comment during the Planning Commission public hearing on May 5th, 2022. Mr. Kent Howe, 86200 Lower Fourmile Lane, expressed concerns about overall road maintenance on the lower end of Lower Fourmile Ln. This section of road is not maintained by the Coos County Road Department, and is not directly land use criteria for the rezone application.

iii. LOCAL TRIBE COMMENTS: There have been no tribal comments received at this time.

E. APPLICABLE IDENTIFIED REVIEW CRITERIA:

- Coos County Zoning and Land Development Ordinance (CCZLDO)
  - Article 5.1 Plan Amendments and Rezones
- Coos County Comprehensive Plan Volume I, Part I Section 3.2 and Part II Section 5.1
- Coos County Comprehensive Plan Maps #14 Zone Maps and #16 Mixed Use Maps
- Oregon's Statewide Planning Goals & Guidelines Goals
  - 3 Agricultural Lands
  - 4 Forest Lands
  - 5 Natural Resources, Scenic and Historic Areas, and Open Spaces
  - 6 Air, Water and Land Resource Quality
  - 7 Areas Subject to Natural Hazards
  - 9 Economic Development
  - 10 Housing
  - 11 Public Facilities and Services
  - 12 Transportation
  - 13 Energy Conservation
  - 14 Urbanization
  - 15 Willamette River Greenway
  - 16 Estuarine Resources
  - 17 Coastal Resources
  - 18 Beaches and Dunes
  - 19 Ocean Resources

F. KEY DEFINITIONS

CHAPTER II. DEFINITIONS ARTICLE 2.1.

DEFINITIONS SECTION 2.1. 100. General Definitions. For the purposes of this Ordinance, unless it is plainly evident ji-om the context that a different meaning is intended, certain words and terms are herein defined SECTION 2.1.200. Specific Definitions.

AGRICULTURAL LANDS: Those lands designated in the Coos County Comprehensive Plan (Volume 1 "Balance of County") for inclusion in Exclusive Farm Use (EFU) Zones. These lands include Soil Capability class I, II, III, and IV lands as defined by the United States Soil Conservation Service in their Soil Capability Classification system and other ands suitable for farm use.

FOREST LAND: Those lands designated in the Coos County Comprehensive Plan (Volume 1- "Balance of County") for inclusion in a Forest Lands zone.

These areas include: (1) lands composed of existing and potential forest lands which are suitable for commercial forest uses, (2) other forested lands needed for watershed protection, wildlife and fisheries habitat and recreation, (3) lands where extreme conditions of climate, soil and topography require the maintenance of vegetative cover irrespective of use, and (4) other forested lands which provide urban buffers, wind breaks, wildlife and fisheries habitat, livestock habitat, scenic corridors and recreational use.

SECTION 4.2.500 RESOURCE ZONES
Forest (F)

The intent of the Forest District is to include all inventoried "forestlands" not otherwise found to be needed (excepted) for other uses.

The purpose of the Forest zone is to conserve and protect forest land for forest uses. Some of the areas covered by the "F" zone are exclusive forest lands, while other areas include a combination of mixed farm and forest uses.

Forest Mixed Use (FMU)
The purpose of the Forest Mixed Farm-Forest Areas ("MU" areas) is to include land which is currently or potentially in farm-forest use. Typically, such lands are those with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and grazing uses. The areas generally occupy land on the periphery of large corporate and agency holdings and tend to form a buffer between more remote uplands and populated valleys. In addition, these "mixed use" areas contain ownership of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.

If land is in a zone that allows both farm and forest uses, a dwelling may be sited based on the predominate use of the tract on January 1, 1993.

If a use is only allowed in the mixed use zone it will be explained in the text. Otherwise the uses listed are allowed in both the Forest and Forest Mixed Use zones.

Exclusive Farm Use (EFU)
These include all inventoried "agricultural lands" not otherwise found to be needed (excepted) for other uses.

The purpose of the EFU district is to preserve the integrity and encourage the conservation of agricultural lands within Coos County and thereby comply with the provisions of ORS 215 and OAR 660. Division 33 to minimize conflicts between agricultural practices and non-farm uses by limiting any development to uses distinguished as dependent upon or accessory to supporting agricultural or forestry production and which qualify such farm lands for special tax relief pursuant to the provisions of Oregon Revised Statutes. This zone is also for the cultivation and marketing of specialty crops, horticultural crops and other intensive farm uses.

According to the Coos County Comprehensive Plan Exclusive Farm Use lands are inventoried as Agricultural Lands. The Main criterion for establishing the "Agricultural Lands Inventory" was land identified on the agricultural lands based on soils, Class I-IV soils or "other lands" suitable for agricultural use, with the following exceptions:

1. *Committed rural residential areas and urban growth areas.*
2. *Proposed rural residential areas as per the Exception to Goals #3 and #4.*
3. *Proposed industrial/commercial sites.*
4. *Existing recreation areas (e.g., golf courses) [Recreation designation]*
5. *Isolated parcels of Class I-IV soils in upland areas, which are under, forest cover. (Forestlands designation).*
6. *Narrow valley bottomlands where no agricultural activity is occurring anywhere in the vicinity [Forestlands designation].*

The secondary criterion for establishing the "Agricultural Lands Inventory" was the use of aerial photos used to identify additional areas without Class I-IV soils in current agricultural use which were not initially identified in the agricultural lands inventory from Assessor's Data. This situation typically occurs on benches, immediately above agricultural valleys, where grazing often takes place on non-class I-IV soils. However, if lands were zoned predominately forest it may have resulted in a Mixed Use Overlay.

Rural Residential (RR)
There are two RR zonings: Rural Residential-5 (RR-5) and Rural Residential-2 (RR-2). The intent of the Rural Residential Districts includes justified sites plus "committed" areas. The County's plan prescribes and allocates a finite number of rural dwelling/units/acreage. The zoning ordinance will specify permitted uses and minimum lot sizes.

The purpose of the "RR-2" and "RR-5" districts are to provide for small to medium acreage dwelling sites outside of Urban Growth Boundaries, where a moderate intensity of land development is appropriate, but where urban services and facilities may not be available or necessary.

The "RR-2" district provides for continued existence of rural family life and to provide a transition of densities between urban development and exclusive agricultural and forestry uses.

The "RR-5" district provides for the orderly development of rural land so as to encourage the continued existence of rural family life and to provide a transition of densities between urban development and exclusive agricultural or forestry uses.

- ***ARTICLE 5.1 REZONES***

  - ***SECTION 5.1.100 LEGISLATIVE AMENDMENT OF TEXT ONLY:***

An amendment to the text of this ordinance or the comprehensive plan is a legislative act within the authority of the Board of Commissioners. [OR 04 12 013PL 2/09/05]

  - ***SECTION 5.1.110 WHO MAY SEEK CHANGE:***

Coos County shall consider the appropriateness of legislative plan text and map amendment proposals upon: 1. A motion by the Board of Commissioners; or 2. A motion of the Planning Commission; or 3. The submission of formal request made by either: a. The Citizen Advisory Committee; or b. An application filed by a citizen or organization, accompanied by a prescribed filing fee. If a Measure 56 notice is required the applicant shall be responsible for the payment of all cost associated with that service.

  - ***SECTION 5.1.115 ALTERATION OF A RECOMMENDED AMENDMENT BY THE PLANNING DIRECTOR:***

The Planning Director may recommend an alteration of a proposed amendment if, in the director's judgment, such an alteration would result in better conformity with any applicable criteria. The Planning Director shall submit such recommendations for an alteration to the Hearings Body prior to the scheduled public hearing for a determination whether the proposed amendment should be so altered.

  - ***SECTION 5.1.120 PROCEDURE FOR LEGISLATIVE AMENDMENT:***

The Board of Commissioners shall conduct one or more public hearings with 10 days advance published notice of each of the hearings. The public notice shall state the time and place of the hearing and contain a statement describing the general subject matter of the ordinance under consideration. (ORS 215.060 & ORS 215.223). Notice to DLCD shall be provided 35 days prior to the initial hearing per ORS 197.610. Notice of adoption is subject to ORS 197.615. [OR 04 12 013PL 2/09/05]

  - ***SECTION 5.1.125 MINOR TEXT CORRECTIONS:***

The Director may correct this ordinance or the Comprehensive Plan without prior notice or hearing, so long as the correction does not alter the sense, meaning, effect, or substance of any adopted ordinance. [OR 04 12 013PL 2/09/05]

  - ***SECTION 5.1.130 NEED FOR STUDIES:***

The Board of Commissioners, Hearings Body, or Citizen Advisory Committee may direct the Planning Director to make such studies as are necessary to determine the need for amending the

text of the Plan and/or this Ordinance. When the amendment is initiated by application, such studies, justification and documentation are a burden of the initiator.

- ***SECTION 5.1.135 STATUS OF HEARINGS BODY RECOMMENDATIONS TO THE BOARD OF COMMISSIONERS****:*

A Hearings Body recommendation for approval or approval with conditions shall not in itself amend this Ordinance or constitute a final decision.

FINDING: This request is not a text amendment as described in Section 5.1.100. This is request meets the both Sections 5.1.110(1) and (3)(b) as by motion of the Board of Commissioners to contract out directly with Crystal Shoji to draft the application and submit it for review on behalf of the County Forestry Department. This property was under the management of the County Forestry Department to manage. This does not require a Measure 56 notice as it only effects one property. This property is considered under Ordinance 22-03-002PL.

The Planning Director does not request any additional alternations at this time. The Planning Commission did not recommend a different approval to the Board of Commissioners. However, please note that the parcel size cannot go below 10 acres without an exception to Statewide Planning Goal 14. This will be considered a non-resource rural residential. The Planning Commission did not wish to include additional qualifiers to ensure compatibility with surrounding properties. However additionally, Deschutes County has been given the direction from DLCD that accessory dwelling units will not be allowed on non-resource lands.

The Planning Commission recommended approval of the application during the May 5, 2022 meetings. The Board of Commissioners' will issue the final decision.

- ***SECTION 5.1.200 REZONES:***

Rezoning constitutes a change in the permissible use of a specific piece of property after it has been previously zoned. Rezoning is therefore distinguished from original zoning and amendments to the text of the Ordinance in that it entails the application of a pre-existing zone classification to a specific piece of property, whereas both original zoning and amendments to the text of the Ordinance are general in scope and apply more broadly.

- ***SECTION 5.1.210 RECOMMENDATION OF REZONE EXPANSION BY THE PLANNING DIRECTOR:***

The Planning Director may recommend an expansion of the geographic limits set forth in the application if, in the Planning Director's judgment, such an expansion would result in better conformity with the criteria set forth in this Ordinance for the rezoning of property. The Planning Director shall submit a recommendation for expansion to the Hearings Body prior to the scheduled public hearing for a determination whether the application should be so extended.

- ***SECTION 5.1.215 ZONING FOR APPROPRIATE NON-FARM USE:***

Consistent with ORS 215.215(2) and 215.243, Coos County may zone for the appropriate non-farm use one or more lots or parcels in the interior of an exclusive farm use zone if the lots or

parcels were physically developed for the non-farm use prior to the establishment of the exclusive farm use zone.

- ***SECTION 5.1.220 PROCESS FOR REZONES:***

1. *Valid application must be filed with the Planning Department at least 35 days prior to a public hearing on the matter.*
2. *The Planning Director shall cause an investigation and report to be made to determine compatibility with this Ordinance and any other findings required.*
3. *The Hearings Body shall hold a public hearing pursuant to hearing procedures at Section 5.7.300.*
4. *The Hearings Body shall make a decision on the application pursuant to Section 5.1.225.*
5. *The Board of Commissioners shall review and take appropriate action on any rezone recommendation by the Hearings Body pursuant to Section 5.1.235.*
6. *A decision by the Hearings Body that a proposed rezone is not justified may be appealed pursuant to Article 5.8.*

- ***SECTION 5.1.225 DECISIONS OF THE HEARINGS BODY FOR A REZONE:***

The Hearings Body shall, after a public hearing on any rezone application, either:

1. *Recommend the Board of Commissioners approve the rezoning, only if on the basis of the initiation or application, investigation and evidence submitted, all the following criteria are found to exist:*
   a. *The rezoning will conform with the Comprehensive Plan or Section 5.1.215; and*
   b. *The rezoning will not seriously interfere with permitted uses on other nearby parcels; and*
   c. *The rezoning will comply with other policies and ordinances as may be adopted by the Board of Commissioners.*

2. *Recommend the Board of Commissioners approve, but qualify or condition a rezoning such that:*
   a. *The property may not be utilized for all the uses ordinarily permitted in a particular zone;*
   b. *The development of the site must conform to certain specified standards; or*
   c. *Any combination of the above.*

   A qualified rezone shall be dependent on findings of fact including but not limited to the following:
      i. *Such limitations as are deemed necessary to protect the best interests of the surrounding property or neighborhood;*
      ii. *Such limitations as are deemed necessary to assure compatibility with the surrounding property or neighborhood;*
      iii. *Such limitations as are deemed necessary to secure an appropriate development in harmony with the objectives of the Comprehensive Plan; or*
      iv. *Such limitations as are deemed necessary to prevent or mitigate potential adverse environmental effects of the zone change.*

3. *Deny the rezone if the findings of 1 or 2 above cannot be made. Denial of a rezone by the Hearings Body is a final decision not requiring review by the Board of Commissioners unless appealed.*

- ***SECTION 5.1.230 STATUS OF HEARINGS BODY RECOMMENDATION OF APPROVAL:***

The recommendation of the Hearings Body made pursuant to 5.1.225(1) or (2) shall not in itself amend the zoning maps.

- ***SECTION 5.1.240 REQUIREMENTS FOR "Q" QUALIFIED CLASSIFICATION:***

Where limitations are deemed necessary, Board of Commissioners may place the property in a "Q" Qualified rezoning classification. Said "Q" Qualified Classification shall be indicated by the symbol "Q" preceding the proposed zoning designation (for example: Q C-1).

- ***SECTION 5.1.275 STANDARDS FOR COMPREHENSIVE PLAN AND REZONE FOR NONRESOURCE LAND:***

1. The subject property does not meet the definition of Agricultural Land under Statewide Planning Goal 3 and /or Forest Land under Statewide Planning Goal 4.

   NOTE: If the subject property is predominantly Class 1-IV soils or if it predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.

2. The subject property does not contain any natural resources defined in Statewide Planning Goal 5 which are identified in the Coos County Comprehensive Plan;
3. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract.
4. The subject property is not considered to be nonresource land simply because it is too small to be farmed or forest managed profitably by itself. If the subject property can be sold, leased, rented or otherwise managed as part of a commercial farm, ranch or other forestland it is not considered to be nonresource land.
5. The subject property is not considered to be nonresource land if it has been given a special tax assessment for farm use or as designated forestland at any time in the past five years.
6. If the subject property is found to meet all of the standards above to be considered nonresource land the county shall also determine that rezoning the property to a nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.
7. The subject property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use.

   Any proposal of at least 2 acres but less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040.

8. Rezoning of land that is found to be nonresource land shall be to a "rural" zone that is appropriate for the type of land and its intended use.

Rural commercial or industrial development must comply with standards for small-scale, low impact commercial and industrial use.

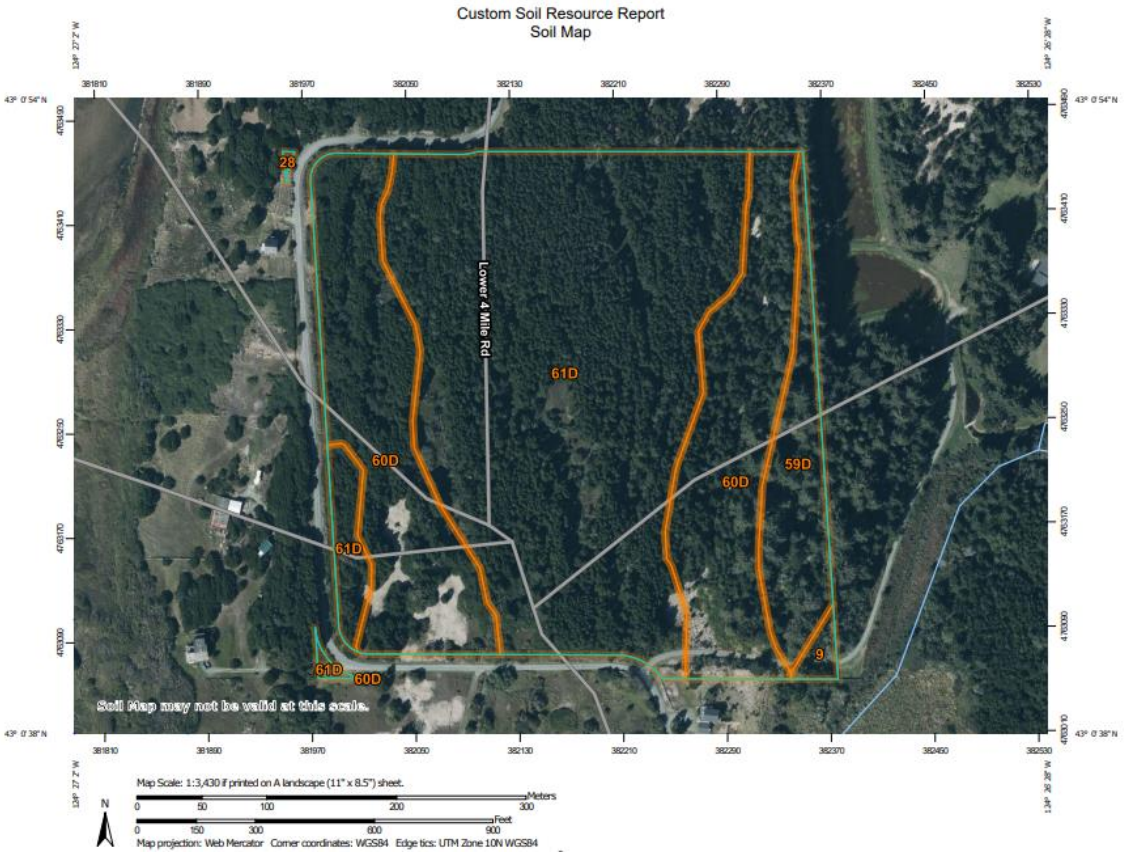
Development of property rezoned from Forest or Forest Mixed use to a nonresource zone shall comply with the resource development and siting standards. (ORD NO. 04-01-001PL February 10, 2004)

FINDING: The applicant is requesting to change the Plan Map to change the official zone form from Forest to Rural Residential. This requires the removal from the mixed use inventory and because the minimum size is 10 acres as it will be mapped as a Qualified-Rural Residential-5 zone.

The subject property is not inventoried as having any Goal 5 resources. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract as explained in the application and within this staff report. The county has tried to sell and lease this property with no interest from anyone as described in the application. This property is exempt from property tax classification at this time but that has not been a factor in this process. A nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.

The subject property is not predominately classified as Class I-IV soils. The applicant stated, and Staff verified, that approximately 98% of the subject property composes of soil not classified as Class I-IV soils; these soils are Waldport-Heceta fine sands – 61D, Waldorf-Dune land complex – 60D, Waldorf fine sand – 59D.

The other criteria is to address is whether the subject property is predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.3	0.7%
28	Heceta fine sand	0.0	0.1%
59D	Waldport fine sand, 0 to 30 percent slopes	2.8	7.6%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	12.7	34.1%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	21.4	57.5%
Totals for Area of Interest		**37.2**	**100.0%**

Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	Common trees	Site Index	Base Age	Site Index Curve Number	Volume Growth Rate (CMAI)
		ft	*yrs*		*cu ft/ac/yr*
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

Staff calculated the following table identifying the cu ft / ac / yr of the subject property. The subject property calculated at 4221.2 cu ft/ac/yr, which is less than the 5000 cu ft/ac/yr requirement for being consider resource land.

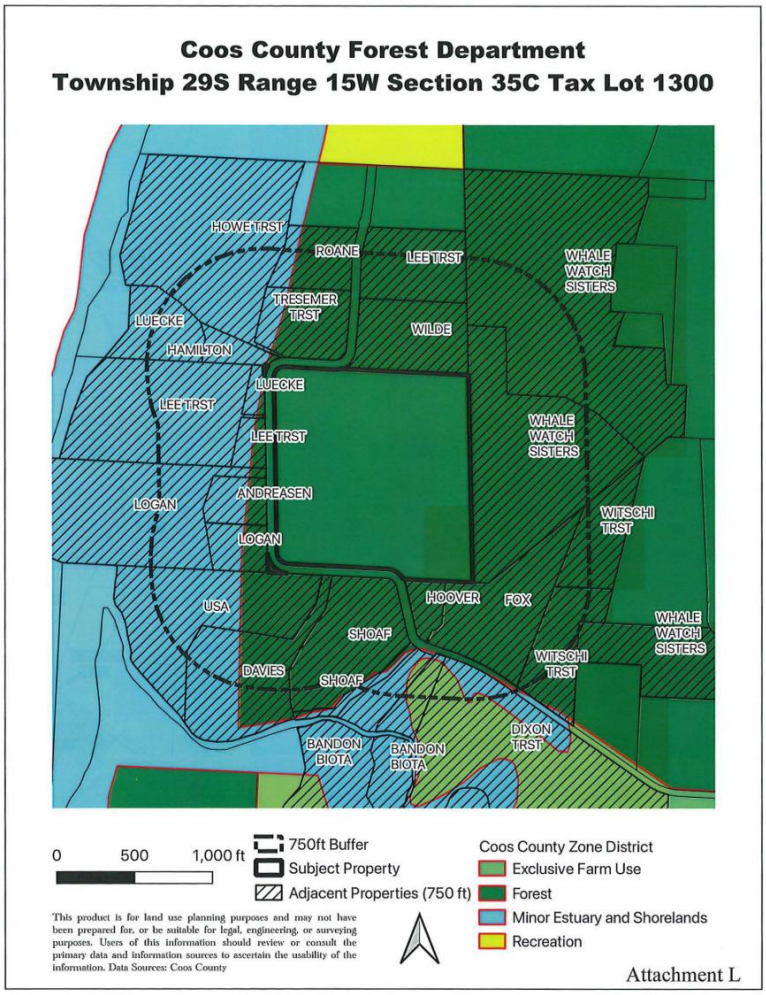
Soil	Acres	Tree Species	cu ft/ac/yr	Total
59D	2.8	Shore pine	86	240.8
61D	21.4	Shore pine	86	1840.4
61D	21.4	Sitka spruce	100	2140
			Total	**4221.2**

This property is surrounded by other resource zoned property. However, the property to the west is a non-conforming subdivision and mostly develop with residential uses. The property is surrounded by tax lots that range in size from 0.90 to 67.84. With an average size of 13.34 and within those tax lots.

MES = Minor Estuary Shorelands, F = Forest, EFU = Exclusive Farm Use and RR-5 = Rural Residential.

Below is the tax lot information to show size, zoning and average size. The area under consideration was the notification area.

Map No	Parcel No	Acres	Plan Zone
29S15W35C	**300**	**3.88**	**MES**
	301	**1.70**	**F**
	600	**4.18**	**F, MES**
	700	**7.29**	**F**
	800	**7.74**	**F**
	900	**5.54**	**F, MES**
	1000	**1.08**	**MES**
	1200	**0.90**	**F, MES**
	1201	**1.41**	**F, MES**
	1202	**8.20**	**F, MES**
	1400	**2.70**	**F, MES**
	1500	**2.60**	**F, MES**
	1600	**20.70**	**F, MES**
29S15W35D	**600**	**37.52**	**F**
	700	**22.87**	**F**
	801	**5.93**	**F**
30S15W02	**101**	**55.16**	**MES, EFU**
	102	**6.20**	**F**
	104	**9.74**	**F**
	105	**10.27**	**F**
	107	**1.54**	**F**
	109	**40.00**	**MES, EFU**
	110	**9.95**	**F**
	111	**67.84**	**Q-RR-5, MES, F, EFU**
	112	**1.08**	**MES**
	501	**14.20**	**MES, F**
	502	**10.00**	**MES, F**
	Average	**13.34**	



Staff finds it appropriate based on the zoning that at least a minimum of 10 acres be applied. Any proposal of at less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040 based on the language of the CCZLDO. The Board of Commissioners could state that the minimum lot size cannot be less than the average tax lot size of 13.34 acres if they find it necessary to be compatible with surrounding zoning. The properties range in uses, zoning and development capabilities, soils, hydrology of the soils, zoning, flood hazard, erosion and size. However, based on the these factors it does not appear that this proposal will change the overall stability of the land pattern.

The subject property is not developed. Based on the zoning map, the subject property is surrounded by similar forest zoning district.

Typically, the RR-5 zoning district requires a 5-acre minimum lot size. However, applicant requested that a qualifier be placed on the zoning district that lot size is a minimum of 10 acres to be consists with the nonresource rezone criteria. This will meet the standard for non-resource land based on the LUBA case Oregon Shores Conservation Coalition v. Curry County, 53 Or LUBA 503 (2007). The subject

property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use.

The application was received on March 4, 2022 and the 35 day notice to DLCD was provided within the appropriate period. The notice shall be provided 35 days prior to the first hearing. The first hearing on this matter is May 5, 2022 and the notice was required to be submitted by March 31, 2022. Notice was provided on March 23, 2022. This hearing is after this date. Therefore, this application meets the minimum of being filed 35 days prior to the first hearing.

This application is plan map amendment to change the zoning from Forest to Rural Residential and the official zoning from Forest to Qualified- Rural Residential with the Qualifier requiring 10 acre minimum lot size. Based on the Planning Commission recommendation, Staff requests the Board of Commissioners approve the rezone based on the findings found in the staff report and application.

Coos County Comprehensive Plan

- ***Coos County Comprehensive Plan Volume II, Part I Section 3.2 and Part II Section 5.1***

3.2 FOREST LANDS

1. Legislative Framework

1.1 Introduction

Forest lands are the resource base for Oregon's leading industry, lumber and wood products. In addition, they provide many other benefits of economic, ecologic, and aesthetic value: water quantity and quality, minerals, grazing for livestock, fish and wildlife, recreation and scenic resources. According to the State Department of Forestry's "Forestry Program for Oregon," there are currently more than 24 million acres of commercial forest land in the State. Of these lands, more than 15 million acres are in public ownership, under the U.S. Forest Service and Bureau of Land Management. Five (5) million acres are owned by the forest industry and more than four (4) million areas are in other private-ownerships. Conservation and proper management of the State's commercial forest lands is essential.

1.2 Statewide Land Use Goal #4: Forest Lands

The State has adopted the following Goal:

GOAL: To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Forest lands are those lands acknowledged as forest lands as of the date of adoption of this goal amendment. Where a plan is not acknowledged or a plan amendment involving forest lands is proposed, forest land shall include lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources.

Uses which may be allowed subject to standards set forth in this goal and administrative rule are: (1) uses related to and in support of forest operations; (2) uses to conserve soil, water and air quality, and to provide for fish and wildlife resources, agriculture and recreational opportunities appropriate in a forest environment; (3) locationally dependent uses; (4) forest management dwellings that are necessary for, and accessory to, forest operations; and (5) other dwellings under prescribed conditions."

COMMENTARY

1) Mapping of site classes. The State Land Conservation and Development Commission has clarified the requirement of the Goal on mapping of site classes. It requires mapping according to "cubic foot site class," a measure of the potential forest productivity of the land.

Where cubic foot site class mapping is not directly available, it can be derived by conversion of other readily available mapping showing other types of site classification, e.g. the State Department of Revenue system. The State Department of Forestry has provided a convenient conversion table which is shown in Table 2.

2) Definition of forest lands. This definition encompasses not only existing and potential commercial forest lands but also non-commercial forest land supporting forest uses other than timber production, non-forest lands which require protection due to their fragility and forested lands in urban and agricultural areas. "Commercial forest land" is not defined in the Goal.

3) Definition of forest uses. This definition includes a number of potential uses, and constitutes a mandate for a "multiple-use" approach to the use of forest lands. It includes all the uses in the multiple-use concept under which public forest lands are managed by the U.S. Forest Service and Bureau of Land Management. While public land must be managed for this full range of uses, private forest land may be managed to emphasize one or other (or more) of these uses. However, other uses like dispersed recreation and water supply may occur on private lands incidentally to the primary use. Most forest uses are compatible with one another, and may occur simultaneously. However, emphasis on one use may exclude others. For instance, developed recreational uses may not always be compatible with time harvest. The Comprehensive Plan identifies special areas where significant resources exist (for example, significant wildlife habitats, or special scenic resources) where conflicts may occur with other forest uses like timber harvest. It should be noted that a residence is not defined as a forest use, whether or not it is provided in conjunction with forest management.

1.4 Relationship of the Forest Lands Goal to the Forest Practices Act

The Forest Practices Act (FPA) (ORS 527.620-527.990) is implemented by the State Department of Forestry and sets minimum standards for the following forest practices:

(a) reforestation of forest land economically suitable therefore;

(b) road construction and maintenance operations in forest land;

(c) harvesting of forest tree species;

(d) application of chemicals on forest land; and

(e) disposal of slashing on forest land.

Sets minimum standards for surface mining. These practices are regulated for the following objectives:

(a) maintaining forest tree species;

(b) maintaining soil air and water resources; and

(c) providing a habitat for wildlife and aquatic life.

These rules apply to any operations on all forest lands throughout the State, except federal lands, and provide a significant level of protection for forest uses. These standards have been recognized by EPA as "Best Management Practices" to protect water quality for forest operations (See ORS 527.620).

The relationship between the Forest Practices Act (FPA) and the goal was addressed by the 1979 Oregon Legislature in HB 3008, which; upon passage, became incorporated into the FPA as part of ORS Chapter 527.

ORS 527.722 (1) Except as provided in subsection (2) of this section, no unit of local government shall adopt any rules, regulations or ordinances regulating the conduct on forest lands of forest operations governed by the Oregon Forest Practices Act or rules promulgated thereunder.

(2) Notwithstanding subsection (1) of this section, a city may adopt rules, regulations or ordinances regulating the conduct on forest lands of forest operations within city boundaries if those rules, regulations, or ordinances establish standards equal to or more stringent than those established by the Oregon Forest Practices Act or rules promulgated thereunder.

ORS 527.724 Any forest operations on forest lands within this state shall be conducted in full compliance with the rules and standards of the Environmental Quality Commission relating to air and water pollution control. In addition to all other remedies provided by law, any violation of those rules or standards shall be subject to all remedies and sanctions available under statute or rule to the Department of Environmental Quality or the Environmental Quality Commission.

ORS 527.726 (1) Nothing in ORS 527.722 and ORS 527.724 is intended to preclude counties from performing their planning duties pursuant to ORS 197.005 to 197.430 with respect to forested lands by:

a) Designating in comprehensive plans forested lands to be conserved in accordance with the statewide planning goals;

b) zoning forested lands for uses other than or complementary to commercial growing and harvesting of forest tree species in implementing a comprehensive plan; or

c) adopting rules, regulations or ordinances regulating forest operations on those forested lands zoned for primary uses other than the commercial growing and harvesting of forest tree species in accordance with the use or purpose for which those lands have been zoned.

(2) As used in this section, "forested lands" means those lands upon which forest tree species are growing.

Thus, the statutes effectively prohibit counties from establishing forest practices rules beyond those in the FPA. The Forest Lands Goal itself does not directly address the application of management standards affecting forestry, the implication being that this is handled by the FPA. As noted in ORS 527.736 above, however, counties adopt more stringent forest practice rules only on forested lands zoned for primary uses other than and not including commercial timber management and harvest. Thus, if forest land is zoned for another forest use, for instance a municipal watershed with timber management excluded or made a conditional use only, and if it is found that the normal practice of timber harvest would conflict with the water resource, then additional rules, regulations or ordinances regulating forest operations may be imposed to protect that resource. However, if the zone permits forest uses in general, additional regulations may not be imposed. An Attorney General's opinion [#7894, 4/28/80] makes it clear that this

section of ORS 527 does not grant counties additional powers. It simply ensures that it retains the powers to zone and regulate uses granted in ORS Ch. 197. The opinion was given in answer to a question by State Senator Kulongowski, who asked whether a county might impose zoning regulations different from the FPA in a watershed.

If there is some concern over the FPA regulations, jurisdictions are required to either:

(a) Work with the local forest practices officer of the State Department of Forestry to have the resource protected through forest operation management plans for specific areas and/or operations, or

(b) Seek an FPA rule amendment through the Regional Forest Practices Committee.

1.5 Special Provision in Coastal Shorelands Goal (#17) Relating to Forest Practices

The Coastal Goals make specific provisions relating to the Forest Practices Act and its implementation. Most refer to estuarine shorelands. (See Estuary Elements). However, there is one requirement which also relates more generally to non-estuarine shorelands. The State Department of Forestry must:

"recognize the unique and special values provided by coastal shorelands when developing standards and policies to regulate uses of forest lands within coastal shorelands. With other state and federal agencies, the Department of Forestry shall develop forest management practices and policies which protect and maintain the special shoreland values and forest uses." (Goal 17, Implementation Requirement (1).)

This means that special forest practices regulation must be developed in coastal shorelands to protect diverse values such as recreation, scenic resources, wildlife habitats or natural areas.

2. Forest Land Inventory

2.1 Forest Productivity Measures.

The 'site index' concept is used to measure the forest productivity of a particular location. 'Site index' is based on the height that a free-growing forest tree will reach within a certain time period (normally 100 years). A fully-stocked stand of trees of this species will add a certain volume of wood growth per acre per year. An alternative measurement of productivity is based on this volume and is called "cubic foot site class." There is a variety of productivity classifications based on these two measures. The classification systems used for Douglas Fir in Western Oregon are summarized in Table 2 below.

Table 2

Classification Systems for Douglas Fir
(below 2500 feet in western Oregon)

Growth Measures	Scale																				
Site Index: Height in Ft. at 100 years	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210				
Potential Yield: cubic feet/acre/year	20	20-49	50-80				85-119		120-164				165-224								
Classification Systems																					
Cubic Foot Site Class	7	6	5				4		3				2								
Site Class (Bulletin 201)			V				IV		III				II				I				
Dept. of Revenue Forest Land Class	FX		FG				FF		FE				FD		FC		FB		FA		

Source: Oregon State Department of Forestry

Douglas fir is used as the basis for productivity because it is the dominant species in most areas west of the Cascades. Along the coast, however, other species like Shore pine or Sitka spruce may be dominant. While the shore pine areas are usually older stabilized sand dune areas and are of low productivity, in Sitka spruce areas the site class may be higher for this species than for Douglas fir.

The Forest Lands Goals requires that forest productivity be inventoried and mapped by 'cubic foot site class.' However, as noted earlier, the Department of Revenue Forest Land Classification System is recognized as an acceptable equivalent, and may be converted to cubic foot site class by Table 2 above.

2.2 Forest Productivity Mapping

Generalized forest site classes for the forest lands of Coos County have been identified on the Forest Resources map at a scale of 1/2" = 1 mile and include:

1. *Cubic Foot Site Classes 2 and 3 (combined) with a potential yield of 120-220 cubic foot per acre per year for Douglas fir.*
2. *Cubic Foot Site Class 4 (85-119 cu. ft./acre/year)*
3. *Cubic Foot Site Class 5 (50-84 cu. ft./acre/year)*
4. *Boundary of area in which Sitka spruce and Hemlock tend to dominate as the major timber type.*

The site productivity mapping is based on the Forest Land classification of the Oregon State Department of Revenue.

These classifications reflect observed growth, rates on sites that were forested in 1967 and are generalized to 40 acre map units. The boundaried area addresses the concern of the Coos

County Forestry Department that in many areas where a relatively low site class is indicated for Douglas fir, a significantly higher site class exists for Sitka Spruce or Western Hemlock.

As Table 2 shows, there is not an exact correspondence between the divisions of the Department of Revenue site classes and those of cubic foot site class. For instance, the lower half of Class FE and the upper half of FF correspond with Site Class 4. Thus, some map interpolation is done in order to approximate the extent of Site Class 4 and 5, as suggested by the State Department of Forestry, the procedure followed was to separate Class FE and FF lands into upper or lower divisions based on whether one or more of the neighboring 40 acre units were in a higher or lower class, or the same class. For instance, if a unit of FF is bounded by one or more units of FE, then it is placed in Site Class 4. Otherwise, it is in Site Class 5. The Cape Arago to Beaver Hill area, which includes part of the Coos County Forest, is generally site class 3 or 4 land for Douglas fir. However, it is considerably more productive for Sitka spruce and Hemlock.

As the Forest Resources map indicates, much of the County is highly suitable for timber production of major commercial species. It should be noted that the flood plains, where in agricultural use, were not given site classes by the D.O.R. due to the fact that they were not under forest cover in 1967, though these soils are highly productive.

The original tree cover was mainly hardwoods, alder, maple, ash and myrtle, with some conifers. Technically, these lands could be classified as forest lands, because of the potential vegetation, but their primary value will continue to be as agricultural lands. A somewhat lower productivity is indicated on the coastal plain, where poorer soils and climate limit growth and in the Siskiyou National Forest in the southern part of the county, where elevation and rocky soils are limiting factors. However, even these sites have a potential productivity well above 20 cu. ft./acre/year, which is the standard definition of commercial forest land.

Only the sand dune areas of the coastal fringes have so little growth potential that they fall outside the definition of "commercial forest lands."

Unlike the definition of 'Agricultural Land', which has a different standard in Eastern Oregon, the definition of "commercial forest lands" is the same state-wide. However, in reality a rather different standard operates on the Oregon Coast, where the levels of forest productivity are generally very high. Land of lower site classes in Coos County (site class 4 or below) is regarded as relatively poor timber growing land. Commercial timber production is only feasible on lower site class lands where large contiguous tracts are managed (for example in the Coos County Forest or the upper elevations of the Siskiyou National Forest.) There are a few large corporate holdings on the coastal plain in these lower site class areas which may still be economically feasible to manage. However, many citizens in this area have complained that most timber companies are not interested in purchasing land and in the area for commercial timber production. Thus, while these low site class lands are technically "commercial" forest lands, in practice they are not often managed intensively, particularly where they are in smaller private ownerships.

2.3 Forest Land Types

There are several types of forest land in Coos County, ranging from that intensively managed for timber production, to land used for both timber and grazing/agriculture, to smaller forest

ownerships in areas experiencing pressure from development. The categories may generally be described in terms of their use and ownership characteristics as well as other influencing factors, such as topography and access.

Much of the commercial forest land in the County is devoted primarily to the growing and harvesting of timber and other forest products, though other forest benefits are also derived from the land (water, wildlife habitat and recreation, for instance.) Generally, the topography is quite rugged, and access provided through private logging roads. Lands in this category are the steep mountain slopes in the northern, eastern, and extreme southern portions of the County. This category includes much of' the publicly-owned land in the County (Elliott State Forest, Bureau of Land Management, Coos County Forest, Siskiyou National Forest), and much of the forest-industry owned land. Basically, this type of land is unsuited for other non-forest uses. The remoteness of these areas, however, makes them well suited to "intensive" forms of forest management such as fertilization by helicopter and slash burning.

Forest and grazing land includes land that either by use or land ownership pattern, combines forested land with grazing land. Typically, this land is owned by farmers who combine cattle and sheep raising with timber production. There are distinct differences in land ownership/use patterns between different parts of the County. In the southern part of the County, particularly in the drainage of the South Fork of the Coquille River and south of Bandon, there are hill ranches, generally of very large acreage where open grazing land is intermingled with forested land. A few operations may cover an entire major drainage basin. In other parts of the County, particularly the northern and eastern parts, farm/forest ownerships follow narrow valleys. Typically, the bottom lands are in agricultural use, while the lower slopes and benches will also often be in open grazing. However, the upper slopes are generally forested. (Such farm ownerships generally lie along valleys, with the property extending well beyond the bottom land on either side and often reaching to the top of the first ridge.) Beyond that the uplands on all sides are typically in forest industry or public ownership. Good examples of this ownership pattern may be seen in the valleys of the East Bay or Tenmile Lakes. This ownership pattern historically stemmed from the fact that the more inaccessible lands originally in small private ownership were allowed to revert to the County due to non-payment of taxes mostly during the Depression years, and were bought by the major timber companies.

Particularly on the hill ranches of the southern half of the County the land is characterized by a fluctuation in use between timber production and grazing. This includes both the practice of grazing livestock in wooded areas and conversion of timber land to grazing land after the timber is harvested. This type of use of forest land has been important to the County throughout its history.

In certain parts of the County, there are substantial acreages of forest land in smaller private ownerships (mostly under 160 acres) which are not managed in conjunction with farms. This type of land is found primarily in coastal areas north and south of Bandon and also in the Hauser area, on predominately low site class lands (as defined in 2.2 above). There are also similar smaller ownerships in higher site forest lands further inland, particularly close to urban areas, like the Isthmus Heights, Sumner area. Most of this land is still under forest cover, but is generally not being managed intensively by modern forestry techniques. This is in part due to a low productivity (at least in the Bandon and Hauser areas), and in part due to the intrusion of developed uses, particularly rural homesites on small acreages into many of these areas.

Inevitably, the pressure is great to remove any merchantable timber from these lands and convert it to rural homesites of various acreages. The bulk of citizen requests for rural residential designation (as expressed through the citizen involvement program) have been in areas like north and south of Bandon, Isthmus Heights/Sumner and Hauser. The rural housing section and Exception Statement have stated that such areas might best accommodate the public need for future rural residential growth in the County, given the commitment of nearby land to residential use, and other favorable factors, as assessed in the Suitability Rating System. The problem which remains is, how best to plan rural residential growth so that small-scale forest management remains a viable option on the remaining lands.

Finally, there are also certain corporate forest holdings in close proximity to established residential areas. Primary examples are found adjacent to the communities of Glasgow, Cooston, Barview and Millington. While acreages are substantial, there are still problems with the use of industrial forest management practices. The owners may eventually have to look at other options for these lands.

2.4 Forest Land Base

Preservation or enlargement of the amount of land available for timber production is essential to the maintenance of sufficient timber harvest levels. A decline in the amount of land available for growing trees will mean a decline in the potential harvest, unless the degree of intensive forest management practiced on the available lands is increased correspondingly. Estimates for 1973 show that there were 873,000 acres of "commercial forest land" in Coos County, while there were 847,000 acres in 1975.

"Commercial Forest Land," according to the source's definition, is land that is (a) producing or capable of producing usable wood crops (b) economically feasible to harvest new or in the future; (c) not withdrawn from timber harvest. The 1975 figure reflects a net loss of 53,000 acres of commercial forest land over a 12 year period (see Table 3 below). Some of this land went into the "unproductive forest land" category (land not capable of producing wood due to adverse site conditions) and the "productive-reserved" category (productive land removed from commercial use by statute or administrative order).

Of particular concern to land use planning is the 33,000 acre increase in the amount of non-forest land in the county. While most of this acreage may be attributed to conversion of tree-covered land to agricultural and grazing land, it must be assumed that some of it at least, has been permanently removed from the realm of resource production through development as rural homesites. The exact acreage is not known at this time. Land converted to agricultural or grazing use may, in a sense, be assumed to be only temporarily removed, as it can be reclaimed for the production of timber if economic feasibility and the landowner's desires so dictate.

Land converted to urban uses, however, cannot be reclaimed at all and may be assumed to be permanently lost. Considering the County's substantial economic dependence on the timber/forest products industry, the impact of these land losses to development may be significant. The extent of the impact depends on whether the land lost is of high or lower site class. A fair proportion of rural homesite development over the years has occurred in relatively low site class forest lands, for example north and south of Bandon and near Hauser. Forest land ownership is divided between three major types as follows 35.2% is in public ownership (U.S.

Forest Service, Bureau of Land Management, Elliott State Forest and Coos County Forest); 40.5% is in forest industry ownership (major owners are Weyerhaeuser, Menasha Corporation, Georgia Pacific and International Paper); 24.3% is owned by farmers and other private individuals.

The total volume of standing sawtimber was estimated at 17,346 million board feet in 1975. [ibid] Public lands contained 66.7% of this volume, forest industry lands 23.2% and private non-industrial lands, 10.1%. Thus, while private lands total almost two-thirds of the land base, they contain only one-third of sawtimber stocks. Examination of air photographs shows that there is little old growth timber remaining in the western half of the County. A very low percentage of the farm-forest lands in the County contain stands of fully mature timber, older than 100 years. Remaining reserves can be clearly identified by the darker color and rougher texture as it appears on infra-red photography. The more inaccessible areas of the Siskiyou National Forest contain the highest volumes of over-mature material. The Elliott State Forest, however, contains plentiful reserves of older second growth timber of approximately 90-100 years age-class, dating from extensive fires in the last century. In addition, the major timber companies have established extensive stands of younger reproductive growth on their free farms. Unfortunately, large acreages of land in the more accessible parts of the County support "bastard growth", a mixture of hardwoods (mostly alder, maple and myrtle) and conifers (Douglas fir, Grand fir, Hemlock, and cedars). Reproduction by the more economically valuable conifers has been cut back by the aggressive regrowth of "pioneer" species (especially alder.) While this is a stage of natural plant succession, (alder prepares a fertile soil for later colonization by conifers), it would take many times as long to establish a fully stocked coniferous stand by this process as by replanting a harvested site. Generally it takes at least 25 years before fir beneath it to start to grow more rapidly. Some foresters state that the process actually takes much longer, and that often the suppressed trees fail to respond at all.

Future timber supplies will be depleted because of a past failure to re-establish fully-stocked coniferous stands.

A State Department of Forestry Study of the Oregon Coast Range estimates that in 1976, 568,400 acres (or 15% of the area studied) was "underproductive", that is, land that "once supported mature conifer forests that are no longer commercially productive." This points to the magnitude of the problem. The study found that over half of this land is in the "other private" (non-industrial) category, and comprises 30.2% of the total holdings in that category.

Table 3

Forest Land in Coos County, 1963 and 1975

	1963		1973		1963-1973 Acre Change	1975		1973-1975 Acre Change
	Acres	%	Acres	%		Acres	%	
Total Land Area	1,031,000	100.0	1,027,000	100.0	-4,000	1,027,000	100	-
Total Forest Land	905,000	87.8	891,000	86.8	-14,000	868,000	84.5	-23,000
Commercial	900,000	87.3	873,000	85.0	-27,000	847,000	82.5	-26,000
Productive-Reserve	2,000	0.2	3,000	0.3	+1,000	8,000	0.8	+5,000
Unproductive	3,000	0.3	15,000	1.5	+12,000	13,000	1.3	-2,000
Non-Forest Land	126,000	12.2	136,000	13.2	+10,000	159,000	15.5	+23,000

Sources: Forest Statistics for Southwest Oregon; USFS Resources Bulletin PNW-8; & Timber Resource Statistics for Oregon; USFS Resource Bulletin PNW-56.

4. Forest Management and Practices

4.1 Intensive Forest Management Techniques

Some degree of forest management, along with conservation of forest land, is necessary to ensure a continued harvest at levels equal to or greater than the present harvest. "Forest management" is a term used to denote a number of methods or tools aimed at increasing the useable timber harvest from a given piece of land.

"Forest management" refers to any or all of the following practices: (1) forest fire control; (2) insect or disease control; (3) vegetation control; (4) reforestation; (5) precommercial and commercial thinning; (6) fertilization; (7) genetic improvement of timber species; and (8) other measures, such as assistance to forest land-owners, forest research, etc."

Intensive forest management of commercial timberland assumes a management regime of:

A. Harvesting when stands are mature by financial formula commonly used in the area. In most cases in this area this is no greater than stand age 60, though other factors are also used to determine maturity.

B. Investing in site preparation (if needed) and trees and planting as rapidly as possible following harvest, to secure an adequate stocking of the best commercial species as commonly used in the area for that forest growth site.

C. Investing in pre-commercial thinning if necessary to maintain or enhance growth of selected crop trees for future commercial thinning and eventual clearcut.

D. Investing in herbicide spray or hand clearing for site preparation or to secure release from competing overtopping vegetation if needed, keeping the conifers free to grow.

E. Being prepared to do commercial thinning where, early harvest can be secured to maintain or enhance growth of remaining crop trees. More than one commercial thinning at 3 to 8 year intervals may have financial advantages;

F. Beginning the cycle again with clearcut harvest followed by site preparation and planting.

Increases in the level of forest management practices are necessary for all classes of forest land owners: public agencies, forestry industry and non-industrial private owners. There may be pressure from neighbors and local residents not to do many of the things necessary in forest management to obtain the desired standard where commercial lands abut farms or rural residences.

Intensive management using the above practices produces effects which may be objectionable to nearby residents. The use of fire in reducing slash hazard or site preparation will temporarily impact air quality. Management may involve aerial or ground application or herbicides for site preparation or release from competing vegetation. Harvesting operations will cause perceived reduction of aesthetic values for a few years at least. This might be objectionable to local

residents for a certain period of time. Heavy truck hauling may cause temporary dust problems or potential extra hazard to school children and passenger car traffic where it passes through residential areas.

Forest management may involve operations close to 'class one streams' which includes streams used for domestic water supply, the protection of which may reduce the actual operable acreage of the tract in question. For reasons outlined above, there may -be pressure from adjacent property owners not to do many of the things necessary to forest management to desired standards, where commercial forest lands abut farms or rural residences.

Some forest industry companies and public timber agencies are experimenting with genetic improvement, specifically development of a larger and faster growing Douglas fir tree.

4.2 Problems for Encouraging Reforestation

The "farmer and other private" owner class controls 1/3 of the commercial forest land in the County. With some notable exceptions, this group practices a minimum of forest management. Their activities are controlled primarily by the regulations of the Oregon Forest Practices Act and individual economic concerns, especially taxes. Both the Forest Practices Act and Oregon timber tax structure are designed to encourage reforestation. The Forest Practices Act does this through requirements for reforestation within five years unless the owners states his intent to convert the land to non-forest use. The long term impact of these reforestation requirements on the continued or increased timber yield from the "farmer and other private" owner class is as yet unknown. Limited financial and staff resources are currently hindering full enforcement of the Forest Practices Act, especially with regard to small private landowners.

The problems of encouraging reforestation must still be addressed. The long term no-return commitment of land to timber growth is leading many to seek more immediate returns on that land, such as by conversion to agriculture and grazing use, after the timber has been harvested. Incentives have been made available to encourage the small private owners to keep that land in tree production.

There are three types of assistance currently available to small, private woodland owners for reforestation and stand improvement: (i) Federal cost-sharing programs administered by the State Department of Forestry Service Foresters with funding through the local Agricultural Stabilization and Conservation Service (ASCS); (ii) Tree farm programs of certain major forest companies; (iii) Assistance provided by forestry consultants. State Department of Forestry Service Foresters also provide other aid to small woodland owners. They may help them to form cooperatives so as to be able to purchase services at a lower rate (helicopter operation, tree planting, purchase of nursery stock and pre-commercial thinning). The Department will also provide equipment and labor where these are not available from the private sector. Service foresters also help landowners design management plans for their forests.

While it is beyond the scope of the State Department of Revenue (administrator of timber land taxation), the State Department of Forestry (administrator of the Forest Practices Act), and local planning agencies to require forest land owners to grow trees, it should, be noted that conversion of land to other uses will, in the long run, mean a decline in timber harvest. Such

land will be used for the production of trees only when it is to the economic advantage of the land owner.

4.3 Problems for the Application of Intensive Forest Management Techniques on Small Tracts and Adjoining Lands

The problems discussed below apply especially to small forest-land tracts in the range of 10-40 acres. However, they also apply to larger farm-forest ownerships or even much larger corporate or agency lands where they abut farms or (especially) rural residential areas.

Most forest land tracts of under 10 acres are bought with the primary objective of securing a rural homesite. These areas are therefore classified in the Plan as "Rural Residential." Many owners in the 10-40 acre range also have the objective of rural living. However, few can justify the expense of a tract of this size without also intending to manage the land at some level for resource production, either purely for forest products or a mixture of forestry and grazing. Due to the varied objectives of owners of these small forest tracts, there has been in the past a tendency to practice a less intensive level of forest management than on the corporate agency and larger farm holdings.

Rural living involves establishment and protection of a domestic water supply, access of utilities, right-of-way access, privacy and aesthetics. Most residences involve at least one acre of homesite development. Water supply access can occupy an additional area, and in many instances may affect portions of surrounding ownerships. These influences may have an inhibiting or dampening effect on the practice of intensive forest management on their owner and adjacent forest lands.

Some of these inhibiting effects on intensive forest management can be:

(a) Restrictions on logging where it might destroy or damage domestic water supplies. Water rights for domestic use can be established in drainages originating on other ownerships, or the drainage providing water may originate on another ownership, even though the catch basin is on the owner's land.

(b) The influence of the water supply and homesite situation extends to eliminating or reducing the possible use of herbicides as a management tool within the drainage area or a defined distance from the residence. Oregon State Field Guide to Oregon Forest Practices Rules, (1/10/80) - Rule 629-24-203 'Protection of Waterways, Areas of Open Water, and Dwellings When Spraying,' states; "Protect waterways and areas of open water such as swamps or impoundments from contamination when spraying by aircraft by leaving a buffer strip of at least one swath width untreated on each side of every Class I stream or area of open water.

(c) Access for proper forest management, harvest or project work may be a problem. Where portions of the ownership are steep, the only practical way to harvest the timber may be highlead logging. Highlead logging requires access to proper location for setting landings which are dictated by the terrain. Access to these landings may require negotiation of rights-of-way across steep terrain through one or more adjacent owners. These adjacent owners may or may not be agreeable to temporary or permanent rights-of-way. Their timber may be at a different stage of

growth, or newly planted reproduction which would not fit in with a combined harvest to make a more economic harvest setting boundary.

These objections may hinder an owner from securing convenient access to efficiently manage his own lands. Access roads or roads within 10-40 acre tracts may have been built in the- past to much lower standards as to depth of gravel, width, and curve radius, than are public roads or logging roads. Use of these roads, which may not be dedicated public roads, may involve undue damage to thin rock surfaces and ditches.

Use of tract roads for commercial hauling will involve negotiating rights-of-way for commercial log hauling if not already a public road.

(d) For owners of small forest tracts (10-40 ac.), the objective of preserving aesthetic values may tend to deter the application of intensive forest management practices. (This is much more the case with tracts of less than 10 acres). To some owners, the growth of hardwoods may be as pleasing to the eye as well stocked conifer stands, or even more so in the case of certain species like madrone or myrtle.

An owner motivated toward aesthetics may be very reluctant to log by highlead clearcut due to the visual impacts, which persist until new growth has covered the residue from timber harvesting. However, logging by highlead may be the only practical method to remove merchantable volume from steep slopes.

(e) Many of the forest lands which are sold as small: tracts have had a history of repeated selective logging or clearcutting with no subsequent management, which has greatly reduced the value of the remaining stands. These practices tend to reduce the species composition of the stand toward less valuable species of conifer, and promote the predominance of hardwoods, through the removal of overstory conifers which allows smaller understory hardwood trees to increase growth. Even after they are logged, hardwoods can regrow and dominate a site to the exclusion of conifers if continuous efforts are not made to control their regrowth.

Small tracts are often purchased in a poor, unmanaged condition as to potential for forest productivity. With generally low prospects for income from commercial harvest from the existing cover, an owner may be faced with a need to invest money for a considerable period, at interest, before realizing any substantial net income from commercial conifer harvest. This period may be as much as 40 years in the case of site preparation and planting to establish reasonable conifer stocking.

(f) Many types of forest management practice will involve economies of scale. Small tracts mean very infrequent operation which produces rather small income and little incentive for an owner to invest in his own management or harvesting equipment. Letting site preparation operations on a contract basis will attract only high bids because of the cost of moving heavy equipment for a comparatively small project. Site preparation either by tractor scarification, herbicide application, or burning, will have a gradually decreasing cost per acre as the size of the project increases, before lowering costs per acre begin to level off.

In spite of the problems detailed above, it is certainly feasible for intensive forest management to be practiced on tracts of forestland even as small as five acres. However, a set of conditions must exist which is not always found on these smaller tracts.

These conditions are:

1. Strong owner motivation toward forest management practices to produce income often involving part-time manual labor and careful financial and resource planning.

2. Terrain which lends itself to easier and cheaper operations. The best terrain would be gentle enough to allow tractor logging and/or tractor site preparation without damage to the environment (no slopes greater than 35%).

3. A good level of stocking with conifer species, or merchantable hardwood species, so that income could be secured from the first operations. The income from operations should be large enough that site preparation and replanting could be financed and still leave some net income as an incentive to conduct operations.

When one compares the ideal expressed above with the more usual circumstances discussed previously, it becomes evident that few small tracts under 10 acres will be operated under intensive forest management. However, tracts of 10-40 acres will benefit from the increased scale of operation to the point where highlead logging would become more feasible and other economies of scale would begin to be realized.

It is also beneficial to form local owners' cooperatives (either under State Forestry or private industry sponsorship), whereby a group of owners combine together to benefit from economies of scale. This has been successful in the past in the southern states. Federal cost share programs can also improve management of small tracts significantly.

Finally, there are substantial areas on the coastal plain, especially in the Bandon area, which possess reasonably good levels of stocking with coniferous species and have terrain level enough to permit tractor logging. Such areas are of relatively low site class, and are not attractive to the major companies, but may be ideal for small individual woodlots.

In short, investment costs and owner objectives do not usually combine for a favorable future for good forest management of small woodlot tracts. However, given the right set of conditions as discussed above, and appropriate motivation and management by the owner, tracts of 10-40 acres can be as productive as any forest land of the same site class. A combination of planning and zoning measures, tax incentives and corporate agency programs (Dept. of Forestry, Cooperative Extension and forest industry) could give a boost to good forest practices on small woodlots and supplement the incomes of numerous households in the County.

5. Implementation Strategies

5.1 Proposed Forest Zone

The Planning Commission proposes to implement the Forest Lands Goal by establishing one forest zone. That zone is as follows:

F – "Forest"

Within the forest zone, the extent of preservation of forest lands primarily for forest uses will be established through implementation of the zoning ordinance. Specifically, standards within the ordinance are set to delineate those areas, or parcels, which have historically been managed as "mixed use" areas, including both farm and forest uses. Based on the June 24, 1983 DLCD Staff Report on Coos County, it is understood that uses in these "mixed use" areas are appropriately expanded to include additional non-forest uses that may not otherwise be allowed in a prime commercial forest zone. As stated in that report: "The Commission's decision in Allen v. Umatilla County (LUBA 83-076) supports the mixed use/predominant forest use concept and establishes separate requirements for authorizing certain non-forest uses in each forest area". (June 24, 1983 DLCD Staff Report, p. 106)

The zoning ordinance standards are used, ultimately, to determine the degree of productivity of the land for forest production vs. the productivity of the land for farm use. It is the intent of the Planning Commission to strictly preserve prime commercial timber areas in the county, while allowing for some justified non- forest uses in the areas established as "mixed-use" areas. These "mixed-use" areas are identified on the "Mixed Agriculture-Forest Use Areas" inventory map based on specific review criteria.

Standards for determining the degree of allowance for non-forest uses are based on such things as productivity of the land for forestry, historical land use (i.e. farm uses), terrain and surrounding uses. The review process will occur at the request of the applicant on a case by case basis

There are basically two different types of forest areas in Coos County. These are (i) prime forest areas, and (ii) mixed farm-forest areas. Certain non-farm uses not allowed in the former may be allowed as conditional uses in the latter. The two types of forest land are described in greater detail, as follows:

(i) "Prime Forest Area". These areas or parcels are typically large contiguous blocks of undeveloped land which are managed exclusively for timber production with some ancillary forest uses. Intensive forest management is practiced within this classification. A parcel or area subject to this classification will be preserved primarily for forest uses.

(ii) "Mixed Farm-Forest Area". These areas include land which is currently or potentially in farm- forest use. Typically such lands are those with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and grazing uses. The areas generally occupy land on the periphery of large corporate and agency holdings and tend to form a buffer between more remote uplands and populated valleys. In addition, these "mixed use" areas contain ownerships of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.

In certain areas of the County, these "mixed use" areas consist of extensive uplands where the lands are held predominantly by ranchers who manage their properties interchangeably between grazing and forestry depending on the economic base of each commodity at any given time. An essential management approach practiced by these ranchers is to maintain enough upland

grazing acreage to sustain livestock during the winter months due to the flooding of lowland areas. Some intensive forest management is practiced on these lands, but not to the same extent as in "prime forest areas", and grazing is in many places a co-dominant use. There are typically a mixture of farm and forest uses in these areas. Certain non-forest uses will be allowed in areas that meet the criteria of this classification as established in the zoning ordinance.

The mixed use areas are identified at a scale of 1" = 2 miles on the "Mixed Agricultural-Forest Use Areas" Comprehensive Plan inventory map. A change in the boundary of the "mixed use" inventory map will require a comprehensive plan amendment. Criteria used to designate these areas are as follows:

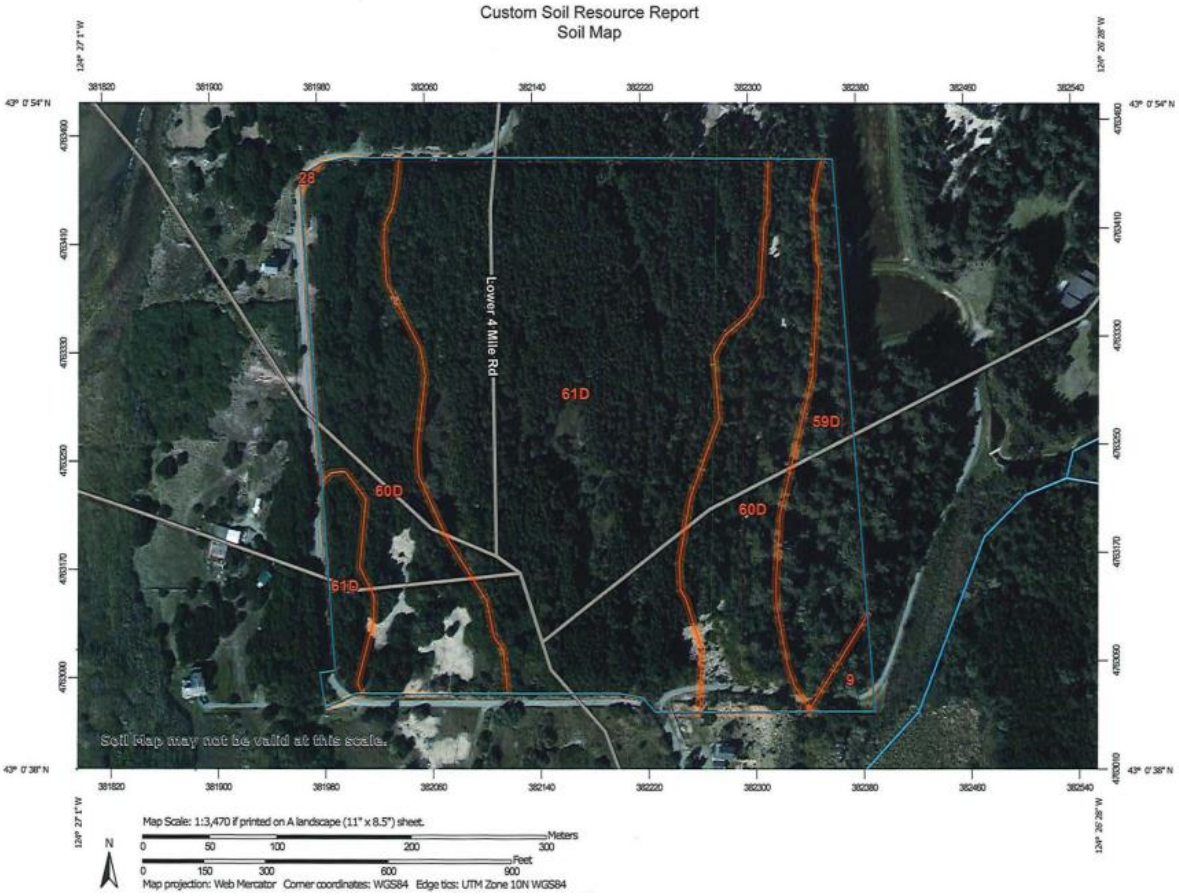
1) Mixed use areas are those areas with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and agricultural uses.

2) Mixed use areas are those areas generally managed to maintain enough upland acreage to sustain livestock during the winter months due to flooding of lowland areas.

3) Mixed use areas are those areas predominantly co-managed for both farm and forest uses.

FINDING: This application is for a Plan Map Amendment and Rezone of the Official Zone Map from Forest to Qualified – Rural Residential-5 zoning district. The qualifier is a 10 acre minimum lot size which will not require a Statewide Goal 14 exception so long as it meet the nonresource language described in Section 5.1.275.

The subject property is combination of Chetco silty clay loam (9D), Heceta fine sand (28), Waldport fine sand (59D), Waldport-Dune land complex (60D), Waldport-Heceta fine sands (61D) soils types.



9-Chetco silty clay loam. This deep, very poorly drained soil is on flood plains and deltas. It formed in alluvium. Slope is 0 to 3 percent. The native vegetation is mainly conifers, shrubs, forbs, and hardwoods. Elevation is 0 to 40 feet. The average annual precipitation is 60 to 80 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown silty clay loam 10 inches thick. The subsoil is mottled, dark gray silty clay 14 inches thick. The substratum to a depth of 60 inches or more is mottled, dark gray clay.

Included in this unit are small areas of Coquille and Nestucca soils. Also included are small areas of Langlois soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Chetco soil is very slow. Available water capacity is about 5.0 to 8.5 inches. Effective rooting depth is 60 inches or more for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is very slow, and the hazard of water erosion is slight. This soil is subject to frequent periods of flooding during prolonged periods of rainfall. Channeling and deposition are common along streambanks. The water table fluctuates between the surface and a depth of 18 inches in October to May.

This unit is used mainly for hay and pasture and wildlife habitat.

The, vegetation in areas not cultivated is mainly Sitka spruce, western redcedar, western hemlock, and red alder. The understory vegetation is mainly western swordfern, evergreen huckleberry, slough sedge, soft rush, and skunkcabbage. If this unit is used for hay and pasture, the main limitations are the susceptibility of the surface layer to compaction, wetness, droughtiness in summer, the hazard of flooding, and, for the curing of hay, high humidity. Grazing when the soil is moist results in compaction of the surface layer and poor tilth. Compaction limits the movement of air and water in the soil and restricts the growth of roots; it can seriously reduce the productivity of the soil. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

Drainage and irrigation are needed for maximum production of crops. Water on or near the surface can be removed by use of open ditches and tide gates. Supplemental irrigation is needed in summer.

Wetness and flooding restrict grazing in winter. Protection from flooding during the growing season can be provided only by the use of extensive dikes. The choice of plants is limited to those that withstand periodic inundation. High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay. To improve the quality of grass for hay, increase the stocking rate in spring. Excess forage in spring can be used as silage.

Fertilizer is needed to ensure optimum growth of grasses. Grasses respond to nitrogen. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Rotation grazing increases the production of forage and helps to control weeds. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth.

This map unit is in capability subclass IVw.

28-Heceta fine sand. This deep, poorly drained soil is in deflation basins and depressional areas between dunes. It formed in eolian material. Slopes are 0 to 3 percent. The native vegetation is mainly sedges, rushes, water-tolerant grasses, and shrubs. Elevation is 0 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is mottled, grayish brown sand.

Included in this unit are small areas of Waldport and Netarts soils and Dune land, Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Heceta soil is rapid. Available water capacity is about 1 to 2 inches. Effective rooting depth is 60 inches for water-tolerant plants, but it is limited by the water

table for non-water-tolerant plants. Runoff is ponded, and the hazard of water erosion is slight. The water table fluctuates from 12 inches above the surface to 6 inches below the surface from October to May.

This unit is used for recreation and wildlife habitat. If this unit is used for recreational development, the main limitation is wetness. Use of paths and trails may be limited to 2 or 3 months in summer.

This map unit is in capability subclass IVw.

59D-Waldport fine sand, 0 to 30 percent slopes. This deep, excessively drained soil is on stabilized sand dunes. It formed in eolian deposits. The native vegetation is mainly conifers, shrubs, grasses, and forbs. Elevation is 10 to 120 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown and brown fine sand 7 inches thick. The underlying material to a depth of 60 inches or more is dark yellowish brown fine sand.

Included in this unit are small areas of Heceta soils and Dune land. Also included are small areas of Netarts soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used mainly for timber production, wildlife habitat, and recreation. It is also used for homesite development. This unit is suited to the production of shore pine. Among the other species that grow on this unit are western hemlock, Sitka spruce, and Douglas fir. The understory vegetation is mainly Pacific rhododendron, salal, red huckleberry, evergreen huckleberry, and European beachgrass.

On the basis of a 100-year site curve, the mean site index for shore pine is 90. At the culmination of the mean annual increment (CMAI), the production of 60-year-old shore pine trees 1.5 inches in diameter or more at breast height is 79 cubic feet per acre per year. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this unit are seedling mortality and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. The risk of soil blowing increases if the timber is harvested or the understory is removed. Conventional methods can be used for harvesting timber, but use of skid trails can accelerate erosion.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Seeding road cuts and fills helps to stabilize the soil and reduces the risk of soil blowing. Windthrow is a hazard when the soil is wet and winds are strong.

When openings are made in the canopy, invading brushy plants delay natural reforestation. Undesirable plants reduce adequate natural or artificial reforestation. Intensive site preparation and maintenance generally are not needed. Reforestation can be accomplished by planting shore pine and Sitka spruce seedlings. Droughtiness increases seedling mortality.

If this unit is used for recreational development, the main limitations are the hazard of soil blowing, the instability of the soil, and slope. Use of the unit is restricted to low-intensity types of recreation, such as hiking and horseback riding. Areas used for recreation can be protected from soil blowing by maintaining plant cover. Plant cover can be maintained by limiting traffic.

Roads, paths, and trails are difficult to maintain because of the loose sand. Cutbanks are not stable and are subject to slumping. Access roads should be placed on lower slopes and designed to provide low cut-slope grades.

If this unit is used for homesite development, the main limitations are the hazard of ground water pollution, slope, the hazard of soil blowing, and droughtiness in summer. The very rapid permeability of the subsoil may permit untreated effluent to enter the ground water. Special designs may be needed to prevent contamination of water supplies. The steeper areas of this unit acre not suitable for installation of absorption fields. Community sewage treatment systems may be needed.

Extensive cutting and. filling are required to provide level building sites. Excavation for houses and access roads exposes material that is highly susceptible to soil blowing. Revegetating disturbed areas around construction sites as soon as feasible helps to control soil blowing. It is difficult to establish plants in areas where the surface layer has been removed. Mulching and fertilizing cut areas help to establish plants. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability subclass VIIe

60D-Waldport-Dune land complex, 12 to 30 percent slopes. This map unit is on stabilized and active foredunes. The vegetation on the Waldport soil is mainly European beachgrass. Dune land does not support vegetation. Elevation is 10 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

This unit is 60 percent Waldport fine sand and 30 percent Dune land. The Waldport soil is in areas that have been stabilized with vegetation. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used. Included in this unit are small areas of Heceta soils.

Included areas make up about 10 percent of the total acreage.

The Waldport soil is deep and excessively drained. It formed in eolian deposits. Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is dark yellowish brown fine sand.

Permeability of the Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of erosion is slight. The hazard of soil blowing is severe.

Dune land is deep and excessively drained. It formed in eolian deposits. Typically, the areas of Dune land are fine and medium sand to a depth of 60 inches or more.

Permeability of Dune land is very rapid. Available water capacity is about 3 to 4 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used for recreation and wildlife habitat.

If this unit is used for recreational development, the main limitations are soil blowing and the instability of the soil. Use of this unit is limited to low-intensity types of recreation, such as hiking, horseback riding, and operating off-road vehicles. Areas used for recreation can be protected from soil blowing by establishing plant cover. Plant cover can be maintained by limiting traffic. Excavation for roads and buildings exposes material that is highly susceptible to soil blowing. Establishing vegetation on disturbed areas around construction sites as soon as possible helps to control soil blowing. Roads and trails are difficult to maintain because of the loose sand. Roads must be surfaced for use by conventional vehicles.

This map unit is in capability subclass Vlle.

61D-Waldport-Heceta fine sands, 0 to 30 percent slopes. This map unit is mainly on stabilized sand dunes and in depressional areas between sand dunes. Some areas are on deflation basins. The native vegetation is mainly conifers, shrubs, grasses, and forbs on the Waldport soil and sedges, rushes, water-tolerant grasses, and shrubs on the Heceta soil. Elevation is 0 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

This unit is 50 percent Waldport fine sand and 30 percent Heceta fine sand. The Waldport soil is on stabilized sand dunes, and the Heceta soil is in interdunal swales and depressional areas. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Netarts and Yaquina soils and Dune land. Included areas make up about 20 percent of the total acreage.

The Waldport soil is deep and excessively drained. It formed in eolian deposits. Slope is 7 to 30 percent. Typically, the surface layer is very dark grayish brown and brown fine sand

7 inches thick. The substratum to a depth of 60 inches or more is dark yellowish brown fine sand.

Permeability of the Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

The Heceta soil is deep and poorly drained. It formed in eolian material. Slope is 0 to 3 percent. Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is mottled, grayish brown sand.

Permeability of the Heceta soil is rapid. Available water capacity is about 1 inch to 2 inches. Effective rooting depth is 60 inches for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is ponded, and the hazard of water erosion is slight. The water table fluctuates from 12 inches above the surface to 6 inches below the surface from October to May.

The Waldport soil in this unit is used mainly for timber production, and the Heceta soil is used mainly for wildlife habitat. The unit is also used for recreation. The Waldport soil is suited to the production of shore pine. Other species that grow on this soil include western hemlock, Sitka spruce, and Douglas fir. The understory vegetation is mainly Pacific rhododendron, salal, red huckleberry, evergreen huckleberry, and European beachgrass. The Heceta soil is poorly suited to the production of timber. The vegetation on this soil is mainly slough sedge, salt rush, coast willow, waxmyrtle, evergreen huckleberry, and salal.

On the basis of a 100-year site curve, the mean site index for shore pine is 90 on the Waldport soil. At the culmination of the mean annual increment (CMAI), the production of 60-year-old shore pine trees 1.5 inches in diameter or more at breast height is 79 cubic feet per acre per year. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this soil are seedling mortality and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. The risk of soil blowing increases if the timber is harvested or the understory is removed. Conventional methods can be used for harvesting timber, but use of skid trails can accelerate erosion.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Seeding cuts and fills helps to stabilize the soil and reduce soil blowing. Windthrow is a hazard when the soil is wet and winds are strong.

When openings are made in the canopy, invading brushy plants can delay natural reforestation. Undesirable plants reduce adequate natural or artificial reforestation. Intensive site preparation and maintenance generally are not needed. Reforestation can be accomplished by planting shore pine and Sitka spruce seedlings. Droughtiness increases seedling mortality.

If this unit is used for recreational development, the main limitations are the hazard of soil blowing, the instability of the Waldport soil, and the wetness of the Heceta soil. These limitations restrict the use of this unit mainly to low-intensity types of recreation, such as hiking and horseback riding. The unit can be used for other kinds of recreational activities that require a minimum of construction and soil disturbance. Areas used for recreation can be protected from soil blowing by maintaining plant cover. Plant cover can be maintained by limiting traffic. Excavation for houses and access roads exposes material that is highly susceptible to soil blowing. Revegetating disturbed areas around construction sites as soon as feasible helps to control soil blowing.

Roads, paths, and trails are difficult to maintain because of the loose sand. Cutbanks are not stable and are subject to slumping.

Wetness limits most recreational development on the Heceta soil. Use of paths and trails may be limited to 2 to 3 months in summer. Drainage is impractical because of the lack of suitable outlets.

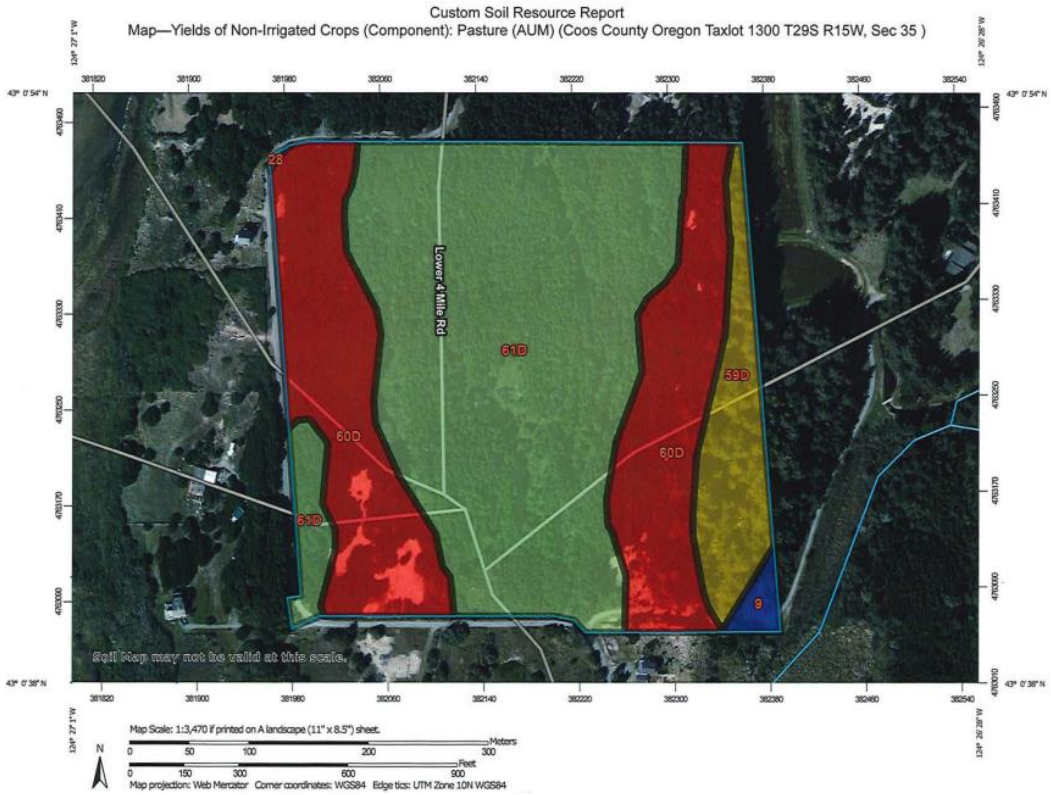
This map unit is in capability subclass VIIe.

The applicant submitted the required NRCS custom soil report that identifies forest volume growth rates on the subject property. The County must follow the NRCS reports unless proven otherwise by site specific alternative data. The County has a set of guidelines to follow as identified in Oregon Administrative Rules 660-006-0005.

List in order:

A. Natural Resource Conservation Service soil surveys
B. Oregon Department of Revenue Western Oregon site class maps
C. USDA Forest Service plant association guides
D. Other existing data sources determined by the State Forester to be of equal or better quality to Items A, B, and C
E. Alternate methods to develop site productivity data based on direct tree measurements and calculations using applicable Douglas-fir, western hemlock, or ponderosa pine site tables, with priority given to the species among these three that dominates the area being evaluated
F. Alternate methods based on direct tree measurements and calculations using other native forest tree species site tables
G. Site-specific soil surveys.

Below are soil maps and the forest productivity with site index base for the subject property.



Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	Common trees	Site Index	Base Age	Site Index Curve Number	Volume Growth Rate (CMAI)
		ft	yrs		cu ft/ac/yr
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

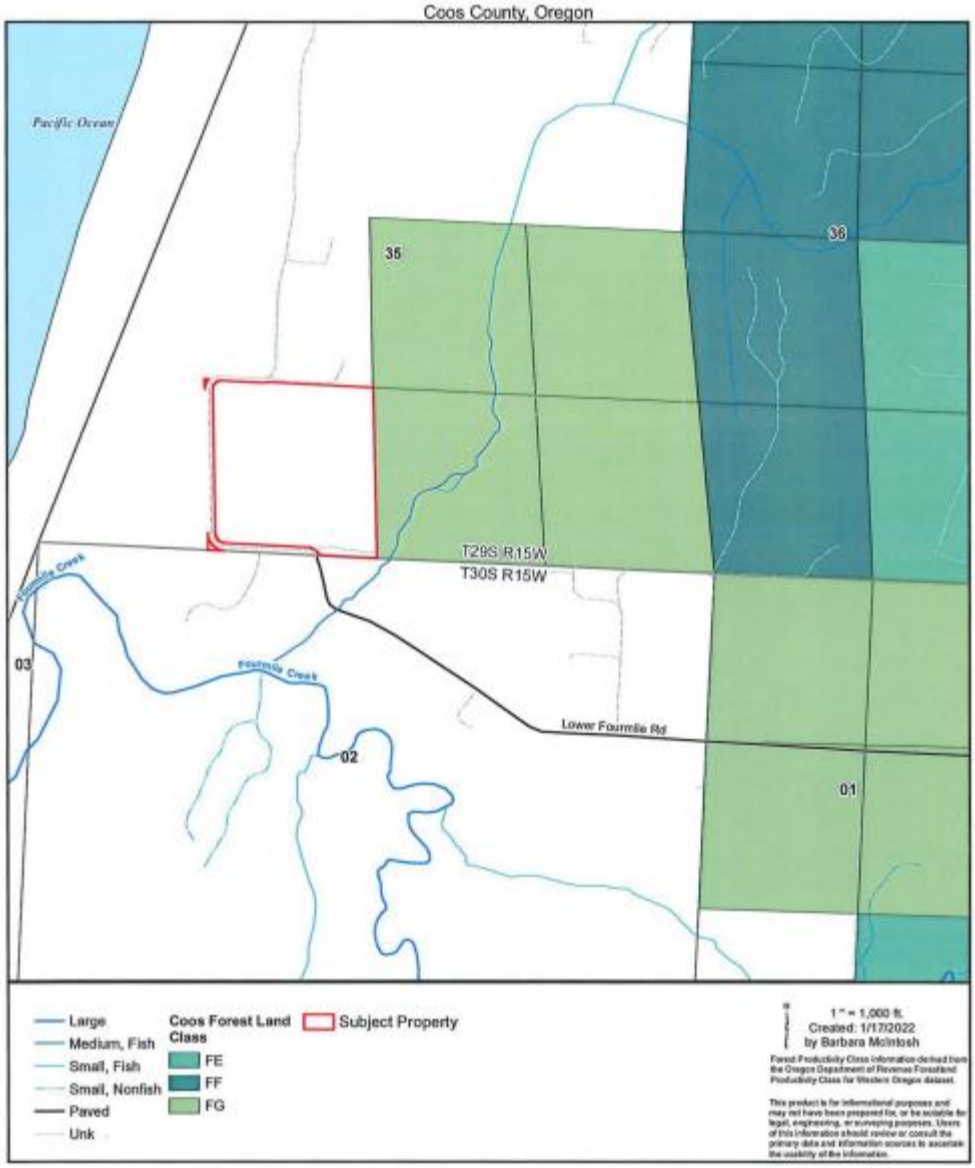
The applicant submitted the following map, identified as Exhibit #6, showing the OR DOR Western Oregon site class maps. Like other government properties, the subject property was never assigned a site class by the Oregon Department of Revenue.

Farm Unlimited
P.O. Box 761
North Bend, OR 97459

Subject Property
Oregon Department of Revenue
Forestland Productivity Class Map
Tax Lot 1300; T 29S, R 15W, Sec. 35C

Exhibit 6

Coos County, Oregon



Staff requested official comments from Oregon State Forester Calvin Mukumoto on April 8, 2022.

Chris MacWhorter

From: Planning Department
Sent: Friday, April 8, 2022 8:49 AM
To: 'forestryinformation@odf.oregon.gov'
Cc: Planning Department
Subject: Coos County Planning Department

Hello,

Please find a link to a land use application currently under consideration in Coos County: https://www.co.coos.or.us/planning/page/2022-amendment-rezones

Please have State Forester Calvin Mukumoto contact us if he wishes to make any official comments on this particular application.

We may be reached at 541-396-7770 for further information.

Thanks,
Chris MacWhorter, Planning Staff
Coos County Planning Department
planning@co.coos.or.us

Chris MacWhorter

From: INFORMATION Forestry * ODF <forestryinformation@odf.oregon.gov>
Sent: Friday, April 8, 2022 8:49 AM
To: Planning Department
Subject: Automatic reply: Coos County Planning Department

This Message originated outside your organization.

Thank you for contacting the Oregon Department of Forestry. Your e-mail will be referred to the appropriate agency personnel for response/action, and they will reply to your request.

ODF Public Affairs Program

Other than the auto-generate email, Staff has not received any comments from Oregon Department of Forestry (ODF). ODF rarely responses to requests for comments and it is not mandatory that they respond, but staff does make every effort to solicit comments from other agencies when an application is proposed.

The applicant hired Farm Unlimited to perform a Forest Productivity / Suitability Report. The applicant submitted a timber inventory cruise complied by Eric Farm and James Hill of Farm Unlimited.

Mr. Farm and Mr. Hill include a list of their background and educational credentials. Under Oregon (OAR 674.100) appraisal rules, professional foresters are exempt from licensing for appraising the value of timber as part of forest management consultation.

Goal 4 directs the County to protect forest land, including lesser value forest lands. Although, there is not necessary a formal definition of a professional forester. ODF Land Use Planning Note #3 advises "*Where tree measurements are undertaken, a professional forester who is either registered as a full member in good standing with the Association of Consulting Foresters of America or Certified by the Society of American Foresters should be retained by the landowner to take tree measurements and prepare a report*". Mr. Farm identifies himself as an ACF certified forester, and Staff feels there is no reason to question that. Staff advises the Board of Commissioners that these are really only guidelines, not requirements. Staff has not really found any formal State land use requirements for timber cruising or valuation, and the Board of Commissioners may decide whether Mr. Farm and Mr. Hill are expert witnesses. Based on these two individuals' backgrounds, they appear meet the requirements to work in the County's Forestry Department as field foresters. Therefore, Staff recommends that their educational background and experience are sufficient for this report.

ODF Land Use Planning Note #3 identifies a series of steps that required to be look at before alternative methodologies are used. The first source is NRCS soil surveys which the indicate that Shore pine and Sitka spruce are trees to manage on site. They further indicated the property is not include in DOR site class maps, and no alternative data sources existing direct tree measurements.

Therefore, they submitted a report to comply with alternative methodologies under Step 2.

Mr. Farm indicated the entire site was fully stocked with Shore pine with some scatter Sitka spruce. They indicated the timber is between 32 to 46 years old, and 25-50 feet tall. Based on aerial imagery and other site assessment of neighboring properties. Staff has found no compelling reason not to take their forest inventory as an accurate assessment.

However, the applicant's forester is making the assertion that Shore pine is not commercially marketable as a timber species and the site class index for Shore pine is not applicable to western Oregon.

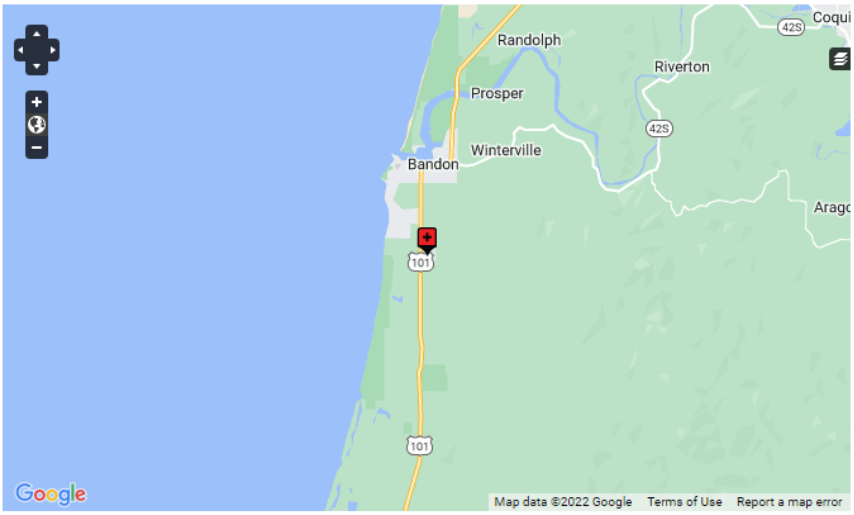
These two concepts need further planning discussion. The first concept that Shore pine is not a commercially marketable timber species in Coos County. The applicant asserts that "*no local sawmills, veneer mills, or wood chip manufacturer will accept shore pine. Additionally, mills will not pay for a load with shore pine included and may reject the load entirely and not accept/unload a truck that arrives at the mill with shore pine included on the load. It is not foreseeable that any mill will accept delivery of shore pine in the future*".

Typically, Planning Department would ask the County Forestry Department to verify this statement. However, the Forestry Department are the applicants for this application.

So, Staff verified this statement using the following methodology. Oregon State University manages a website called Oregon Forest Industry Directory. This website is part of the College of Forestry outreach program. One of the features of the site is link to companies that buy logs. Staff utilized this website to check the log buying specifications of three nearby mills.

The first mill is Oregon Overseas Timber Co. Inc. located in Bandon, Oregon.

Oregon Overseas Timber Co. Inc.



Company Information

87680 Kehl Lane
P.O. Box 1701
Bandon, OR 97411
Website: http://ootci.com
County: Coos
Phone: 541-347-4419

Log Buying Preferences

Minimum Diameter: 26
Minimum Length: 8
Maximum Length: 40
Length Preference: 40
Notes: high grade logs, old-growth culls
Accepts Big Logs

Certifications

Forest Stewardship Council (FSC)

Products Produced | Products Purchased | **Species** | Residue | Services

Douglas-fir

Company Contacts

Name	Position/Title	Phone	Email address
Jim Curran	Mill Manager	541-347-4419 x309 (work)	Email Contact
Ulrich Lau	Sales	541-347-4419 x304 (work)	
Jim Curran	Log Buyer	541-347-4419 x309 (work)	

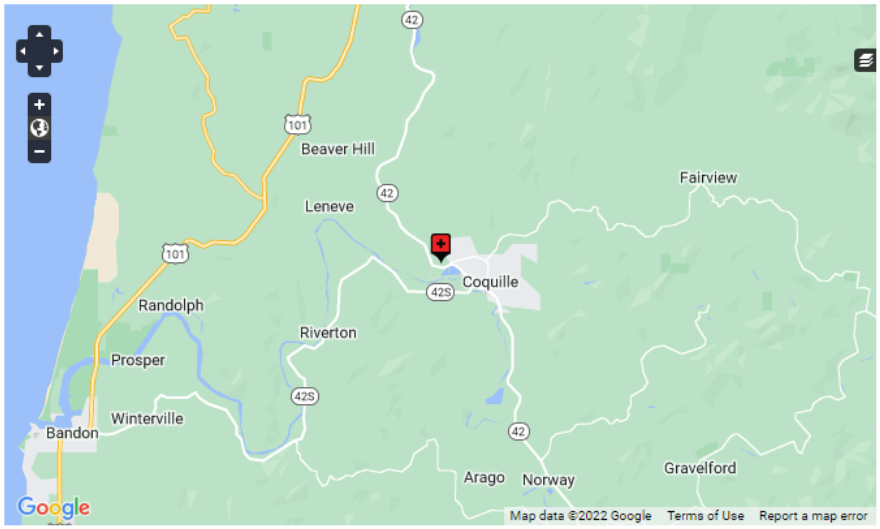
Additional Information:
Wood products made of mainly Douglas-fir for European market. Sawmill Hours: Mon-Fri 7 a.m. till 4 p.m. Retail Hours: Tue-Sat 8 a.m. till 4:30 p.m. Retail Phone Number: 541-347-4410

Are you with this company? Request an account or permission to edit this listing.

Staff had a telephone discussion, on April 14, 2022, with the log buyer for Oregon Overseas Timber Co. Inc. This is the nearest mill to the subject property. When asked about selling of Shore pine. The log buyer informed Staff the only use for Shore pine was burning as outdoor fire wood as it was not a commercially viable forest product.

The second mill was Roseburg Forest Products in Coquille, Oregon.

Roseburg Forest Products - Coquille



Company Information

Cedar Point Road
P.O. Box 218
Coquille, OR 97423
Website: http://www.roseburg.com
County: Coos
Phone: 541-396-2131

Log Buying Preferences

Minimum Diameter: 5
Maximum Diameter: 30
Minimum Length: 17
Maximum Length: 34
Length Preference: 34

Certifications

Forest Stewardship Council (FSC)

Products Produced | Products Purchased | **Species**

Fir, grand	Fir, white	Hemlock, western	Douglas-fir
Pine, lodgepole	Pine, ponderosa	Pine, sugar	Pine, western white
Spruce, Engelmann	Spruce, Sitka		

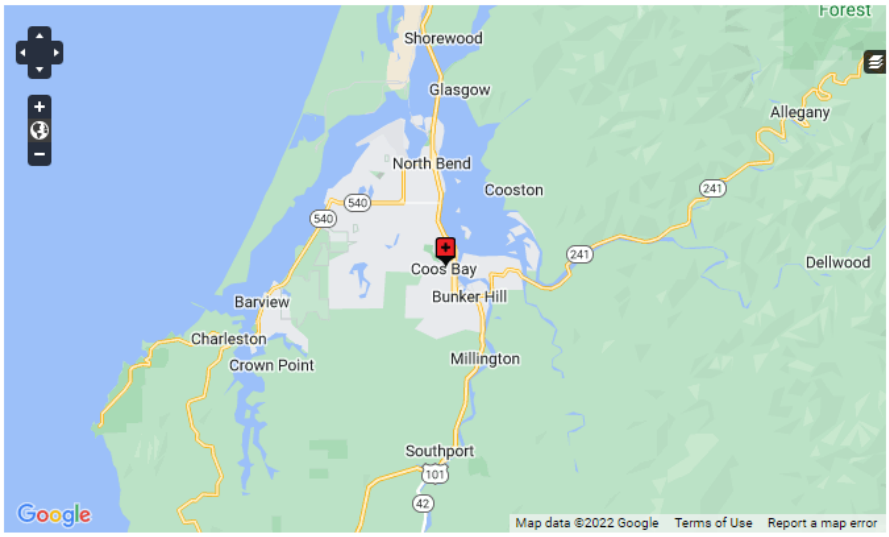
Company Contacts

Name	Position/Title	Phone
Joshua Phillips	Log Buyer	541-396-2131 (work)

While Shore pine (Pinus contorta var. contorta) sounds similar to Lodgepole pine (Pinus contorta var. latifolia) it is not. A telephone conservation, on April 15, 2022, with a log buyer from Roseburg Forest Products (RFP) about the two species and he explained these two tree species are completely different. They look different, they cut different, they have different characteristics, and RFP had no interest in buying Shore pine for commercial forest products. They were willing to buy Lodgepole pine if anyone was willing to ship to the Douglas County at a cost effective price. RFP is in the business of buying timber for commercial purposes and Staff recommends that this is considered expert advice on the market.

The third mill contacted was Southport Forest Products located in Coos Bay, Oregon.

Southport Forest Products



Company Information

P.O. Box 298
Coos Bay, 97420, OR 97420
Website: http://www.southportforest.com/
County: Coos
Phone: (541) 266-0903

Log Buying Preferences

Minimum Diameter: 4"
Maximum Diameter: 60"

Products Produced | **Products Purchased** | **Species** | **Residue**

Fir, grand	Fir, white	Hemlock, western	Douglas-fir
Pine, lodgepole	Pine, ponderosa	Pine, sugar	Pine, western white
Spruce, Engelmann	Spruce, Sitka		

Company Contacts

Name	Position/Title	Phone	Email address
Jason Smith	Manager	541-266-0903 (work) (cell)	Email Contact
Forest Flowers	Log Buyer	541-266-0903 (work) 541-297-5482 (cell)	
Jacob Steensen	Log Buyer	541-266-0903 (work)	

Staff had a telephone conservation with Jacob Steensen on April 14, 2022. Mr. Steensen indicated that Southport had no interest in buying only Shore pine, and would only allow a minor amount of Shore pine mixed into Douglas fir or white wood mix of pulp wood.

These three sources support that the there is a very limited commercial value in the timber on this property.

The applicant's consulting forester, Mr. Eric Farm, is asserting that there is no site index for Shore pine. While typically, Staff checks the cubic feet per acre per year (cf/ac/yr) of vegetation growth on a subject property. Tree site index is similar enough to cf/ac/yr measurements and the conversion factor is listed in Oregon Department of Forestry's Land Use Planning Note #3.

Mr. Farm indicates that *"the NRCS soil survey shows a value for forest productivity based on the Alexander lodgepole pine site index table. This site index table is not applicable to western Oregon per the author's note".*

The applicant submitted the report for Lodgepole pine.

Site Indexes for Lodgepole Pine, with Corrections for Stand Density: Instructions for Field Use

by

Robert R. Alexander

Lodgepole pine (Pinus contorta Dougl.) commonly grows in overly dense stands, and crowding restricts the rate of height growth. Site index must, therefore, be adjusted for stand density. Figures 1 and 2, and tables 1 through 7 have been prepared for field use in estimating site index for lodgepole pine. They are applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and eastern Washington and Oregon.[2] Information necessary to understand field application of the site index curves and instructions for their use are presented in this paper. Methodology used to develop the site index curves will be presented in a subsequent paper.

Stand density is expressed as Crown Competition Factor (CCF).[3] CCF compares growing space available to a tree with the space represented by a vertical projection of the average crown area of an open-grown tree of the same stem diameter (Maximum Crown Area, MCA). Because space occupied by a single tree is not easily determined, the comparison is made on a stand basis. CCF may be obtained from the numbers and diameters of trees in a stand, or it may be estimated from measurements of basal area and average diameter.

[2] *This paper is based on a cooperative study planned and undertaken jointly by the Rocky Mountain, Intermountain, and Pacific Northwest Forest and Range Experiment Stations. David Tackle (INT) and Walter G. Dahms (PNW) collected the field data in their respective areas.*

[3] *Krajicek, John E., Brinkman, Kenneth A., and Gingrich, Samuel F. Crown competition factor, a measure of density. Forest Sci. 7: 35-42. 1961.*

Site index is expressed as the average height of dominant trees in pure, even-aged stands at age 100 years. For stands where the CCF is 125 or less, height growth is unaffected by density. For stands where the CCF is greater than 125, height growth is reduced as density increases, and the reduction in height growth at any level of CCF above 125 becomes greater as site quality improves.

Site index can be estimated from tables 1 through 5 for all combinations of height, age, and density indicated in the Rocky Mountain and Intermountain regions, providing the average height of the trees selected for site determination is equal to or exceeds the height of the site index 30 class but does not exceed the height of the site index 100 class at the age sampled. Figure 1 can be used if the CCF is 125 or less. In the Pacific Northwest region, site index can be estimated reliably only if the "site trees" are 50 or more years old.

Field Application of Site Index Curves

Step 1.--Determine average height and age of the stand. Select four or more dominant trees (site trees) and measure heights and ages in the conventional manner.[4] Average total age may be approximated from age at breast height by adding 9 years to the average age at breast height (fig. 1 and all tables are based on total age).

[4] *Chapman, Herman H. and Meyer, Walter H. Forest mensuration, Chap. 15, "The measurement of heights in standing trees," pp. 149-212 and Chap. 23, "The age of standing trees," pp. 318-323. New York: McGraw-Hill Book Co. 1949.*

When Staff is confused on a technical question, such as the site index of Shore pine. We often rely on NRCS for guidance. Staff visited the NRCS office for assistance on April 14, 2022. NRCS staff did not know the specifics of whether the site index for Lodgepole pine from a 1966 applies to Shore pine. That is too specific of a question for local NRCS to answer. NRCS staff referred Planning staff to contact OSU Extension Staff about tree species site index questions.

Staff then contact OSU Extension Staff. Dr. David Shaw, Forest Health Specialist, offered his expert opinion *"My general thought is that Alexander was the Rocky Mt. variety, i.e. P. contorta subsp. latifolia. And of course shore pine is P. contorta subsp. contorta. And grows on much different soils and climate. So I don't think those site index and density and yield tables would work for coastal Oregon. Not sure specific site index yield estimates for shore pine exist for Oregon".* Staff wishes to inform the Board of Commissioners, that while a rotating professorship, this is the most qualified non-bias expert in the State of Oregon. Dr. David Shaw does not need to prove his qualifications under the rules we need follow. The Planning Commission recommended that the Board of Commissioners consider OSU Extension as expert witnesses.

Based on the submitted NRCS soils, there is a potential for Sitka spruce on the subject property within the 61D soil class. The applicant's forester found some legacy Sitka spruce on the subject property. The applicant did not provide much information on whether they try previous reforestation efforts onsite. When asked for additional information from Staff about previous reforestation effects. The applicant stated there had not been any previous reforestation attempts on the subject property and they felt it would not have been successful.

The applicant's consulting forester also submitted additional information. The summary is that the soils and climate factors would not be suitable for the commercial growing of Sitka spruce.

Staff did consult with NRCS – Coquille office staff on April 25, 2022 to verify that Sitka spruce had potential to growth in 61D soil types. There is potential for Sikta spruce to growth at this site. Goal 4 identifies Forest land shall include *"lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources".*

There is an interesting LUBA opinion from Linn County for the Board of Commissioners to consider. The application involved rezoning of 28.62 acre parcel from Farm/Forest to Non-Resource (NR-5). The site had the forest productivity for Douglas-fir of 106 cf/ac/yr, which produces a similar example of the 100 cf/ac/yr of Sitka spruce on this subject property. At the time of the application, only 2 acres of the Linn property was stocked in timber. The remainder of the Linn property was covered in *"scattered deciduous and Douglas-fir trees species, open grassy area and rock outcrops".* The petitioner argues that *"where NRCS data is available local governments*

"must rely on that information and may not substitute other information when conducting an inventory of forest land". **The intervenor argued that *"a local government may choose to rely on that study rather than the NRCS ratings to determine the productivity of the parcel and hence whether it is suitable for commercial forest uses under Goal 4".* Like most LUBA opinion, both sides argue they were correct and the other side was completely wrong. Every application is unique, and what the decision concluded in this case was that** "***essentially, that because the majority of the property is not forested and has no streams, the property is not "other forested lands" that maintain the listed resources".*** **The question is are the existing Shore pines enough to be consider other forest lands that provides for soil, air, water and fish & wildlife resources.**

The Planning Commission had detailed discussion about the habitat values of the subject property and found that property does not meet the definition of Goal 4 based on the site conditions described in report by Eric Farm.

<u>Forest Management</u>
Some of the comprehensive plan implementation goals relates to siting of new rural residential dwellings and their effects on nearby farm and forest lands.

If the zone change is approved, then there will be analysis of the changes to nearby farming or forestry practices. The County must analyze whether those effects would be significant changes or not. Most forest operations are preempted from planning review by OAR 660-006-0060.

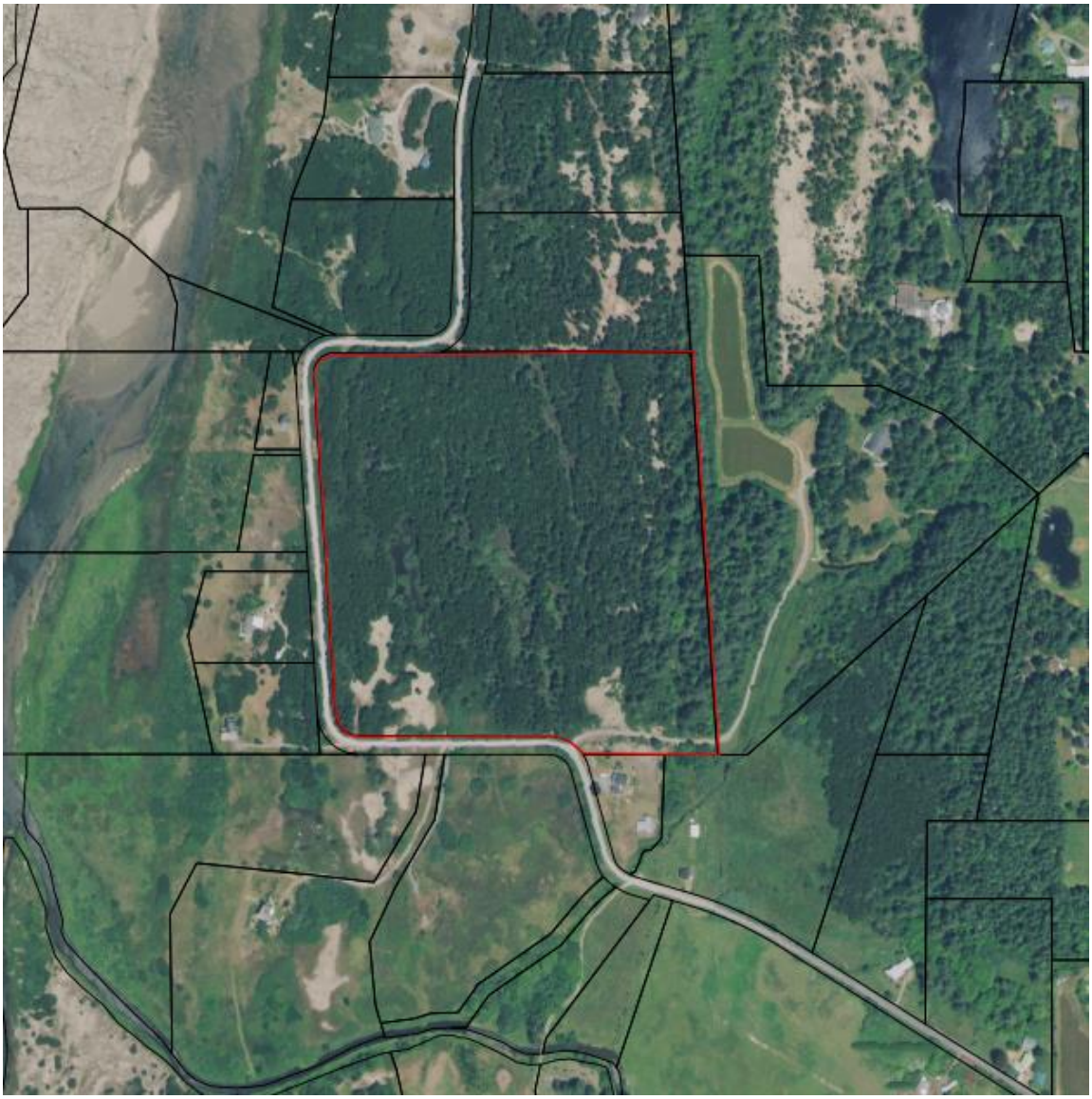
Comprehensive Plan Volume 1 Part 2 provides the inventory and factual background for forest lands in Coos County. The plan identifies the following methods or tools as the forest management, which is supposed to increase the usability of timber lands: ***"refers to any or all of the following practices: (1) forest fire control; (2) insect or disease control; (3) vegetation control; (4) reforestation; (5) precommercial and commercial thinning; (6) fertilization; (7) genetic improvement of timber species; and (8) other measures, such as assistance to forest land-owners, forest research, etc."***

Rezoning from Forest to Qualified Rural Residential-5 zones will not have a direct effect on forest fire control. The subject property is currently, and remain, within Bandon Rural Fire Protection District for structural protection. The subject property is currently, and remain, within Coos Forest Protection District for wildland protection. While the subject property appears to be cover with Gorse, which is a flammable invasive species, the rezoning process will not necessary require removal any invasive species.

Insect and disease control measures are not necessarily affected by County zoning districts. First, Staff has no evidence provided that there are any insect or disease damage on the subject property or nearby properties for that matter. Second, there are a handful of residential tree services businesses in the Bandon area provide services to rural residential properties. Changing the zoning district will not necessary increase any challenges for controlling pest damage.

Vegetation control refers to controlling unwanted vegetation that competes with commercial tree species. This does not necessarily mean only invasive species. Based on the submitted professional forester report, by Eric Farm, the subject property a very minimal commercial tree species.

Based on the aerial imagery of the subject property and nearby area, there are a varied of timber stand types in this area.



Senate Bill 1602 increased the helicopter spray distance buffer from 60 feet to 300 feet of an inhabitable dwelling starting January 1, 2021. The Anderson v. Coos County, 51 Or LUBA 454 (2006) case established an important factor. According to the LUBA case, a reasonable assumption could conclude that herbicides would be applied to land less than 40 acres using ground application methods. Spraying herbicides using ground spraying applications is permitted up to the property line. Herbicide application by aerial spraying is preferred for lands over 40 acres.

While it appears, there may be forestlands suitable for harvest and within 300 ft on the adjacent tract to the east. Staff finds that it is reasonable to conclude ground-based herbicide treatments would be utilized on these timber stands given the existing cranberry bogs on this tract and adjacency to Laurel Lake.

The parcels located to the north, south and west of the subject property are mostly residentially developed. These parcels are all less than 40 acres in size. Any herbicide application is likely to be ground side, and likely residential in nature.

Reforestation refers to replanting of trees. State Forest Practices Act regulates any commercial forest practices regardless of the County zoning. Any specific requirements for restoration are outside the purview of County zoning regulations. Rezoning of the subject properties is not likely to affect reforestation on the adjacent forest lands.

Precommercial and commercial refers to types of thinning operations. This is when the forest stand is removed of a percentage of trees in the stand. This is not considered a full harvest of the stand. Forest thinning is more complicated than simply cutting every other tree, and these are considered operations under the purview of the Forest Practices Act.

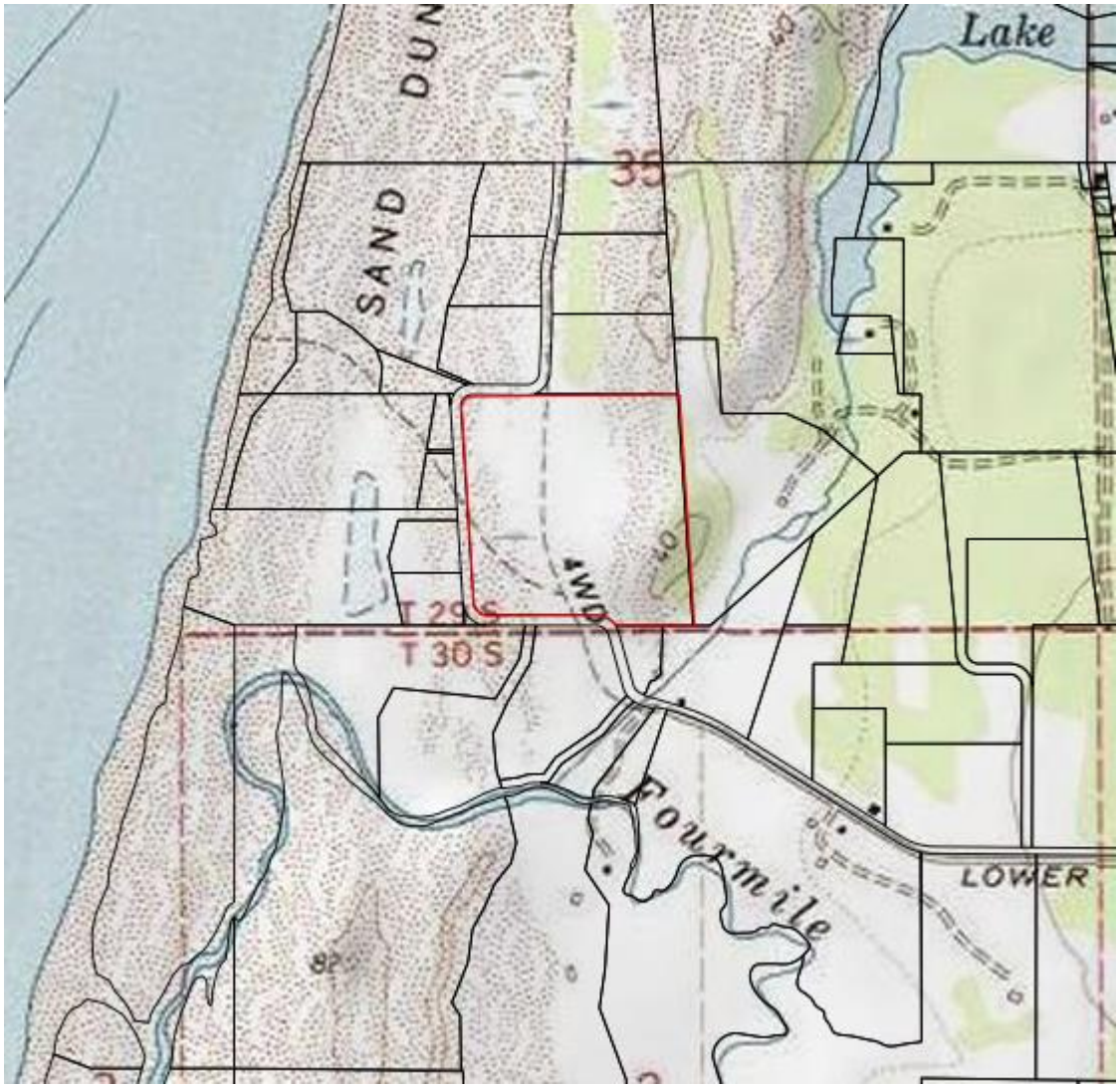
Fertilization refers to the application of applying fertilizer to increase tree species growth. Changing the zoning district will not affect applications of fertilizer to subject property.

Planting genetic improved trees are not affected by zone changes. This refers to the tree species propagation. This is does not include reforestation or herbicide vegetation control is analyzed elsewhere. For context, an example of this would be the building a house using LVL studs vs dimensional lumber. Siting of the house would be regulated by land use planning. However, the type of stud utilized is not land use criteria.

The Comprehensive Plan also identifies intensive forest management of commercial timberlands consisting of timber harvests, initial site preparation, pre-commercial thinning, release site preparation, commercial thinning, then final harvest.

Oregon Department of Forestry's Land Use Planning Note #2 provides guidance for harvesting on forest lands, and the relationship between residential development and nearby forest lands. The note states that slope is an important factor in determining whether timber harvest will be by ground based equipment or using cable yarding equipment. It is appropriate to assume cable yarding will be used for slopes over 35%, while ground based equipment will be use for slopes under 35%. The note states that a minimum of 500 feet safety buffer should be between residential developed and cable yarding harvests. While only a 300 feet buffer should be required for ground based harvesting methods.

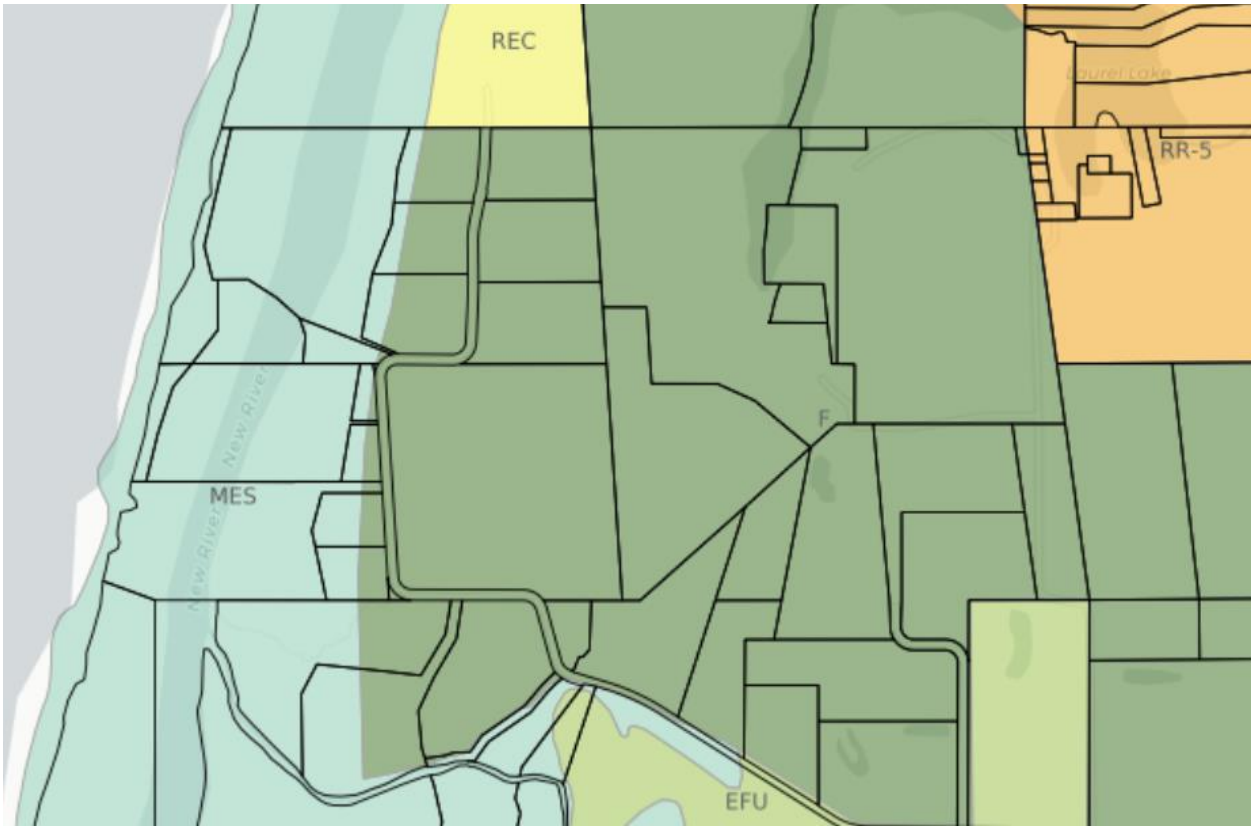
Based on the topographic map indicating less than 35% slope, this area will likely be harvested using ground-based equipment.



Based on the information and analysis above, Staff recommends the finding that a rezone from Forest to Qualified Rural Residential-5 zoning district will not have a significant negative effect on nearby forest practices.

- ***Coos County Comprehensive Plan Maps #14 Zone Maps and #16 Mixed Use Maps***

FINDING: The subject property is currently zone as Forest zoning district.



If approved, the subject property will be changed to Qualified – Rural Residential -5 zoning district.

Therefore, Staff recommends the subject property be removed from the mixed use overlay.

3.1 AGRICULTURAL LANDS - INVENTORY AND ASSESSMENT

1. Statutory Framework
1.1 Introduction – Intent of the Oregon Legislature

Agriculture is the second greatest industry in Oregon, after lumber and wood products. Land suited to agricultural use is a valuable resource which is under pressure from development for other uses.

In response to a state-wide problem of loss of prime agricultural land to non-resource producing uses, in 1973 the Oregon Legislature acted to stem the rapid conversion of agricultural land to other uses. The Legislature's agricultural land use policy was codified in ORS 215.243: "215.423 Agricultural land use policy. The Legislative Assembly finds and declares that:

> *(1) Open land used for agricultural use is an efficient means of conserving natural resources that constitute an important physical, social, aesthetic and economic asset to all of the people of this state, whether living in rural, urban or metropolitan areas of the state.*
>
> *(2) The preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state and for the assurance of adequate, healthful and nutritious food for the people of this state and nation.*
>
> *(3) Expansion of urban development into rural areas is a matter of public concern because of the unnecessary increases in costs of community services, conflicts between farm and urban activities and the loss of open space and natural beauty around urban centers occurring as the result of such expansion.*
>
> *(4) Exclusive farm use zoning as provided by law, substantially limits alternatives to the use of rural land and, with the importance of rural lands to the public, justifies incentives and privileges offered to encourage owners of rural lands to hold such lands in exclusive farm use zones."*

This land use policy was implemented through the establishment of Exclusive Farm Use (EFU) zoning and taxation assessment. The E.F.U. zoning was later embodied in State-wide Planning Goal #3 (Agricultural Lands).

FINDING: Based on the application, the *"entire tract is fully stocked with shore pine".* The subject property is currently mostly covered in Gorse and beach grass as the understory layer; Gorse is an invasive species. In staff's review it appears that the undeveloped open space lands to the north are also covered in a mixture of Gorse and Scotch broom. This is based on previous applications to the planning department where the applicants identified the vegetation cover as these invasive species.

The parcels to the south of the subject property are described as "open space" in their dwelling applications. The Oregon Department of State Lands inferred there may be wetlands covering these parcels. Either way, Staff has never been given any evidence of farming on the adjacent lands other than the aerial imagery showing the cranberry bogs to the east of the subject property.

Based on the attached soils reports and analysis presented in the report. These nearby lands do not appear to have much potential "*for the primary purpose of obtaining a profit in money*".

1.9 Definition of 'Commercial Agriculture'

In accordance with the Oregon Administrative Rules, Chapter 660, Division 5 – Land Conservation and Development Commission, the definition of commercial agriculture is as follows:

"COMMERCIAL AGRICULTURAL ENTERPRISE" consists of farm operations which will:

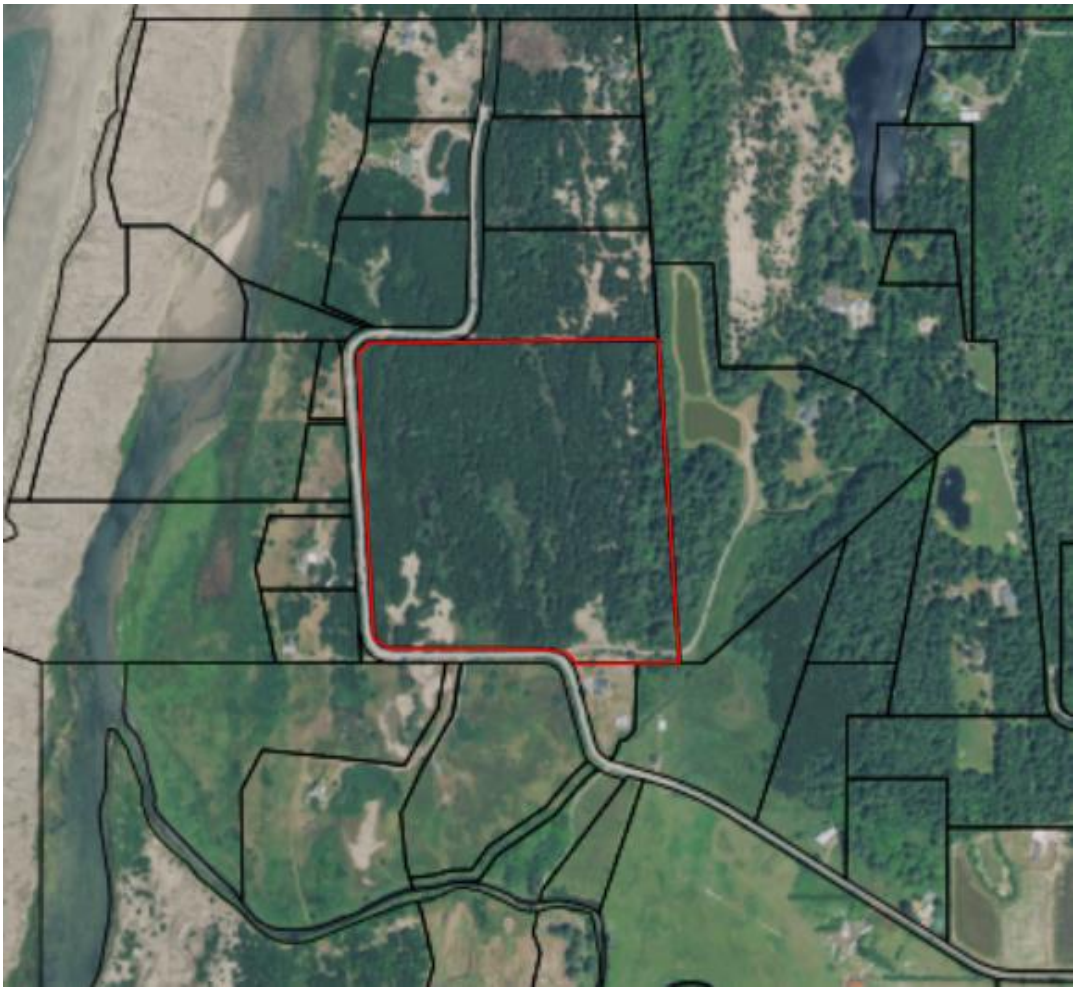
> *(a) Contribute in a substantial way to the area's existing agricultural economy; and*
> *(b) help maintain agricultural processors and established farm markets;*
> *(c) when determining whether a farm is part of the commercial agricultural enterprise, not only what is produced, but how much and how it is marketed shall be considered.*

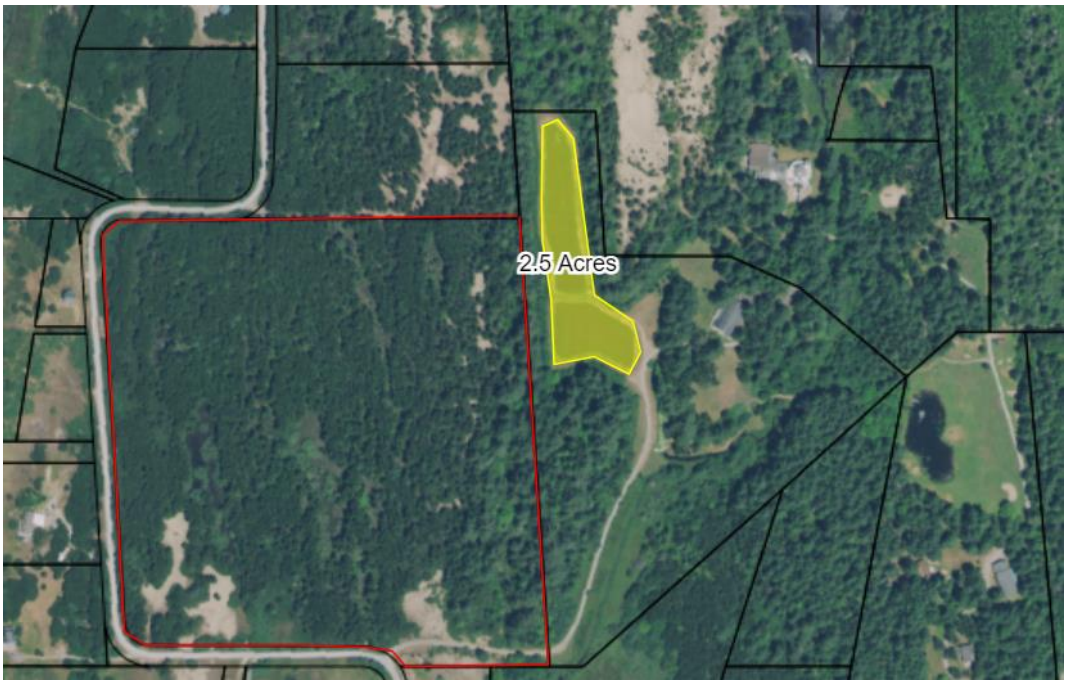
The type and value of products produced and how they are marketed are key factors in identifying the existing commercial agricultural enterprise. Owner characteristics, such as percent of income from farming and primary occupation, do not necessarily define a commercial farmer, or a commercial farm unit. Commercial agriculture in Oregon is supported in part, by less than full-time farmers. However, profitability or gross farm income is a factor in determining whether a farm operation is part of the commercial agricultural enterprise. Appropriate minimum lot size or performance standards as are utilized for any farm use zone shall be appropriate for the continuation of the existing agricultural enterprise within the area.

The inclusion of part-time or "small-acreage" farmers is of special relevance to Coos County, where a significant volume of farm products are produced by these farmers. This is substantiated in the sections which follow discussing farm size distribution and types of agricultural practices and products.

FINDING: Staff reviewed the aerial imagery of the subject property and nearby lands and did not find any commercial agricultural enterprise inside of this area. There is a small amount of cranberry farming located on the tract to the east. Staff estimates there is 2.5 acres of cranberry bogs.

The County's comprehensive plan identifies the average cranberry farm is 7 to 10 acres. Staff has not received any indication from the owner of tract, Whale Watch Sisters, whether their 2.5 acres in profitable or not. This property is under farm tax deferral, so the County Assessor does recognize the property is at least trying to be commercial farm operation.




2.5 Acres

Staff still must analyze whether the rezone will have any effect on this adjacent cranberry farm.

To provide the Board of Commissioners with at least some context of cranberry farming practices and the effects of nearby development. Friday Farms, operated by the Freitag's, have successfully grown cranberries directly adjacent to the City of Bandon for decades. The majority of cranberry farmers live on-site at their farming operations. Modern commercial cranberry growing has little direct correlation to adjacent lands, other than water rights and during the fall crop transportation.

Based on the NRCS custom soils report of the subject property, the subject property is capable of growing 5 tons of cranberries per year.

Custom Soil Resource Report

Irrigated and Nonirrigated Yields by Map Unit Component–Coos County, Oregon										
Map symbol and soil name	Land capability		Cranberries		Grass hay		Grass-legume hay		Pasture	
	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated
			Tons		Tons		Tons		AUM	
9—Chetco silty clay loam										
Chetco	4w	4w	—	—	3.50	2.00	—	—	6.0	1.5
Coquille	4w	4w	—	—	3.50	2.00	—	—	10.0	6.0
Langlois	4w	4w	—	—	10.00	6.00	—	6.00	12.0	8.0
28—Heceta fine sand										
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
59D—Waldport fine sand, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Dune land	—	8	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
Yaquina	—	4w	—	—	—	—	—	—	—	3.0

Onsite Cranberry Production:

Just because there are currently not cranberries on the subject property does not mean that the land could not be used for cranberry production. However, cranberries are an irrigated crop. This mean the landowners would need a water right to irrigate the subject property.

The subject property is the SESW of Section 35 of T29S-R15W. Below a map of the Oregon Water Resources Department Water Rights Mapping Tool.

There are no water rights on the subject property according to the map tool and verification with Water Resources.

The next logical thought is could a landowner owner apply for water rights. Staff verified thru the Oregon Water Resources Department Water Availability Analysis website.

Water Availability Analysis

FOURMILE CR > NEW R - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 4/18/2022

Watershed ID #: 70915 (Map)
Date: 4/18/2022

Exceedance Level: 80%
Time: 3:50 PM

Download Data

Water Availability

Select any Watershed for Details

Nesting Order	Watershed ID #	Stream Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	70915	FOURMILE CR> NEW R- AT MOUTH	No	No	No	No	No	No	No	No	No	No	No	No	Yes

Limiting Watersheds

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Limiting Watershed ID #	Stream Name	Water Available?	Net Water Available
JAN	70915	FOURMILE CR > NEW R - AT MOUTH	No	-40.60
FEB	70915	FOURMILE CR > NEW R - AT MOUTH	No	-25.20
MAR	70915	FOURMILE CR > NEW R - AT MOUTH	No	-30.10
APR	70915	FOURMILE CR > NEW R - AT MOUTH	No	-17.60
MAY	70915	FOURMILE CR > NEW R - AT MOUTH	No	-3.88
JUN	70915	FOURMILE CR > NEW R - AT MOUTH	No	-8.67
JUL	70915	FOURMILE CR > NEW R - AT MOUTH	No	-6.02
AUG	70915	FOURMILE CR > NEW R - AT MOUTH	No	-3.74
SEP	70915	FOURMILE CR > NEW R - AT MOUTH	No	-1.78
OCT	70915	FOURMILE CR > NEW R - AT MOUTH	No	-2.24
NOV	70915	FOURMILE CR > NEW R - AT MOUTH	No	-22.90
DEC	70915	FOURMILE CR > NEW R - AT MOUTH	No	-43.10
ANN	70915	FOURMILE CR > NEW R - AT MOUTH	Yes	3,730.00

Detailed Reports for Watershed ID #70915

FOURMILE CR > NEW R - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 4/18/2022

Watershed ID #: 70915 (Map)
Date: 4/18/2022

Exceedance Level: 80%
Time: 3:50 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	30.30	0.90	29.40	0.00	70.00	-40.60
FEB	46.20	1.41	44.80	0.00	70.00	-25.20
MAR	40.80	0.95	39.90	0.00	70.00	-30.10
APR	25.20	0.92	24.30	0.00	41.90	-17.60
MAY	10.50	1.28	9.22	0.00	13.10	-3.88
JUN	5.04	1.91	3.13	0.00	11.80	-8.67
JUL	3.56	2.43	1.13	0.00	7.15	-6.02
AUG	2.77	2.10	0.67	0.00	4.41	-3.74
SEP	2.19	1.34	0.85	0.00	2.63	-1.78
OCT	1.97	0.75	1.22	0.00	3.46	-2.24
NOV	7.96	0.61	7.35	0.00	30.20	-22.90
DEC	27.80	0.93	26.90	0.00	70.00	-43.10
ANN	27,900.00	937.00	27,000.00	0.00	23,700.00	3,730.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.31	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.90
FEB	0.81	0.00	0.00	0.04	0.00	0.01	0.54	0.00	1.41
MAR	0.35	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.95
APR	0.02	0.31	0.00	0.04	0.00	0.01	0.54	0.00	0.92
MAY	0.01	0.67	0.00	0.04	0.00	0.01	0.54	0.00	1.28
JUN	0.01	1.30	0.00	0.04	0.00	0.01	0.54	0.00	1.91
JUL	0.00	1.84	0.00	0.04	0.00	0.01	0.54	0.00	2.43
AUG	0.00	1.51	0.00	0.04	0.00	0.01	0.54	0.00	2.10
SEP	0.00	0.75	0.00	0.04	0.00	0.01	0.54	0.00	1.34
OCT	0.00	0.16	0.00	0.04	0.00	0.01	0.54	0.00	0.75
NOV	0.02	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.61
DEC	0.34	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.93

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IS70915A	CERTIFICATE	70.00	70.00	70.00	41.90	13.10	11.80	7.15	4.41	2.63	3.46	30.20	70.00
Maximum		**70.00**	**70.00**	**70.00**	**41.90**	**13.10**	**11.80**	**7.15**	**4.41**	**2.63**	**3.46**	**30.20**	**70.00**

While this report contains some technical information the red "No" under water availability means there is no available water rights, thus no availability to irrigate cranberry bogs which is a crucial component to growing and harvesting cranberries.

Onsite Grazing

The applicant quoted the following from the NRCS soil report ".... ***Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Wetness and flooding restrict grazing in winter*****". The applicant stated their professional forester visited the site in early February and part of the land was under water. Considering this both a mapped 100 year floodplain and a mapped wet deflation plane; Staff has no reason to doubt this statement and there has been no evidenced submitted to contradict the information. On site grazing may be a possibility but without onsite water to use for watering for livestock it is not likely a viable grazing.**

The Planning Commission had detailed discussions about the potential for grazing on the subject property. After much discussion, the conclusion given the limited success in grazing these wet deflation plains. The Planning Commission found that the subject property is unsuitable for summertime grazing.

Goal 5 Natural Resources, Scenic and Historic Areas, and Open Spaces
To protect natural resources and conserve scenic and historic areas and open spaces.

Local governments shall adopt programs that will protect natural resources and conserve scenic, historic and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

Applicable OARs:
OAR 660-023 – Procedures and Requirements for Complying with Goal 5
OAR 660-016 – Complying with Statewide Planning Goal 5
OAR 660-031 – State Permit Compliance and Compatibility

Coos County Comprehensive Plan, Volume 1, Part 1
5.6 FISH AND WILDLIFE HABITATS GOAL:

Coos County shall value its identified significant fish and wildlife habitat and shall strive to protect them where practicable.

PLAN IMPLEMENTATION STRATEGY
1. Coos County shall consider as "Sc" Goal #5 resources (pursuant to OAR 660-16-000) the following"

- *"Sensitive and peripheral Big-game Range" (ORD 85-08001 0L)*
- *Bird Habitat Sites {listed in the following table)*
- *Salmonid Spawning and Rearing Areas*

2. Coos County shall manage its riparian vegetation and identified non-agricultural areas so as to preserve their significant habitat value, as well as to protect their hydrological and water quality benefits (ORD 85-08-0l0L). This strategy does not apply to forest management actions, which are regulated by the Forest Practices Act. This strategy recognizes that protection of riparian vegetation and other wetland areas is essential to preserve the following qualities deriving from these areas:

- *Natural Flood Control - Flow stabilization of streams and rivers*
- *Environmental Diversity - Habitat for fish and wildlife, including fish and wildlife of economic concern*
- *Reduction of sedimentation*
- *Recreational opportunities*
- *Improved water quality*
- *Recharge of aquifers*

4. Coos County shall protect for agricultural purposes those land areas currently in agricultural use but defined as "Wet meadow" wetland areas by the U.S. Fish and Wildlife Service, and also cranberry bogs associated sumps and other artificial water bodies. Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas. The policy shall be implemented by: c. (ORD 85.08.0l0L) Use of the "Special Considerations Map" to identify (by reference to the detail inventory map) salmonid spawning and rearing areas subject to special riparian vegetation protection; and sensitive and peripheral big game range.

6. Coos County shall consider the following to be ("5b) resources pursuant to the inventory information available in this Plan and OAR 660-16-000(5)(b): • Osprey Nesting Sites • Snowy Plover Habitat (outside the CBEMP) • Spotted Owl Nesting sites.

FINDING: Coos County relies on Oregon Department Fish & Wildlife for providing guidance for development near bird site. The way the process works is bird sites are buffered a predefined distance to create an overlay zone. Any proposal development within these overlay zones are sent to ODFW for technical guidance. There are none of these bird site overlay zone on the subject property.

There are no streams on the subject property, so no riparian corridors would be required. In addition, a rezone from Forest to Qualified – Rural Residential-5 does not have an effect on the feature. This is should also be considered an overlay zone.

There are "Wetlands" on the subject property. Approving a rezone will not have the effect of removing this feature. Any future development, or action, on the property will be addressed during any future application. Staff does not see any reason this would be a concern.

Coos County Comprehensive Plan, Volume 1, Part 1
5. 7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS

ISSUES:
*I. The historical sites and structures have been identified in uninco1porated Coos County by Dr. Stephen Dow Beckham for OCC&DC and the State Pm*s Division. Of these, the Philpott Indian Village site, the Bandon Lighthouse, and Cape Arago Lighthouse are in the National Register of Historic Places. In other cases, however, the presence of historical resources are either not generally known to the public or the resources may be located in areas under pressure for development. What measures can the County take to protect the value of these resources while permitting development of non-conflicting uses? 2. Both the State Office of Historic Preservation*

(SOHP) and local tribal authorities are aware of the exact) location of relic archaeological sites. However, once publicly identified, the sites often fall prey to amateur "pot hunters" that could desecrate gravesites and diminish the value of the resource. What can Coos County do to protect these archaeological resources without inadvertently endangering them through widespread public dissemination of site-specific invent01y information?

PLAN IMPLEMENTATION STRATEGIES
1. Coos County shall manage its historical, cultural and archaeological areas, sites, structures and objects so as to preserve their original resource value. This strategy recognizes that preservation of significant historical, cultural and archaeological resources is necessary to sustain the County's cultural heritage.

2. Coos County shall permit the expansion, enlargement or other modification of identified historical structures or sites provided that such expansion, enlargement or other modification is consistent with the original historical character of the structure or site.

3. Coos County shall continue to refraining widespread dissemination [sic} site specific inventory information concerning identified archaeological sites. Rather, Coos County shall manage development in these areas so as to preserve their value as archaeological resources.

This strategy shall be implemented by requiring development proposals to be accompanied by documentation that the proposed project would not adversely impact the historical, cultural and archaeological values of the project's site. "Sufficient document" shall be a letter from a qualified archaeologist/historian and/or duly authorized representative of a local Indian tribe(s). . . . "Appropriate measures" are deemed to be those which do not compromise the integrity of remains, such as (1) paving over the sites, (2) incorporating cluster-type housing design to avoid the sensitive areas, or (3) contracting with a qualified archaeologist to remove and re-inter the cultural remains or burial(s) at the developer's expense. If an archaeological site is encountered in the process of development, which previously had been unknown to exist, then these three appropriate measures shall still apply. Land development activities found to violate the intent of this strategy shall be subject to penalties prescribed by ORS 97. 745. - Coos Bay Plan.

FINDING: There are adopted cultural resources maps. Staff did check the map that was adopted. There are no known sites on the subject property. Therefore, there really can not be any affects of rezoning the subject property. Realistically, this provides further rationale for rezoning this parcel to Qualified - Rural Residential-5 since there are not any known archaeological sites on this parcel.

Goal 6 Air, Water and Land Resource Quality
To maintain and improve the quality of the air, water and land resources of the state.

Applicable OARs: None

Coos County Comprehensive Plan, Volume 1, Part 1
5.12 AIR, LAND & WATER QUALITY

Problem/Opportunity Statement

Protection of the quality of air, land, and water resources is especially important in Coos county because the region's economy is almost totally dependent on natural resources for agriculture, forestry, fishing, and tourism. At the same time, development needs often conflict with stringent legal requirements for maintaining environmental quality.

GOAL

Coos County shall exercise sound land use practices to maintain the quality of its air, land, and water resources in a manner that reflects County citizens' desires for a quality environment and a healthy economy.

FINDING: If the Planning Commission recommends the zone change from Forest to Qualified – Rural Residential -5. There will no significant negative effect air, land, or water quality. This land use goal is encouraging franchise system of private solid waste, the County's Beaver Hill solid waste site, promotes general air quality standards. Rezoning 38 acres to either Q-RR-5, or even RR-5 will not have any significant effect on any of these programs.

Goal 7 Areas Subject to Natural Hazards
To protect people and property from natural hazards.

Applicable OAR: None

Coos County Comprehensive Plan, Volume 1, Part 1
5.11 NATURAL HAZARDS

Problem/Opportunity Statement

Coos County's topography, geology and climate create a variety of hazards to life, structures and natural resources such as farm and forestlands.

GOAL

Coos County shall strive to protect life and property from natural disasters and hazards, based on an inventory of areas potentially subject to such problems

PLAN IMPLEMENTATION STRATEGIES

*1. Coos County shall regulate development in known areas potentially subject to natural disasters and hazards, so as to minimize possible risks to life and property. Coos County considers natural disasters and hazards to include stream and ocean flooding, wind hazards, wind erosion and disposition, *critical streambank erosion, coastal erosion and deposition, mass movement (earthflow and slump topography), earthquakes, and weak foundation soils.*

This strategy shall be implemented by enacting special protective measures through zoning and other implementing devices, designed to minimize risks to life and property.

This strategy recognizes that it is Coos County's responsibility (1) to inform its citizens of potential risks associated with development in known hazard areas, and (2) to provide appropriate safeguards to minimize such potential risks.

Finding: The subject property has the following natural hazards overlays:

- Wind Erosion
- Earthquake & Liquefaction
- Tsunami

Coos County Zoning & Land Development Ordinance
4.11.132 Natural Hazards (Balance of County Policy 5.11)

Coos County has inventoried the following hazards:

- *Flood Hazard*
  - *Riverine flooding*
  - *Coastal flooding*
- *Landslides and Earthquakes*
  - *Landslide Susceptibility*
  - *Liquefaction potential*
- *Tsunamis*
- *Erosion*
  - *Riverine streambank erosion*
  - *Coastal*
    - *Shoreline and headlands*
    - *Wind*
- *Wildfire*

Purpose Statements: Coos County shall regulate development in known areas potentially subject to natural disasters and hazards, so as to minimize possible risks to life and property. Coos County considers natural disasters and hazards to include river and coastal flooding, landslides, liquefaction potential due to earthquakes, fault lines, tsunamis, river bank erosion, coastal erosion along shorelines and headlands, coastal erosion due to wind, and wildfires, including those areas affected by gorse.

This strategy shall be implemented by enacting special protective measures through zoning and other implementing devices, designed to minimize risks to life and property associated with new development and substantial improvements. The determination of whether a property is located in one of the above referenced potentially hazardous areas shall be made by the reviewing body (Planning Director, Planning Commission, Board of Commissioners, or any designee based upon adopted inventory mapping). A specific site may not include the characteristics for which it is mapped. In these circumstances staff shall apply § 4.11.132.ii.2m

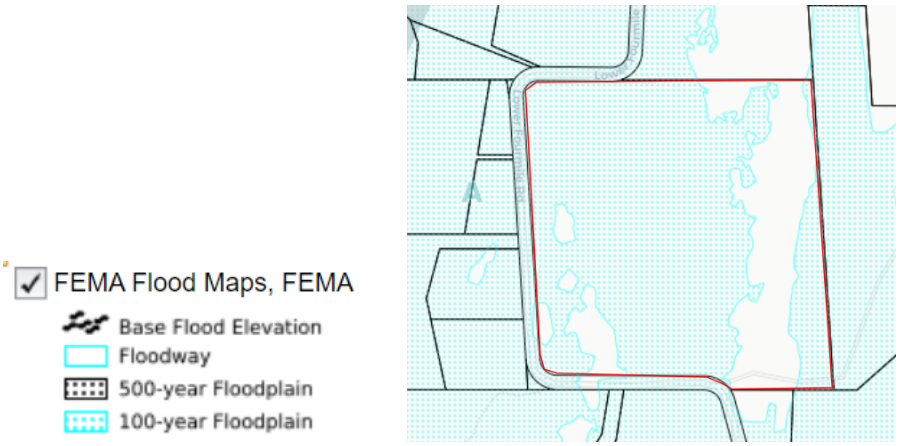
a. Flooding: Coos County shall promote protection of valued property from risks associated with river and coastal flooding along waterways in the County through the establishment of a

floodplain overlay zone (/FP) that conforms to the requirements for participation in the National Flood Insurance Program. See Sections 4.11.211-257 for the requirements of this overlay zone. See Sections 4.11.211-257 for the requirements of this overlay zone.

Comprehensive Plan
2. Coos County shall continue to participate in the National Flood Insurance Program (Public Law 90-448), recognizing that participation in this program substantially insures the health and safety of County residents and allows property owners to benefit from subsidized insurance rates. Further, this strategy also recognizes that failure to participate in this program would prohibit affected property owners from receiving construction and permanent mortgage loans by federally insured lending institutions.

2a. The areas of special flood hazard, identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Coos County" dated September 25, 2009, with accompanying Flood Insurance Rate Maps and Flood Boundary - Floodway Maps is hereby adopted by reference and declared to be a part of the Coos County Comprehensive Plan Inventory.

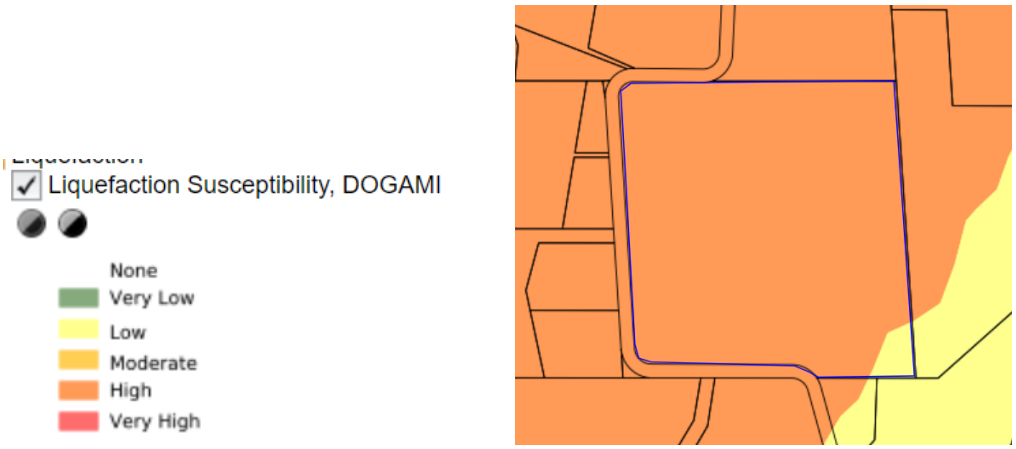
FINDING: The subject is within the A zone of the 100-year floodplain. This is part of the area adopted into the National Floodplain Insurance program. Below is a map of the subject property with the floodplain identified. Most of the subject property is covered in the 100 year floodplain.



However, changing the zoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district will have no effect on the floodplain overlay zone.

b. Landslides and Earthquakes
Earthquakes: Coos County shall promote protection of life and property in areas potentially subject to earthquake hazards. New development or substantial improvements in mapped areas identified as potentially subject to earthquake induced liquefaction shall be subject to a geologic assessment review as set out in this section. Such areas shall include lands subject to "very high" and "high" liquefaction identified in DOGAMI Open File Report O-13-06, "Ground motion, ground deformation, tsunami inundation, co-seismic subsidence, and damage potential maps for the 2012 Oregon Resilience Plan for Cascadia Subduction Zone Earthquakes."

FINDING: The subject is within the liquefication zone. This is part of the area adopted into the County's natural hazard program. Below is a map of the subject property with the liquefaction susceptibility identified. Most of the subject property is covered in the High liquefaction zone.



However, changing the zoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district will have no effect on the liquefaction susceptibility overlay zone.

c. Tsunamis: Coos County shall promote increased resilience to a potentially catastrophic Cascadia Subduction Zone (CSZ) tsunami through the establishment of a Tsunami Hazard Overlay Zone (THO) in the Balance of County Zoning. See Sections 4.11.260-4.11.270 for the requirements of this overlay zone.

FINDING: The subject property is mapped as an area susceptible to both small and medium scenario tsunami. Changing the zoning will not have a direct effect on the overlay zone. Specific land use actions will trigger different rules or regulations. This overlay zone will be addressed during those applications.

e. Erosion: Coos County shall promote protection of property from risks associated with shoreline, headland, and wind erosion and deposition hazards.

Coos County shall promote protection of property from risks associated with bank erosion along rivers and streams through necessary erosion-control and stabilization measures, preferring nonstructural solutions when practical.

Any proposed structural development within a wind erosion/deposition area, within 100 feet of a designated bank erosion area, or on a parcel subject to wave attack, including all oceanfront lots, will be subject to a geologic assessment review as set out in Section 4.11.150. There is a setback of 100 feet from any rivers or streams that have been inventoried in the erosion layer. If a variance is requested, a geologic assessment will be required.

FINDING: This overlay zone will need to be addressed during any application process. Staff does not have any proposal other than rezoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district.

Goal 8 Recreational Needs
To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Applicable OAR:
OAR 660-034

Coos County Comprehensive Plan, Volume 1 Part 1
5.20 RECREATION
County residents have difficulty engaging in certain recreational activities because the opportunity or supply is lacking.

FINDING: Most of the comprehensive plan implementation strategies revolve government parks, specifically County operated parks. This proposal is about a rezone to Qualified – Rural Residential-5, so no major effects to County recreation is expected.

Goal 9 Economic Development
To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Applicable OARs:
OAR 660-009

5.16 INDUSTRIAL & COMMERCIAL LANDS

GOAL

Coos County shall strive to diversify and improve its regional economy.

FINDING: Goal 9 revolves around implementation of strategies for commercial and industrial development. This application is rezoning Forest zoned lands to Rural Residential zoning. There is not much relevance between the request and this goal. The applicant did state that *"New development can enhance the tax base and contribute to*

the business climate of the community". **Staff wishes to caution the Board of Commissioners that increases to the tax base is not criteria for approval of a land use planning action.**

Goal 10 Housing
To provide for the housing needs of citizens of the state.

Applicable OARs:
OAR 660-007
OAR 660-008
OAR 660-038
OAR 660-039

5.17 HOUSING

GOAL

Coos County shall provide for the housing needs of its residents.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall provide zoning for adequate buildable lands and shall encourage the availability of adequate numbers of housing units for future housing needs at price ranges and rent levels, which are commensurate with the financial capabilities of Coos County households.

This strategy shall be implemented: (1) through appropriate Comprehensive Plan map and zoning designations, as appropriately determined to meet housing and estimates established in this plan's inventory and assessment, (2) through cooperation by Coos County with the Coos-Curry Housing Authority (CCHA) in their efforts to develop housing assistance programs for people with low and moderate incomes. This strategy recognizes (1) the lead role of CCHA in housing assistance planning, (2) each city's responsibility for assessing housing needs within its urban growth boundary (UGB), and (3) the County's responsibility for assessing housing needs within all other unincorporated areas and for coordinating the UGB housing assessments of each city.

2. Coos County shall encourage the availability of a wide variety of housing locations in urban and rural areas. For urban and urbanizable areas, this strategy shall be implemented through urban growth management agreements and appropriate coordinated land use designations. For rural areas, this strategy shall be implemented through appropriate land use designations for acreage homesites as selected and justified in the County's rural housing exception.

This strategy recognizes that the selected urban and rural locations are necessary to provide flexibility in housing location.

3. Coos County shall structure its implementing zoning ordinance such that it: (1) permits mobile homes, (2) permits mobile homes and clustering of dwellings under a Planned Unit Development concept in most residential zones, (3) permits multiple family dwellings in selected locations within urban growth boundaries (UGB's), and (4) permits

multiple family dwellings outside UGB's when part of a Recreation Planned Unit development. This strategy recognizes that such flexibility of housing type provides greater choice and enhanced ability to meet the housing needs of the citizens of Coos County.

4. Coos County shall structure its implementing ordinance so that it allows increasing density for (from lowest to highest) acreage homesites, rural centers, and UGA's.

FINDING: The applicant is making the argument that since the subject property will not be considered Goal 3 or Goal 4 lands, and thus be considered non-resource lands. Then the property may be under Goal 10. Staff does not necessary disagree that if lands are not considered farm or forest, then lands could then be used for rural housing.

County housing inventories are a complex matter and beyond the scope of this application. There is not necessarily a shortage of existing housing in Coos County, or especially the Bandon area. There appears to be a shortage of affordable housing, workforce housing, houses for citizens wishing reside in their dwellings. Based on the City of Bandon's 2018 Housing Needs Assessment identified that approximately 20% of the City's housing stock were not being used for long term housing because the land owners simply choose for them not to be occupy. The County's rural residential housing stock, in the Bandon, could easily be in the same situation.

Staff wishes to point out to the Board of Commissioners that is currently no shortage of vacant, or undeveloped, Rural Residential, Commercial, or Industrial lands. Changing to a Rural Residential zoning would not necessary be a positive or negative benefit.

Goal 11 Public Facilities and Services
"To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development".

Applicable OARs:
OAR 660-011

5.18 PUBLIC FACILITIES & SERVICES

GOAL

Coos County shall encourage the timely, orderly and efficient development of public facilities and services necessary to support appropriate for needed rural and urban development.

PLAN IMPLEMENTATION STRATEGIES

2. Coos County shall provide opportunities to its citizens for a rural residential living experience, where the minimum rural public services necessary to support such development are defined as police (sheriff) protection, public education (but not necessarily a rural facility), and fire protection (either through membership in a rural fire protection district or through appropriate on-site fire precaution measures for each dwelling). Implementation shall be based on the procedures outlined in the County's Rural Housing State Goal Exception.

This strategy is based on the recognition: (1) that physical and financial problems associated with public services in Coos Bay and North Bend present severe constraints to the systems' ability to provide urban level services, and (2) that rural housing is an appropriate and needed means for meeting housing needs of Coos County's citizens.

FINDING: The subject property will meet at least the minimum rural public services. Realistically, the property is already zoned Forest and the landowner could apply for either a template or 200-acre non-contiguous dwelling. The Coos County Sheriff Department will provide police protection no matter what the zoning is. The same is true for structural fire protection from Bandon Rural Fire Protection District. Wildfire protection is provided thru the Coos Forest Protective Association under an Oregon Department of Forestry contract. Port Orford Langlois School District provides local public educational services for the subject property. Staff recommends the Board of Commissioners finds that Goal 11 is met either with or without approval of this zone change.

Goal 12 Transportation
To provide and encourage a safe, convenient and economic transportation system.

Applicable OARs:
OAR 660-012
OAR 660-034

5.19 TRANSPORTATION

GOAL

Coos County shall strive to provide and encourage a transportation system that promotes safety and convenience for citizens and travelers and that strengthens the local and regional economy by facilitating the flow of goods and services.

Finding: The County Comprehensive has various strategies for implementing Goal 12 elements. However, the request is for rezoning Forest to Rural Residential zone change. Staff recommends the Planning Commission finds that Goal 11 is met either with or without approval of this zone change.

Goal 13 Energy Conservation
To conserve energy.

Applicable OARs:
None

5.21 ENERGY

PLAN IMPLEMENTATION STRATEGIES

6. Coos County shall ensure that its implementing ordinances promote the conservation of energy, based upon sound economic principles, by considering utilization of the following techniques as incentives:

i. lot size, dimension and siting controls;

ii. building height, bulk and surface area;

iii. density of uses, particularly housing;

iv. availability of light, wind, and air.

In addition, alternate energy devices (such as wind energy towers) shall be conditionally permitted to exceed the maximum height limitation of its particular zone if found to be visually compatible with the immediate neighborhood.

This strategy recognizes that implementing ordinances can provide incentives in development to promote energy conservation.

FINDING: The applicant's is requesting a zone change from the Forest zone to a Rural Residential zoning district. The applicant is requesting a qualifier that would raise the minimum lot size to 10 acres. Even if the Board of Commissioners approves a standard Rural Residential-5 zoning district with 5 acres and further goal exceptions. This is only an increase the density of three to four more dwellings in typical part of Coos County, that is relatively sparse. Staff could not could to any real, useful, reason that this proposal would not necessary comply with the intent of Goal 13.

Goal 14 Urbanization
To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Applicable OARs:
OAR 660-011 – Public Facilities Planning
OAR 660-012 – Transportation Planning
OAR 660-014 – Newly Incorporated Cities, Annexations, Urban Development on Rural Lands
OAR 660-021 – Urban Reserves (applies statewide except the Portland Metro area)
OAR 660-022 – Unincorporated Communities
OAR 660-024 – Urban Growth Boundaries
OAR 660-025 – Periodic Review
OAR 660-027 – Urban and Rural Reserves in the Portland Metro Area
OAR 660-032 – Population Forecasts
OAR 660-038 – Simplified Urban Growth Boundary Method

5.22 URBANIZATION

GOAL

Coos County shall provide for an orderly and efficient transition from rural to urban land use, and shall establish urban growth boundaries to identify and separate urbanizable land from rural land.

FINDING: Goal 14 is important for Coos County. However, this proposal is not requesting any development that would trigger Goal 14 level of reviews. The requested lot size is above 10 acres.

Goal 15 Willamette River Greenway
To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Applicable OARs:
660-020 – Willamette River Greenway Plan

FINDING: The Willamette River Greenway is outside of the jurisdiction of Coos County.

Goal 16 Estuarine Resources
To recognize and protect the unique environmental, economic and social values of each estuary and associated wetlands; and

To protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Applicable OARs:
OAR 660-017 – Classifying Oregon Estuaries
OAR 660-031 – State Permit Compliance and Compatibility
OAR 660-035 – Federal Consistency

FINDING: Goal 16 is important land goal in Coos County. It is so important that the County has adopted two federally recognized estuary management plans, Coos Bay and Coquille. But the subject property is located approximately 7 miles south of the Coquille River Estuary Management Plan. Therefore, Goal 16 does not apply to this application.

Goal 17 Coastal Shorelands
To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and

To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Applicable OARs:
OAR 660-035 – Federal Consistency
OAR 660-037 – Goal 17 Water-Dependent Shorelands

5.10 DUNES, AND OCEAN AND COASTAL LAKE SHORELANDS

GOAL

Coos County shall manage its dune areas, ocean and coastal lake shorelands, and minor estuary shorelands, to provide for diverse uses consistent with maintenance of the natural values associated with such areas and with the need to reduce hazards to human life and property.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall base policy decisions for dunes and ocean, coastal lake, and minor estuary shorelands on the boundaries for these areas as identified on the Special Considerations Map.

In addition, the County shall utilize the Special Considerations Map and the boundaries it delineates for the following specific areas:

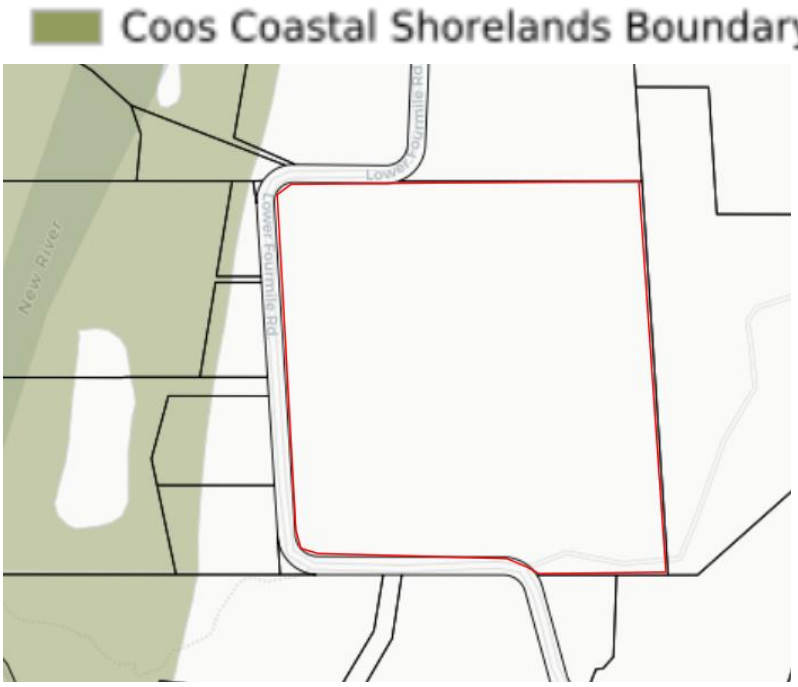
i. "Coastal Shorelands Boundary"'

ii. "Coastal Lake Shorelands Boundary:'

iii. "Suitable", "Limited Suitability" and "Not Suitable" areas of development potential.

This strategy recognizes that the Special Considerations Map specifically delineates the boundaries for areas identified in the Dunes and Ocean, Coastal Lakes Inventory and Assessment.

FINDING: Coastal Shoreland Boundary is also an important aspect of Coos County Comprehensive Plan. Attached is a map of the subject property and the location to the CSB. The location of the CSB is close to the subject property, however Lower Fourmile County Road is between the CSB and the subject property.



Goal 18 Beaches and Dunes
To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and

To reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Applicable OARs:
OAR 660-034 – State and Local Parks Planning
OAR 660-035 – Federal Consistency

5.10 <u>DUNES, AND OCEAN AND COASTAL LAKE SHORELANDS</u>

GOAL

Coos County shall manage its dune areas, ocean and coastal lake shorelands, and minor estuary shorelands, to provide for diverse uses consistent with maintenance of the natural values associated with such areas and with the need to reduce hazards to human life and property.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall base policy decisions for dunes and ocean, coastal lake, and minor estuary shorelands on the boundaries for these areas as identified on the Special Considerations Map.

In addition, the County shall utilize the Special Considerations Map and the boundaries it delineates for the following specific areas:

i. "Coastal Shorelands Boundary"'

ii. "Coastal Lake Shorelands Boundary:'

iii. "Suitable", "Limited Suitability" and "Not Suitable" areas of development potential.

This strategy recognizes that the Special Considerations Map specifically delineates the boundaries for areas identified in the Dunes and Ocean, Coastal Lakes Inventory and Assessment.

2. Coos County shall permit development within areas designated as "Beach and Dunes Areas with Limited Development Suitability" on the Special Considerations Map only upon the establishment of findings that consider at least:

i. the type of use proposed and the adverse effects it might have on the site and adjacent areas,

ii. the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation,

iii. the need for methods for protecting the surrounding area from any adverse effects of the development, and

iv. hazards to life, public and private property, and the natural environment which may be caused by the proposed use.

Further, Coos County shall cooperate with affected local, state and federal agencies to protect the groundwater from drawdown, which would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of salt water into water supplies.

Implementation shall occur through an Administrative Conditional Use process, which shall include submission of a site investigation report by the developer that addresses the five considerations above.

This policy recognizes that:

i. The Special Considerations Map Category of "Beach and Dune Areas with Limited Development Suitability" includes all dune forms except older stabilized dunes, active foredunes, conditionally stable foredunes that are subject to ocean undercutting or wave-overtopping, and interdune areas (deflation plains) subject to ocean flooding.

ii. the measures prescribed in this policy are specifically required by LCDC Goal #18 for the above-referenced dune forms, and that this strategy recognizes that potential mitigation sites must be protected from pre-emptory uses.

3. Coos County shall prohibit residential development and commercial and industrial buildings within areas designated as "Beach and Dunes Areas Unsuitable for Development" on the Special Considerations Map.

Further, Coos County shall permit other developments in these areas only:

i. When specific findings have been made that consider at least:

a) the type of use proposed and the adverse effects it might have on the site and adjacent areas;

b) the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;

c) the need for methods for protecting the surrounding area from any adverse effects of the development; and

d) hazards to life, public and private property, and the natural environment which may be caused by the proposed use; and

ii. When it is demonstrated that the proposed development:

a) is adequately protected from any geologic hazards, wind erosion, undercutting, ocean flooding and storm waves; or is of minimal value, and

b) is designed to minimize adverse environmental effects, and

iii. When specific findings have been made, where breaching of foredunes is contemplated, that (1) the breaching and subsequent restoration is consistent with sound principles of conservation, and either (2) the breaching is necessary to replenish sand supply in interdune areas, or (3) the breaching is done on a temporary basis in an emergency (e.g., fire control, cleaning up oil spills, draining farm lands, and alleviating flood hazards).

Further, Coos County shall cooperate with affected local, state and federal agencies to protect the groundwater from drawdown, which would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.

This policy shall be implemented through (1) review of the Special Considerations Map when development is proposed in these areas, and (2) an Administrative Conditional Use process where findings are developed based upon a site investigation report submitted by the developer, which addresses the considerations set forth above.

iv. This policy recognizes that:

a) The Special Considerations Map category of "Beach and Dune Areas Unsuitable for Development" includes the following dune forms:

1) active foredunes

2) other foredunes which are conditionally stable and that are subject to ocean undercutting or wave overtopping, and

3) interdune areas (deflation plains) that are subject to ocean flooding,

b) the measures prescribed in this policy are specifically required by LCDC Goal #18 for the above referenced dune forms, and that

c) it is important to ensure that development in sensitive beach and dune areas is compatible with or can be made compatible with, the fragile and hazardous conditions common to such areas.

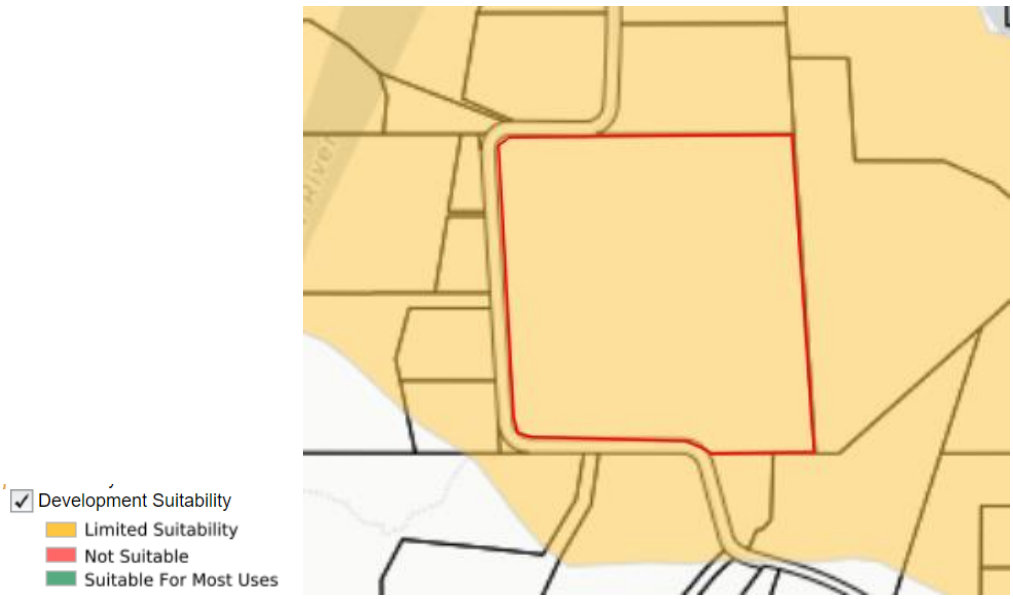
4. Coos County shall cooperate with state and federal agencies in regulating the following actions in the beach and dune areas described in subparagraph (iii) of Policy #1: (1) destruction of desirable vegetation (including inadvertent destruction by moisture loss or root damage), (2) the exposure of stable and conditionally stable areas to erosion, (3) construction of shore structures which modify current or wave patterns leading to beach erosion, and (4) any other development actions with potential adverse impacts.

This strategy shall be implemented through the processes described in Policies #2 and #3 above and through review and comment by the County on state and federal permits in beach and dune areas.

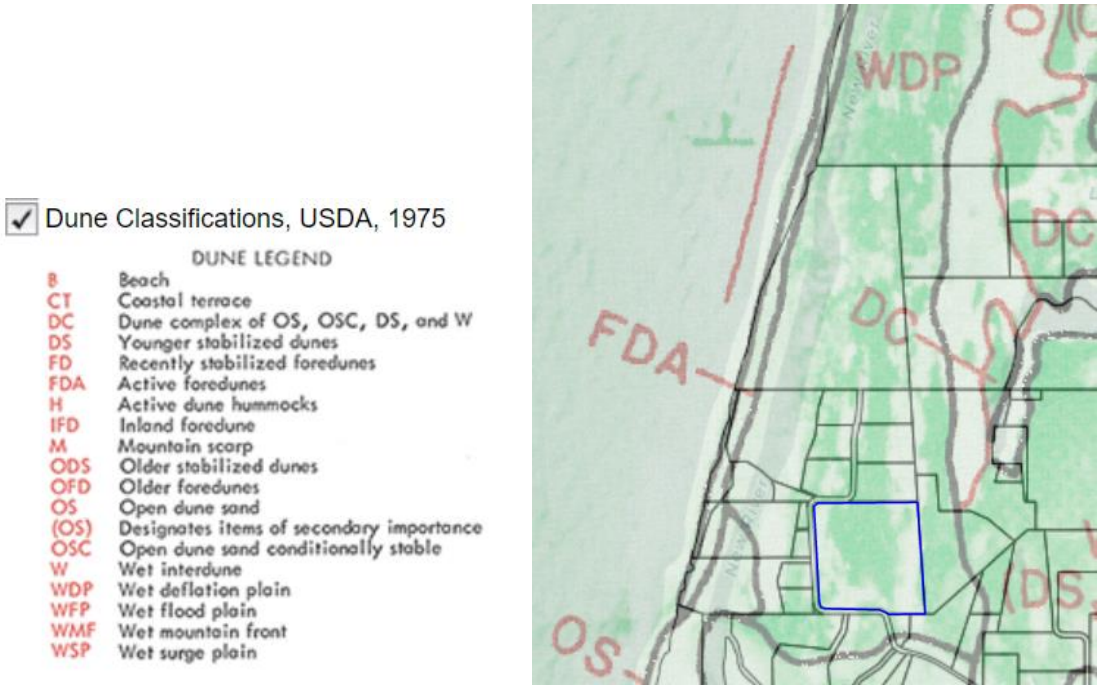
This strategy recognizes that regulation of these actions is necessary to minimize potential erosion.

FINDING: While applicant stated that "*there are no dune areas identified though this application",* meaning the subject property. The subject property is entirely covered by the Beaches and Dunes overlay, specifically classified as "Limited Suitability".

Below is a map of the subject property identified in red.



Below is a map of the 1975 USDA Dune Classification, with the subject identified in blue. The subject property is within the "Wet deflation plane".



Since Coos County implements Goal 18 as an overlay zone, changing the zoning from Forest to Rural Residential will not have an effect on the County's implementation of Goal 18.

The Planning Commission had much discussion about the wet deflation plains on the subject property and found that because of soil compaction concerns, these lands are unsuitable for livestock grazing.

Goal 19 Ocean Resources
To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.

Applicable OARs:
OAR 660-036 – Ocean Planning

FINDING: The subject property is close to the ocean, but on the dry side of 1967 OPRD Statutory Vegetation Line. Therefore, this goal does not apply.

RECOMMENDATION:
The Planning Commission recommended approval of the requested rezone from Forest to Qualified – Rural Residential-5 zoning district. The qualifier for this zoning district will be a 10-acre minimum lot size. The rezone will also remove the subject property from the Forest Mixed Use overlay map.

Staff only received one public comment during the public hearing. Mr. Kent Howe, 86200 Lower Fourmile Lane, expressed comments concerning the maintenance of the gravel portion of Lower Fourmile Road. Mr. Howe requested that the subject property have a condition of approval that it must participate in road maintenance. While this is a valid request for the Board of Commissioners in broad sense. This is not land use criteria. There is process thru either the County Counsel office or County Road Department to form a local improvement district for road maintenance.

Staff also received a few phone calls prior the hearing from neighbors. They also expressed concerns about road maintenance of Lower Fourmile Road. To assistance the Board, Staff confirmed with the County Roadmaster that the County ends maintenance responsibility at mile post 1.52, which is just past where the pavement ends near 86655 Lower Fourmile Road. Staff estimated using GIS software that the subject property is an additional 500 feet beyond this point.

BOARD OF COMMISSIONERS

COOS COUNTY

STATE OF OREGON

In the Matter of Amending the Coos County Comprehensive Plan Designation and Zone Map from Forest to Qualified – Rural Residential-5 and the Official Zone Map from Forest with a Mixed-Use overlay (F/MU) to Qualified – Rural Residential -5. File Nos. AM-22-002/RZ-22-001	ORDINANCE No.: 22-03-002PL

SECTION 1. TITLE

This Ordinance shall be known as the "Coos County Ordinance No. 22-03-002 PL".

SECTION 2. AUTHORITY

This ordinance is enacted pursuant to the provisions of ORS 203.035 and Chapter 215;

SECTION 3. PURPOSE

The purpose of this Ordinance is to amend Ordinance 85-12-020L that adopted Coos County Comprehensive Plan Volume I (Balance of County) Plan Zone Map and Ordinance 85-03-004L that adopted Coos County Zoning & Land Development Ordinance which implements Volume I of the Coos County Comprehensive Plan;

SECTION 4. FINDINGS AND ORDER

WHEREAS the property owners Coos County applied on properties described as map number: Township 29S, Range 15W, Section 35C, Tax Lots 1300. The subject properties are located south of the City of Bandon. The properties are currently zoned Forest with a Mixed Use Overlay. The request is to amend the plan and implementing zone on these property from Forest with a Mixed Use Overlay to Qualified – Rural Residential-5 (Q-RR-5) as presented in the application and proposal to found at Attachment A;

WHEREAS Staff reviewed the proposal and made findings in the April 28, 2022, staff report that the applicant met the required criteria and recommended that the Planning Commission (Hearings Body) find that the application complied with CCZLDO § 5.1.400.;

WHEREAS the Planning Commission took testimony at the May 5, 2022 hearing, there was no one else besides the applicant's representative to present and no written testimony in the record on this proposed. The Planning Commission found that the plan amendment and rezone would meet the criteria.;

AND IT APPEARING to the Board of Commissioners that given the definition of compatibility the Board of Commissioners found that the rezone would be compatible with a qualifier to limit the minimum lot size of the property to ten (10) acres. The application and staff findings along with the soil and forest inventory information support the zone change request.

The proposal was reviewed by the Department of Land Conservation and Development (DLCD) at the pre-application meeting and no conflicts with the Statewide Planning Goals, Statues or Rules in regards to the request.

NOW, THEREFORE, IT IS HEREBY ORDERED that the Coos County Board of Commissioners reviewed the Hearings Body recommendations and found the proposal met the objectives of the comprehensive plan. The evidence and testimony in the record supported the rezone to Qualified – Rural Residential-5. The Board of Commissioners took into consideration the evidence and determined that the proposal complied with other polices and ordinances as may be adopted by the Board of Commissioners. The findings in this matter can be found at Attachment B.

SECTION 5. SEVERANCE CLAUSE

If any section, subsection, provision, clause or paragraph of this ordinance shall be adjudged or declared by any court of competent jurisdiction to be unconstitutional or invalid, such judgment shall not affect the validity of the remaining portions of this ordinance; and it is hereby expressly declared that every other section, subsection, provision, clause or paragraph of this ordinance enacted, irrespective of the enactment or validity of the portion thereof declared to be unconstitutional or invalid, is valid.

SECTION 6. REPEAL OF INCONSISTENT ORDINANCES

Coos County Ordinances 85-12-020L, 85-03-004L and any subsequent amendments thereto are repealed to the extent that they are in conflict with this ordinance. Coos County Ordinances 85-12-020L and 85-03-004L shall remain in full force and effect in all other respects.

SECTION 7. EMERGENCY CLAUSE

The Board of Commissioners for the County of Coos deems this Ordinance necessary for the immediate preservation and protection of the public peace, safety, health and general welfare for Coos County and declares an emergency exists, and this Ordinance shall be in full force and effective upon its passage.

//

//

Adopted this Dated this 1st day of June, 2022.

BOARD OF COMMISSIONERS

ATTEST

_____
Recording Secretary

_____
Chair

Approved as to form:

_____
Office of Legal Counsel

_____
Vice Chair

Planning Commission Reading: May 5, 2022
Board of Commissioner Reading: June 1, 2022
Effective Date of Adoption: June 1, 2022

_____
Commissioner

Coos County Planning Department
Coos County Courthouse Annex, Coquille, Oregon 97423
Mailing Address: 250 N. Baxter, Coos County Courthouse, Coquille, OR 97423
Physical Address: 225 N. Adams, Coquille, Oregon
(541) 396-7770
FAX (541) 396-1022 / TDD (800) 735-2900
planning@co.coos.or.us

Official Use Only
FEE: _____
Receipt No. _____
Check No./Cash _____
Date _____
Received By _____
File No. Am-22-002/RZ-22-001

AMENDMENT/REZONE APPLICATION

PLEASE SUBMIT 2 COMPLETE UNBOUND COPIES OF THIS APPLICATION
OR 1 ELECTRONIC AND ONE UNBOUND COPY

The following questions are to be completed in full. An application **will not** be accepted for an Amendment/Rezone without this information. The applicant should contact the Planning Department prior to filing, in order to determine a valid basis for the request.

The Board of Commissioners and Hearings Body will use these answers in their analysis of the merits of the request.

PLEASE PRINT OR TYPE:

A. APPLICANT:

Name: Lance Morgan, County Forester Telephone: 541-396-7750
Address: 250 N. Baxter St,
Coquille, OR 97423

As applicant, I am (check one):

☐ Property owner or a purchaser under a recorded land sale contract. "Property owner" means the owner of record, including a contract purchaser. The application shall include the signature of all owners of the property. A legal representative may sign on behalf of an owner upon providing evidence of formal legal authority to sign;

☐ A person or persons that have written consent of the property owner to make an application. A legal representative may sign on behalf of an owner upon providing evidence of formal legal authority to sign. In the case of an attorney a statement of representation shall accompany the application;

☐ Transportation agency, utility or entity that meets the criteria in Section 5.0.175 of the Coos County Zoning and Land Use Development Ordinance (CCZLDO)

If other than the owner, please give the owner's name and address:
Subject Property is owned by Coos County under the jurisdiction of the Coos County Forestry Department. Coos County is under the jurisdiction of the Coos County Board of Commissioners, 250 North Baxter Street, Coquille, OR 97423.

B. DESCRIPTION OF PROPERTY:

Township 29S Range 15W Section SE quarter of SW quarter 35C Tax Lot 1300
Account No. 1243302 Lot Size 38.17 Acres Zoning District FMU
Existing Use Vacant - no use

C. STATE SPECIFIC ZONE DISTRICT REQUESTED: Rural Residential (RR-5) with a Q-RR-5:10-acre minimum lot size

D. JUSTIFICATION:

(1) If the purpose of this rezone request is to rezone one or more lots or parcels in the interior of an exclusive farm use zone for non-farm uses, the following question must be answered:
Were the lots or parcels for which a rezone request is made, physically developed for a non-farm use prior to February 16, 1983? N/A
Explain and provide documentation: _____

(2) If the purpose of this rezone request is for other than (1) above the following questions must be answered:

a. Will the rezone conform with the comprehensive plan? Yes.
Explain: Included with this Application form is a document titled, "Application - Criteria, Findings and Exhibits." The document provides all of the criteria language, the findings, and Attachments A - S, to explain the proposal. The document explains how the rezone conforms.

b. Will the rezone seriously interfere with the permitted uses on other nearby parcels? _____
Explain: The Application document explains how any negative effects on permitted uses on other nearby parcels can be mitigated. There are a few nearby parcels with farm and forest use that need protections as explained within the document.

c. Will the rezone comply with other adopted plan policies and ordinances? _____
Explain: Yes. The document explains how the proposal for the rezone will comply with the Coos County Zoning and Land Development Ordinance, the Statewide Planning Goals, and the Coos County Comprehensive Plan.

(3) If a Goal Exception is required please review and address this section.

All land use plans shall include identification of issues and problems, inventories and other factual information for each applicable statewide planning goal, evaluation of alternative courses of action and ultimate policy choices, taking into consideration social, economic, energy and environmental needs. The Coos County Comprehensive Plan (CCCP) and Implementing Zoning Land Development Ordinance (CCZLDO) was acknowledge[1] as having all necessary components of a comprehensive plan as defined in ORS 197.015(5) after the Coos County adopted the documents on April 4, 1985. The date of the effective plan and ordinance is January 1, 1986. Coos County did go through a periodic review exercise in the 1990's but due to lack of gain in population, economic growth and public request plan zones were not altered. Changes to the comprehensive plan and implementing ordinance have been done to ensure that any required statutory or rules requirements have been complied with. However, sometimes it is necessary for property owners or applicants to make a request to have certain properties or situations such as text amendments considered to reflect a current condition or conditions. These applications are reviewed on a case by case basis with the Board of Commissioners making a final determination. This type application and process is way to ensure that process is available to ensure changing needs are considered and met. The process for plan amendments and rezones are set out in CCZLDO Article 5.1.

Exception means a comprehensive plan provision, including an amendment to an acknowledged comprehensive plan, that; (a) Is applicable to specific properties or situations and does not establish a planning or zoning policy of general

[1] "Acknowledgment" means a commission order that certifies that a comprehensive plan and land use regulations, land use regulation or plan or regulation amendment complies with the goals or certifies that Metro land use planning goals and objectives, Metro regional framework plan, amendments to Metro planning goals and objectives or amendments to the Metro regional framework plan comply with the goals. In Coos County's case the commission refers to the Land Conservation and Development Commission.

applicability; (b) Does not comply with some or all goal requirements applicable to the subject properties or situations; and (c) Complies with standards for an exception.

NOTE: This information outlines standards at OAR 660-004-0025, 660-004-0028 and 660-04-0022 for goal exceptions, but is NOT to be considered a substitute for specific language of the OARs. Consult the specific Oregon Administrative Rule for the detailed legal requirements.

A local government may adopt an exception to a goal when one of the following exception process is justified:

(a) The land subject to the exception is "physically developed" to the extent that it is no longer available for uses allowed by the applicable goal;

(b) The land subject to the exception is "irrevocably committed" to uses not allowed by the applicable goal because existing adjacent uses and other relevant factors make uses allowed by the applicable goal impracticable; or

(c) A "reasons exception" addressing the following standards is met:

(1) Reasons justify why the state policy embodied in the applicable goals should not apply;

(2) Areas which do not require a new exception cannot reasonably accommodate the use;

(3) The long-term environmental, economic, social and energy consequences resulting from the use of the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located in areas requiring a goal exception other than the proposed site; and

(4) The proposed uses are compatible with other adjacent uses or will be so rendered through measures designed to reduce adverse impacts. Compatible, as used in subparagraph (4) is not intended as an absolute term meaning no interference or adverse impacts of any type with adjacent uses. A local government approving or denying a proposed exception shall set forth findings of fact and a statement of reasons which demonstrate that the

Compatible, as used in subparagraph (4) is not intended as an absolute term meaning no interference or adverse impacts of any type with adjacent uses. A local government approving or denying a proposed exception shall set forth findings of fact and a statement of reasons which demonstrate that the standards for an exception have or have not been met.

PART III -- USE OF GUIDELINES Governmental units shall review the guidelines set forth for the goals and either utilize the guidelines or develop alternative means that will achieve the

E. REQUIRED SUPPLEMENTAL INFORMATION TO BE SUBMITTED WITH APPLICATION:

1. A legal description of the subject property (deed);
2. Covenants or deed restrictions on property, if any;
3. A general location map of the property;
4. A detailed parcel map of the property illustrating the size and location of existing and proposed uses and structures on 8 ½" x 11" paper. If proposed structures are not know then the plot plan will need to include only existing with a note that no new structures are proposed at this time;

5. If applicant is not the owner, documentation of consent of the owner, including:
   a. A description of the property;
   b. Date of consent
   c. Signature of owner
   d. Party to whom consent is given

6. The applicant must supply a minimum of 2 copies of the entire application or one paper copy and electronic copy (email is acceptable), including all exhibits and color photocopies, or as directed by the Planning Staff.

G. Authorization:

All areas must be initialed by all applicants, if this application pertains to a certain property all property owners[2] must either sign or provide consistent for application unless otherwise allowed by Section 5.0.175 of the CCZLDO. As an applicant by initializing each statement I am accepting or agreeing to the statements next to each area designated for my initials and/or signature. All property owners shall sign and initial the designated areas of the application or provide consent from another party to sign on their behalf. If another party is signing as part of a consent that does not release that party that gave consent from complying with requirements listed below or any conditions that may be placed on an application. In the case of a text amendment the procedures for set out in Section 5.1.110 WHO SEEK CHANGE applies and an applicant may not be a property owner.

__✓__ I hereby attest that I am authorized to make the application and the statements within this application are true and correct to the best of my knowledge. I affirm to the best of my knowledge that the property is in compliance with or will become in compliance with CCCP and CCZLDO. I understand that any action authorized by Coos County may be revoked if it is determined that the action was issued based upon false statements or misrepresentation.

__✓__ I understand it is the function of the planning staff to impartially review my application and to address all issues affecting it regardless of whether the issues promote or hinder the approval of my application. In the event a public hearing is required to consider my application, I agree, as applicant I have the burden of proof. I understand that approval is not guaranteed and the applicant(s) has the burden of proof to demonstrate compliance with the applicable review criteria.

__✓__ As the applicant(s) I acknowledge that is in my desire to submit this application of free will and staff has not encouraged or discouraged the submittal of this application.

__✓__ I understand as applicant I am responsible for actual cost of that review if the Board of Commissioners appoints a hearings officer to hear the application I have submitted. As applicant I will be billed for actual time of planning services, materials and hearings officer cost and if not paid the application maybe become void.

_____
Applicant(s) Original Signature

_____
Applicant(s) Original Signature

3-2-22
Date

[2] Property owner" means the owner of record, including a contract purchaser

Application - Criteria, Findings and Exhibits

Proposal: This application is for a Rezone and Comprehensive Plan Map Amendment. The applicant is seeking to gain approval of amendments in order to permit modifications from Forest Mixed Use, (FMU) to Rural Residential (RR-5) zoning in order to permit partitioning Subject Property into three (3) rural homesites.

With the owner's intent for three maximum parcels, the applicants expect that a Q-RR-5 with a 10-acre minimum size would be appropriate in protecting the use and permitting a land use pattern similar to that existing on adjacent properties. Following the approval of the amendments, Coos County Forestry will submit for the land division that will result in a total of three parcels, with a required survey.

Subject Property: Assessor's Map: T29S, R15W, Sec. 35C, TL 01300
Subject Property includes a lawfully created parcel of 38.17 acres located south of the City of Bandon, north of Croft Lake, and west of Highway 101. See Attachment A, Vicinity Map; Attachment B, Tax Lot Map, and; Attachment C, Aerial Map.

Property Owner and Applicant:

Coos County Board of Commissioners
250 North Baxter Street
Coquille, OR 97423

Lance Morgan, County Forester
1309 W Central Blvd
Coquille, OR 97423
(541)396-7751; lmorgan@co.coos.or.us

Application Compiled by:

Shoji Planning, LLC
Crystal Shoji, AICP, Planner
P.O. Box462
Coos Bay, OR 97420
(541)267-2491; crystal@shojiplanning.com

Professional Consulting Forester:

Farm Environmental Services LLC dba Farm Unlimited
Eric Farm, PE, ACF
PO Box 761, North Bend, OR 97459
(458) 230-0537; eric@farm-unlimited.com

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Attachment F .....Liquefaction Susceptibility

Attachment G .....Hillshade and Contour Map (Topography)

Attachment H.....Attempted 2009 Sale of Subject Property

Attachment I ..... Bussmann Subdivision Plat, 1981

Attachment J..... Roaring Surf Estates Plat, 1982

Attachment K.....Zone Map of Properties in the Vicinity

Attachment L..... Subject Property with 750-ft. Perimeter Ownership

Attachment M .....National Resource Conservation Service (NRCS) Custom Soil Resource Report for Coos County (NCRS Report)

Attachment N .....Visual Analysis of Land Use – 750 Ft. Buffer Polygon – Farm/Forest Use

Attachment O .....Hard Copy NRCS Report Excerpts – 9-Chetco silty clay loam; Table 5.- Yields Per Acre of Crops and Pasture

Attachment P .....Forest Productivity/Suitability Report by Farm Unlimited

Attachment Q .....Land Use Planning Notes Number 3, April 1998, Updated for Clarity April 2010

Attachment R .....Coos County Forest Site Class Maps, Oregon Department of Revenue Western Oregon

Attachment S .....Chart of Goal #5 "5c" Bird Habitat Areas

Subject Property Background and Conditions

Subject Property, comprised of 38.17 acres, has been acknowledged as a lawfully created parcel pursuant to the Coos County Zoning and Land Development Ordinance (CCZLDO), Section 6.1.125(8) described in Deed Doc #Book 115, page 437, conveying real property prior to 1986. This information was confirmed by Coos County Planning Director Jill Rolfe, October 15, 2021. Subject Property has been in the ownership of Coos County since October 5, 1929.

Subject Property has poor soils that are poorly drained, with property especially suited for the growth of shore pine. With close proximity to the Pacific Ocean on the west, high winds are a factor that limits tree growth except within protected areas. Soil conditions for agricultural use are also a problem limiting suitability for agricultural uses. These topics will be explained in detail, and analysis will be provided within this document.

Beaches and dunes are to the south and west, providing views of the Pacific Ocean from portions of Subject Property. Beach grass and gorse are both visible and abundant on Subject Property, which has a number of Special Development Considerations and overlays that are applicable. Included are Archaeological Sites (ARC), Beaches/Dunes-Limited (BDL) and Natural Hazards Wind Erosion (HZW), Floodplain (FP), Wetlands, National Wetland Inventory Site (NWI), and Natural Hazards including Earthquake-Liquefaction (NHEQL), and Tsunami (NHTHO). The Planning Director has confirmed that these are the special considerations that apply. The special considerations are pertinent to any future development of the property. See the following maps*:

Floodplain Overlay zone, Attachment D
Beaches and Dunes Overlay zone, Attachment E
Liquefaction Susceptibility, Attachment F
Hillshade and Contour Map (Topography), Attachment G

*(750- foot buffer/boundary shown on maps will be explained within this document)

Subject Property is vacant property that does not currently contribute to the economy or livelihood of Coos County. If the property were suitable for forest use, the County Forestry Department could be managing the property for forest production; the Forestry Department includes professional foresters, with the goal of maintaining and maximizing forest property for sustained yield timber harvest, but the property is not conducive to forest management. Coos County is, however, in need of housing at all price ranges as confirmed in their Comprehensive Plan and understood within our communities. Adjacent properties, and others in the vicinity exist in rural residential lots of various sizes. The County would like to offer this property for rural residential use.

Steps have been taken to sell the property in the past, but the FMU zoning is thought to be detrimental to such a sale; no sale took place. See Agenda Item Coversheet with background information about this property and another property dated February 18, 2009, along with the Notice and publication of the public hearing. See Attachment H.

Access

Lower Fourmile Road provides access from Highway 101 on the west side at the location of West Coast Game Park south of Bandon. There may be a little confusion about the access road created by this document. While the application is for a zone change, rather than a specific use at this time, it is important to note that the map shows Lower Fourmile Road (referenced on the Assessor's map as Roaring Surf Road) proceeding from the southern border of the property all around the western border, and partially on the northern border. Access to any future parcels could be from Lower Fourmile Road. The tax lot map shows Roaring Surf Road on the south, west and north side of Subject Property, but we are informed that the name of the road is Lower Fourmile Road and that there is no official Roaring Surf Road. See Tax Lot Map, Attachment B.

The NRCS Report, front map shows Lower Fourmile Road proceeding through Subject Property with driveways, but this base map from NRCS appears to be out of date or from a specific previous time. Coos County Forester Lance Morgan has confirmed that the roads shown on the cover of the Custom Soils Report are not in existence at this time.

Zoning and Adjacent Uses

Subject properties and adjacent properties are zoned Forest Mixed Use (FMU). There are a number of zones within the vicinity, but not adjacent, including Rural Residential (RR-5), Recreation, Estuary and Minor Estuary, Shorelands, and Exclusive Farm Use.

Forest Mixed Use (FMU) zoned land may currently be in rural residential or farm-forest use. FMU lands may be those with soils, topographic features and ground cover that are best suited to a combination of forest and grazing uses, although that is not always the case. The areas are described as generally occupying land on the periphery of large corporate and agency holdings. FMU is useful for forming a buffer between more remote uplands and populated valleys. These "mixed use" areas contain ownerships of smaller size than in prime forest areas. The Comprehensive Plan states that some FMU lands are marginal in terms of forest productivity, such as areas close to the ocean. FMU zoning permits both farm and forest uses. One dwelling may be sited based on the predominate use of the tract, January 1, 1993. Information about properties that are adjacent to Subject Property is provided below:

Property to the South, East and Northeast are part of Bussmann Subdivision platted in 1980, including the following:

- South: T30, R15W, Sec.02, Tax Lot 104 (9.74 acres); Tax Lot 107 (1.54 acres), Tax Lot 110 (9.95 acres) and a portion of Tax Lot 501 (14.20 acres in its entirety).
- East: T29S, R15W, Section 35D,Tax Lot 700, (22.87 acres). See Attachments B, and Bussmann Subdivision, Attachment I.

Adjacent properties to the North and Northwest are part of Roaring Surf Estates Subdivision platted in 1982, including:

- North: T29S, R15W, Section 35C with lots including Tax Lot 800 (7.74 acres), and Tax Lot 900 (5.54) acres. See Attachments B, and Roaring Surf Estates, Attachment J.

Adjacent properties to the West include:

- West: T29S, R15W, Section 35C, Tax Lot 1200 (.90 acres), Tax Lot 1201 (1.41 acres), Tax Lot 1400 (2.70 acres), and Tax Lot 1500 (2.60 acres). See Tax Lot Map, Attachment B.

This document includes analysis addressing the adjacent properties described above, and other properties within a 750-feet radius of Subject Property. The 750-foot radius has been selected to provide parameters for consideration of current farm and forest uses. Explanation of this radius is provided within this document.

The Applicant is seeking a rezone to Rural Residential (Q-RR-5), with a 10-acre minimum residential rural rezone that would allow three parcels from the 38.17-acre parcel (Subject Property) that currently exists. This is two additional dwellings than what would be allowed on the 38.17-acre parcel. While urban services are not available Subject Property is south of the southern border of the City of Bandon, where services are provided through the Bandon Rural Fire District, Coos-Curry Electric Co-op, the Coos County Sheriff's Office. The Coos County's Comprehensive Plan and the Coos County Zoning and Land Development Ordinance provide for orderly development of rural land to encourage the continued existence of rural family life and to provide a transition of densities between urban development and exclusive agricultural or commercial forestry uses. See the following maps:

Attachment K, Zone Map of Properties in the Vicinity
Attachment L, Subject Property Zone Map,750-ft. Perimeter/Ownerships

> Within this document language that is quoted directly from the Coos County Comprehensive Plan, Coos County Zoning and Land Development Ordinance, or NRCS Report is provided in *italic font.* Language that is developed or paraphrased to explain findings of compliance with the ordinance or explain the application is provided in regular font.

Coos County Zoning and Land Development Ordinance (CCZLDO)

SECTION 5.1.225 DECISIONS OF THE HEARINGS BODY FOR A REZONE*: The Hearings Body shall, after a public hearing on any rezone application, either*:

1. Recommend the Board of Commissioners approve the rezoning, only if on the basis of the initiation or application, investigation and evidence submitted, all the following criteria are found to exist:

a. The rezoning will conform with the Comprehensive Plan or Section 5.1.215; and

Findings:

SECTION 5.1.215 ZONING FOR APPROPRIATE NON-FARM USE:
Consistent with ORS 215.215(2) and 215.243, Coos County may zone for the appropriate nonfarm use one or more lots or parcels in the interior of an exclusive farm use zone if the lots or parcels were physically developed for the non-farm use prior to the establishment of the exclusive farm use zone.

Subject Property is not within the interior of an exclusive farm use zone (EFU). This application will provide findings of conformance with the *Coos County Comprehensive Plan* through the *CCZLDO SECTION 5.1.275 Standards for Comprehensive Plan and Rezone for Nonresource Land.*

CCZLDO Section 5.1.275 will be the final criteria to be addressed within this document because all of the analysis and findings presented within this document are applicable.

b. The rezoning will not seriously interfere with permitted uses on other nearby parcels; and

Findings: This application includes analysis and findings to determine any interference with permitted uses on nearby parcels with analysis determined using a 750- foot radius boundary.

c. The rezoning will comply with other policies and ordinances as may be adopted by the Board of Commissioners.

2. Recommend the Board of Commissioners approve, but qualify or condition a rezoning such that:

a. The property may not be utilized for all the uses ordinarily permitted in a particular zone;

b. The development of the site must conform to certain specified standards; or

c. Any combination of the above.

A qualified rezone shall be dependent on findings of fact including but not limited to the following:

i. Such limitations as are deemed necessary to protect the best interests of the surrounding property or neighborhood;
ii. Such limitations as are deemed necessary to assure compatibility with the surrounding property or neighborhood;
iii. Such limitations as are deemed necessary to secure an appropriate development in harmony with the objectives of the Comprehensive Plan; or
iv. Such limitations as are deemed necessary to prevent or mitigate potential adverse environmental effects of the zone change.

3. Deny the rezone if the findings of 1 or 2 above cannot be made. Denial of a rezone by the Hearings Body is a final decision not requiring review by the Board of Commissioners unless appealed.

Findings: The applicants are in agreement with a qualified 10-acre minimum lot size because the goal is to have a total of three parcels, which would accommodate two additional homesites. The applicant understands that the Coos County Board of Commissioners has the responsibility and authority to provide qualifiers and limitations on any rezone and/or Comprehensive Plan approvals. The applicant will comply with all limitations required by the Coos County Board of Commissioners.

Standards are included within this application for amendments to the Coos County *Comprehensive Plan and Zone Map (CCZLDO)*. Criteria for these amendments to recognize Subject Property as nonresource land are addressed throughout this document, with findings in the final section of this document to address *Section 5.1.275, Standards for Comprehensive Plan and Rezone for Nonresource Land*, as amended.

CHAPTER II. DEFINITIONS ARTICLE 2.1.

DEFINITIONS SECTION 2.1.100. General Definitions. For the purposes of this Ordinance, unless it is plainly evident from the context that a different meaning is intended, certain words and terms are herein defined. SECTION 2.1.200. Specific Definitions.

AGRICULTURAL LANDS: Those lands designated in the Coos County Comprehensive Plan (Volume 1 "Balance of County") for inclusion in Exclusive Farm Use (EFU) Zones. These lands include Soil Capability class I, II, III, and IV lands as defined by the United States Soil Conservation Service in their Soil Capability Classification system and other ands suitable for farm use.

FOREST LAND: Those lands designated in the Coos County Comprehensive Plan (Volume I- "Balance of County") for inclusion in a Forest Lands zone.

These areas include: (1) lands composed of existing and potential forest lands which are suitable for commercial forest uses, (2) other forested lands needed for watershed protection, wildlife and fisheries habitat and recreation, (3) lands where extreme conditions of climate, soil and topography require the maintenance of vegetative cover irrespective of use, and (4) other forested lands which provide urban buffers, wind breaks, wildlife and fisheries habitat, livestock habitat, scenic corridors and recreational use.

Findings: The definitions of Forest Land and Agricultural Land included within the CCZLDO are organized to comply with the Statewide Planning Goals. Coos County zoning has been organized to include Subject Property as Mixed Use, which includes both Forest Land and Agricultural Lands. Any designation of the lands within Subject Property to nonresource land will involve utilizing information within Statewide Planning Goal 3 - Agricultural Lands, and Statewide Planning Goal 4 – Forest Lands, to provide the analysis of characteristics that make up Subject Property. In addition, findings address the relationship of Subject Property to adjacent lands, and lands within close proximity. In addition there are definitions for resource land and nonresource land, and criteria for removing nonresource land from resource zoning.

OAR 660-004-0005
Definitions

For the purpose of this division, the definitions in ORS 197.015 and the Statewide Planning Goals shall apply. In addition, the following definitions shall apply:

(2) "Resource Land" is land subject to one or more of the statewide goals listed in OAR 660-004-0010(1)(a) through (g) except subsections (c) and (d).

(3) "Nonresource Land" is land not subject to any of the statewide goals listed in OAR 660-004-0010(1)(a) through (g) except subsections (c) and (d). Nothing in these definitions is meant to imply that other goals, particularly Goal 5, do not apply to nonresource land.

SECTION 4.2.500 RESOURCE ZONES

Forest (F)
The intent of the Forest District is to include all inventoried "forestlands" not otherwise found to be needed (excepted) for other uses.

The purpose of the Forest zone is to conserve and protect forest land for forest uses. Some of the areas covered by the "F" zone are exclusive forest lands, while other areas include a combination of mixed farm and forest uses.

Forest Mixed Use (FMU)
The purpose of the Forest Mixed Farm-Forest Areas ("MU" areas) is to include land which is currently or potentially in farm-forest use. Typically such lands are those with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and grazing uses. The areas generally occupy land on the periphery of large corporate and agency holdings and tend to form a buffer between more remote uplands and populated valleys. In addition, these "mixed use" areas contain ownership of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.

If land is in a zone that allows both farm and forest uses, a dwelling may be sited based on the predominate use of the tract on January 1, 1993.

If a use is only allowed in the mixed use zone it will be explained in the text. Otherwise the uses listed are allowed in both the Forest and Forest Mixed Use zones.

Exclusive Farm Use (EFU) These include all inventoried "agricultural lands" not otherwise found to be needed (excepted) for other uses.

The purpose of the EFU district is to preserve the integrity and encourage the conservation of agricultural lands within Coos County and thereby comply with the provisions of ORS 215 and OAR 660. Division 33 to minimize conflicts between agricultural practices and non-farm uses by

limiting any development to uses distinguished as dependent upon or accessory to supporting agricultural or forestry production and which qualify such farm lands for special tax relief pursuant to the provisions of Oregon Revised Statutes. This zone is also for the cultivation and marketing of specialty crops, horticultural crops and other intensive farm uses.

According to the Coos County Comprehensive Plan Exclusive Farm Use lands are inventoried as Agricultural Lands. The Main criterion for establishing the "Agricultural Lands Inventory" was land identified on the agricultural lands based on soils, Class I-IV soils or "other lands" suitable for agricultural use, with the following exceptions:
1. Committed rural residential areas and urban growth areas.
2. Proposed rural residential areas as per the Exception to Goals #3 and #4.
3. Proposed industrial/commercial sites.
4. Existing recreation areas (e.g., golf courses) [Recreation designation]
5. Isolated parcels of Class I-IV soils in upland areas, which are under, forest cover. (Forestlands designation).
6. Narrow valley bottomlands where no agricultural activity is occurring anywhere in the vicinity [Forestlands designation].

The secondary criterion for establishing the "Agricultural Lands Inventory" was the use of aerial photos used to identify additional areas without Class I-IV soils in current agricultural use which were not initially identified in the agricultural lands inventory from Assessor's Data. This situation typically occurs on benches, immediately above agricultural valleys, where grazing often takes place on non-class I-IV soils. However, if lands were zoned predominately forest it may have resulted in a Mixed Use Overlay.

Findings: Subject Property is zoned Forest Mixed Use. The code addresses that some forest mixed use areas that are close to the ocean are generally marginal relative to forest productivity, and that they can include ownerships of smaller size than prime forest. The following language is included:

> *In addition, these" mixed use" areas contain ownership of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.*

Subject Property fits within the description provided within Section 4.2.500 in that it is mixed in with smaller parcels, close to the ocean, and has not been suitable for the Coos County Forest Department's utilization for commercial forest use. To our knowledge, Subject Property has always been vacant land, and there is no known history of forest or farm activity on the site. This application addresses the requirements for removing Subject Property from resource zoning so that it can be used and managed by land owners who live on the property and maintain the property for the benefits of rural life. With respect for the organization of the resource zones and the resource uses that exist, Coos County's Zoning and Land Development Ordinance also provides opportunities for reclassifying land where it has been found to be nonresource land through analysis of soils and forestry information, utilizing definitions and procedures described at the State and local levels. There is no intent to rezone land within Coos County that complies with the definitions of agricultural or forest lands.

This document includes an intertwining of applicable farm and forest rules, just as the forest and farm (FMU) mixed use zoning provides for two resource-based uses. Data sources such as the NRCS Report are applicable to both uses. The 750-foot perimeter buffer polygon boundary was organized for utilization of both resource uses. Specific Oregon Administrative rules that incorporate the Statewide Planning Goals apply to each of the resource uses separately. Statewide Planning Goal #3 provides the requirements for agricultural land to be included in resource zoning, while Statewide Planning Goal #4 provides the requirements for forest land to be included in resource zoning. This analysis is key to any amendment that will remove land from resource zoning.

Statewide Planning Goal #3 Agricultural Lands;

660-033-0010
Purpose

The purpose of this division is to preserve and maintain agricultural lands as defined by Goal 3 for farm use, and to implement ORS 215.203 through 215.327 and 215.438 through 215.459 and 215.700 through 215.799.

OAR 660-033-0020
Definitions

For purposes of this division, the definitions in ORS 197.015, the Statewide Planning Goals, and OAR chapter 660 shall apply. In addition, the following definitions shall apply:

(1)(a) "Agricultural Land" as defined in Goal 3 includes:

(A) Lands classified by the U.S. Natural Resources Conservation Service (NRCS) as predominantly Class I-IV soils in Western Oregon and I-VI soils in Eastern Oregon;

Findings: The *U.S. Natural Resources Conservation Service (NRCS) Custom Soil Resource Report for Coos County Oregon* is provided for Subject Property with analysis to determine specific suitability for agriculture. The Report includes maps and soil classifications with information about farm and forest productivity. See Attachment M, NRCS Custom Soil Resource Report for Coos County, Oregon.

The map on the cover shows Subject Property with maps and charts in the report showing Subject Property with five (5) soil types which are referenced within the *Soil Survey of Coos County, Oregon,* a hard copy document published in 1989, and within the Custom Soil Report. Both versions of the report are used for analysis within this application. It is important to note that the Custom Soil Report boundaries for Subject Property are not surveyed boundaries. The boundaries drawn on the map to customize the report, utilizing natural and built land features such as roads for placement are utilized for this analysis.

The Map Unit Legend found on page 12 of the Custom Soil Resource Report, Attachment M, provides information about the makeup of the soils and slopes on the site, as follows:

- Map Unit Symbol 61D, with Map Unit Name, Waldport-Heceta fine sands, 0 to 30% slopes comprises the most acreage of the soil types identified on Subject Property at approximately 22.2 acres, which is 56.2% of Subject Property. This map unit is in capability subclass VIIe. Map Unit Setting, Farmland classification: "Not prime farmland"

- Map Unit Symbol 60D, with Map Unit Name, Waldorf-Dune land complex, 12 to 30 % slopes, comprises approximately 13.3 acres, which is 33.5 percent of Subject Property. This map unit is in capability subclass VIIe. Map Unit Setting, Farmland classification: "Not prime farmland"

- Map Unit Symbol 59D, with Map Unit Name, Waldorf fine sand, 0 – 30% slopes comprises approximately 3.6 acres, which is 9.2% of Subject Property. This map unit is in capability subclass VIIe. Map Unit Setting, Farmland classification: "Not prime farmland"

- Map Unit Symbol 9, with Map Unit Name, Chetco silty clay loam comprises approximately .4 acres, which is 1.1% of Subject Property. This map unit is in capability subclass IVw. Map Unit Setting, Farmland classification: "Farmland of statewide importance" if irrigated, and with other considerations as indicated shown on the Custom Soil report Map legend, page 23, explaining farmland classifications of Subject Property. Subject property includes 1.1% of the property, or .4 acres, which has an agricultural subclass. However, there is no irrigation available.

Capability subclasses are soil groups within one capability class designated by adding a small letter. The soils addressed previously in this section include two such small letters. These are described for nonirrigated capability Subclasses on the property. See page 51.

- The "e" signifies that the main hazard is erosion. The "e" is included on all of the Class VII (not prime farmland) soils addressed above within this section. These soils account for approximately 98.9 % of the soils on Subject Property.

- The "w" shows that water in or on the soil interferes with plant growth or cultivation. The "w" applies to the Chetco silty clay loam comprising .4 acres or 1.1% of Subject Property.

Subject Property is in Western Oregon; 98.9% of Subject Property is not classified by the Natural Resources Conservation Service (NRCS) as predominantly Class I-IV as explained above. The Class VII soils that are predominate throughout the site also have

high erosion "e" which is a major problem with this property close to the ocean and subject to the ravages of wind and water.

Subject Property soils are all nonirrigated with Class VII soils making up 98.9% of the soils. Class VII soils have severe limitations that make the soil unsuitable for cultivation. See Map – Nonirrigated Capability Class, Custom Soil Report, page 43, Attachment M.

The information provided from the NRCS Report shows that none of the soils and subclasses that are shown for Subject Property meet the definition of agricultural land under Goal 3 due to soil type, lack of irrigation, erosion and water in and on the soils and climate conditions due to proximity to the Pacific Ocean.

(B) Land in other soil classes that is suitable for farm use as defined in ORS 215.203(2)(a), taking into consideration soil fertility; suitability for grazing; climatic conditions; existing and future availability of water for farm irrigation purposes; existing land use patterns; technological and energy inputs required; and accepted farming practices; and

Findings: The only exception to Class VII soils on the 98.9% of Subject Property is the Chetco silty clay loam soil that comprises approximately .4 acres and represents 1.1% of Subject Property. The Chetco soil shows standing water, "w" in or on the soil that interferes with plant growth and cultivation compromising any agricultural value of this minimal area of Class 5 soil.

The Custom Soil Resource Report, Attachment M, Crop Productivity Index, page, 38, shows the entirety of Subject Property with a yellow overlay that indicates "moderately low inherent productivity."

The soils within all of the major categories of Subject Property including Map units 61D, 60D and 59D for nonirrigated crops (Component): Grass hay (Tons) is "Not rated or not available," as depicted on the map and legend on pages 65 and 66 of the Custom Soil Resource Report.

All of the soils except the Chetco soils (1.1%) are designated with a small letter "e" with the soil subclass VII, which shows thee main hazard is the risk of erosion. Only Map unit 9 with the Chetco soils has a rating, which is = 2.35 for Grass hay (Tons). This soil is susceptible to compaction, wetness, droughtiness, flooding, and high humidity, which is not conducive to the curing of hay. See Hard Copy NRCS Report Excerpts -- 9-Chetco silty clay loam; Table 5.-Yields Per Acre of Crops and Pasture, Attachment O.

The excerpt describing the 9-Chetco soil addresses flooding, and use for hay and pasture and wildlife habitat. The soil has limitations for" compaction, wetness, droughtiness in summer, the hazard of flooding, and for the curing of hay, high humidity." The soil on this .4-acre site could be drained with ongoing management to withstand livestock.

The hard copy soils report, Table 5. – *Yields Per Acre of Crops and Pasture* indicates that yields provided that can be expected with high level management. "Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. Only the soils suited to crops and pasture are listed." See Hard Copy NRCS Report Excerpts -- 9-Chetco silty clay loam; Table 5.-Yields Per Acre of Crops and Pasture, Attachment O.

The following is relevant:

- Map Unit 61D – not listed.
- Map Unit 60D - not listed
- Map Unit 59D – not listed
- Map Unit 9 – Chetco Soils show ratings for Pasture and Grass hay. Grass-legume hay and cranberries are not listed, which puts those crops into the category of "absence of yield" which indicates that the soil is not suited to the crop. The description of Chetco silty clay loam soil describes the limitations of the Chetco soils on excerpt as described above. Compaction restricts the growth of roots and reduces productivity. The following quoted from the report are relevant:

  . . . . Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

  Drainage and irrigation are needed for maximum production of crops. . .

  Wetness and flooding restrict grazing in winter.

  High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay.

An onsite visit to the southeast corner of Subject Property where the Chetco soils exist was made by the professional forester of Farm Unlimited on February 10, 2022. Following the site visit he reported that the Chetco soil area was under water. It appears that some of this area is within the floodplain overlay. This confirms the above wording from the soils report that states that drainage is needed, and that wetness and flooding restrict grazing in winter.

None of the soils within Subject Property are suitable for farm crops and pasture as depicted and explained within the NRCS Report for all of the reasons that have been provided in response to OAR 660-033-0020, Definitions, (1)(a) "Agricultural Land" as defined in Goal 3, and (A) Lands classified by the NRCS. Farm use of the property is not feasible except where there is intense management and irrigation. For a .4-acre site, this could possibly take place with an on-site owner.

C) Land that is necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands.

Findings: To carry out the analysis to determine land that is necessary to assure that farm practices can continue to be undertaken on adjacent or nearby agricultural land, the

applicant has organized a 750-foot perimeter boundary for analysis applicable to Goal 3, (1)(a) and (C). The applicant is utilizing this perimeter boundary to provide consistency in the selection of an area for analysis based upon notice areas provided in Oregon law and incorporated into Coos County's zoning. The 750-foot boundary is greater than required notice areas for public hearings for plan amendment/rezones that include exceptions, which is a stringent requirement. The 750-foot parameter is equal to those boundaries for notice of administrative decisions where the public can only be involved in the decision by requesting participation. This boundary provides for the broadest consideration of agricultural lands to be considered as an element of this rezoning from resource use to rural residential use, and to assure that land necessary for farm practices on adjacent or nearby agricultural lands will not be negatively affected by the rezone that is proposed within this application.

Notice requirements of ORS 197.763 incorporated into Chapter 5, Section 5.0.900 Notice Requirements (ORS 197.763) of the CCZLDO are summarized below.

> *Section 5.0.900 Notice Requirements (ORS 197.763)*
> *1. Notice of Public Hearing (c) (x) The Planning Director shall cause notice of the hearing to be mailed to, the applicant and to all neighborhood or community organizations recognized by the County and whose boundaries include the site and to the owners of record of property on the most recent property tax assessment roll where such property is located:*
>
> > *3) Within 500 feet of the exterior boundaries of the contiguous property ownership which is the subject of the notice if the subject property is within a farm or forest zone.*
>
> *2. Notice of Administrative Decisions*
>
> > *ii. The owners of record of property as described in ORS 215.416 (11)(c)*
> > . . .
> > *c. Within 750 feet of the exterior boundaries of the contiguous property ownership which is the subject of the notice if the subject property is within a farm or forest zone.*

The 750- foot boundary is appropriate for analysis and findings to assure that farm practices can continue to be undertaken on adjacent or nearby agricultural lands.

Findings: The zoning of properties within the vicinity is shown on Attachment K. Property ownerships are shown along with the 750-foot boundary on Attachment L. The 750-foot boundary is shown on an aerial with Subject Property where farm and forest uses can be observed on the east side of the property, Attachment N.

- Property with designated farm and forest exemptions (Whale Watch Sisters) through Assessor's records exists within the 750-ft. boundary, adjacent and directly to the east. There are cranberry bogs to the northeast.

- Property (Fox) with acreage designated for farm and forest tax exemptions by Assessor's records exist within the 750-ft. boundary, to the southeast.

From visual analysis of the map, the total acreage in farm and forest use within the 750-ft. perimeter buffer polygon is estimated at 9.5 acres on Attachment N.

The topography map, Attachment G, shows a ridge on the east and south portion of Subject Property in the area of the Chetco soils. County Forester (applicant) estimates that the ridge is approximately 200 ft. from the east property line on the south, and within 50 feet of the property line on the north. The County Forester notes that the ridge and the rolling foot of it to the west is exposed sand with scattered brush species and scattered shore pine, while the balance of the land lying to the east of the ridge line is wetland environment.

Locating any residential uses to the west of the ridge proceeding to the west side of the property where the Fourmile Road is located, would provide a barrier between the uses on Subject Property and the observed farm that are shown on the aerial of Subject property with the 750-ft buffer polygon and observed farm/forest uses, Attachment N.

Locating residences to face the west could provide views of the Pacific Ocean from some of the higher elevations. The professional forester provides information that the elevation of this parcel varies from 20 – 50 feet above sea level, as shown on the topography map, Exhibit 3, in the forestry report (also referenced as Attachment G) within this Application document. See *Forest Productivity/Suitability Report* by Farm Unlimited, Eric Farm, PE, ACF, owner and forester, Attachment P.

While a zone change that permits three residences on Subject Property next to identified farm and forest uses may not appear ideal at first glance, it is appropriate to note that Subject Property exists in an "untamed" state, and highly impacted by the forces of nature. It is doubtful that three residences, fifty to 200 feet away from farm land, behind a ridge could change the dominant forces of nature on this landscape. Residential uses within this location are secondary in impact to the forces of nature that shape the landscape, including high winds, high moisture and proximity to the Pacific Ocean with salt spray. Wave action including tsunami hazards, flood hazards, abundant rainfall, wetlands, erosion, invasive gorse, and abundant shore pine (with no commercial use or activity), as described within the NRCS Report and by the professional forester in his report take their toll on the property. With abundant sand, dense understory, and all of the forces of nature described within this document, Subject Property will not be transformed by two added dwellings for human habitation. A few families will have the opportunity to become part of the rural landscape that already exists. Any impact from the location of the dwellings in proximity to farm uses can be mitigated.

Subject Property does not require farm and forest to be maintained with plantings for vegetation, due to natural vegetation on the property. The landscape that exists restricts recreation and big game habitat with the gorse understory as pointed out within the report prepared by the professional forester.

The Forest Productivity report is based upon Land Use Planning Notes developed by the Oregon Department of Forestry incorporating OAR 660-006.0005, Goal 4 forestry analysis techniques for data and methodologies. The methodology was developed by the Oregon Department of Forestry for the following purpose:

> *. . . to help landowners and local governments when they must use an alternative to the USDA Natural Resource Conservation Service (NRCS) Soil Survey or other established data sources to determine the productivity of forestland. Under Oregon Administrative Rules (OAR) 660-006-0005, where sources of data referenced in the rule are not available or are shown to be inaccurate, an alternative method for determining productivity that provides equivalent data may be used.*

See *Land Use Planning Notes Number 3 April 1998, Updated for Clarity April 2010*, which provides the hierarchy of preferences for site productivity data and other methodologies established for forest analysis for land use planning purposes within the State of Oregon when preparing applications. The *Forest Productivity/Suitability Report* by Farm Unlimited, Attachment P followed the step by step methodology set forth in this document, as shown within the report. See Land Use Planning Notes, Attachment Q.

The final provision under the definition of "forest land" provides for Forest zoning for "lands where extreme conditions of climate, soil and topography require maintenance of vegetative cover irrespective of use. To the west of Subject Property, the Shoreland Overlay zone provides protection for existing vegetation along the bluff, which includes gorse. The Shoreland Overlay zone is in effect under Oregon law; it will remain in effect. Any residential uses adjacent to the Shorelands will be required to maintain the vegetative cover along the bluff and direct drainage away from the bluff on the Shorelands to minimize erosion.

(8)(a) "High-Value Farmland" means land in a tract composed predominantly of soils that are:

(A) Irrigated and classified prime, unique, Class I or II; or

(B) Not irrigated and classified prime, unique, Class I or II.

Findings: Subject property does not meet the definitions of "High-Value Farmland. Subject Property is not irrigated, has never been irrigated, and irrigation is not available. Subject Property does not include any Class I or II soils.

(b) In addition to that land described in subsection (a) of this section, high-value farmland, if outside the Willamette Valley, includes tracts growing specified perennials as demonstrated by the most recent aerial photography of the Agricultural Stabilization and Conservation Service of the U.S. Department of Agriculture taken prior to November 4, 1993. "Specified perennials" means perennials grown for market or research purposes

including, but not limited to, nursery stock, berries, fruits, nuts, Christmas trees, or vineyards, but not including seed crops, hay, pasture or alfalfa;

Findings: Subject Property is outside the Willamette Valley, and does not include tracts growing specified perennials grown for market or research purposes. Subject Property does not grow nursery stock, berries, fruits, nuts or Christmas trees. There are no vineyards.

(c) In addition to that land described in subsection (a) of this section, high-value farmland, if in the Willamette Valley, includes tracts composed predominantly of the following soils in Class III or IV or composed predominantly of a combination of the soils described in subsection (a) of this section and the following soils:

(A) Subclassification IIIe, specifically, Bellpine, Bornstedt, Burlington, Briedwell, Carlton, Cascade, Chehalem, Cornelius Variant, Cornelius and Kinton, Helvetia, Hillsboro, Hult, Jory, Kinton, Latourell, Laurelwood, Melbourne, Multnomah, Nekia, Powell, Price, Quatama, Salkum, Santiam, Saum, Sawtell, Silverton, Veneta, Willakenzie, Woodburn and Yamhill;

(B) Subclassification IIIw, specifically, Concord, Conser, Cornelius Variant, Dayton (thick surface) and Sifton (occasionally flooded);

(C) Subclassification IVe, specifically, Bellpine Silty Clay Loam, Carlton, Cornelius, Jory, Kinton, Latourell, Laurelwood, Powell, Quatama, Springwater, Willakenzie and Yamhill; and

(D) Subclassification IVw, specifically, Awbrig, Bashaw, Courtney, Dayton, Natroy, Noti and Whiteson.

Findings: The section above applies to soils in the Willamette Valley. It is not applicable.

(d) In addition to that land described in subsection (a) of this section, high-value farmland, if west of the summit of the Coast Range and used in conjunction with a dairy operation on January 1, 1993, includes tracts composed predominantly of the following soils in Class III or IV or composed predominantly of a combination of the soils described in subsection (a) of this section and the following soils:

(A) Subclassification IIIe, specifically, Astoria, Hembre, Knappa, Meda, Quillayutte and Winema;

(B) Subclassification IIIw, specifically, Brenner and Chitwood;

(C) Subclassification IVe, specifically, Astoria, Hembre, Meda, Nehalem, Neskowin and Winema; and

(D) Subclassification IVw, specifically, Coquille.

Findings: Coos County and the Subject Property are west of the summit of the Coast Range, and the Chetco silty clay loam soil that comprises 9% of Subject Property includes minor components of Coquille soil; there has been no dairy operation involved with Subject Property in the past or at the present time. The section above is not applicable.

(e) In addition to that land described in subsection (a) of this section, high-value farmland includes tracts located west of U.S. Highway 101 composed predominantly of the following soils in Class III or IV or composed predominantly of a combination of the soils described in subsection (a) of this section and the following soils:
(A) Subclassification IIIw, specifically, Ettersburg Silt Loam and Crofland Silty Clay Loam;
(B) Subclassification IIIe, specifically, Klooqueh Silty Clay Loam and Winchuck Silt Loam; and
(C) Subclassification IVw, specifically, Huffling Silty Clay Loam.

Findings: Subject Property is west of U.S. Highway 101, but none of the subclassification soils provided in subsection (e) above is found on Subject Property.

(9) "Irrigated" means watered by an artificial or controlled means, such as sprinklers, furrows, ditches, or spreader dikes. An area or tract is "irrigated" if it is currently watered, or has established rights to use water for irrigation, including such tracts that receive water for irrigation from a water or irrigation district or other provider. For the purposes of this division, an area or tract within a water or irrigation district that was once irrigated shall continue to be considered "irrigated" even if the irrigation water was removed or transferred to another tract.

Findings: Subject property is not irrigated, and never has been irrigated. There are no water rights for Subject Property. There has been no transfer to another tract. The above section is not applicable.

Statewide Planning Goal #3 Agricultural Lands; OAR 660-033-0030 Identifying Agricultural Land 660-033-0030 (3)

(1) All land defined as "agricultural land" in OAR 660-033-0020(1) shall be inventoried as agricultural land.

Findings: Coos County has inventoried agricultural lands, and the County has an acknowledged Comprehensive Plan and zoning. Nevertheless, Subject Property does not meet the definition of agricultural land as defined by OAR 660-033-0020 (1) as explained through analysis of the NRCS data including lack of irrigation, poor soil types, and other elements presented previously within this document. Subject Property was part of a broad sweep inventory for zoning farm and forest land, but this specific property has not previously been analyzed in any detail as to suitability for the current resource designation. The detailed analysis of soil types, land use patterns, hazards and other factors clarify that Subject Property is not agricultural land. A number of adjacent

properties had already transitioned into rural residential by the time the Comprehensive Plan and zoning were acknowledged by the State.

(2) When a jurisdiction determines the predominant soil capability classification of a lot or parcel it need only look to the land within the lot or parcel being inventoried. However, whether land is "suitable for farm use" requires an inquiry into factors beyond the mere identification of scientific soil classifications. The factors are listed in the definition of agricultural land set forth in OAR 660-033-0020(1)(a)(B). This inquiry requires the consideration of conditions existing outside the lot or parcel being inventoried. Even if a lot or parcel is not predominantly Class I-IV soils or suitable for farm use, Goal 3 nonetheless defines as agricultural "Lands in other classes which are necessary to permit farm practices to be undertaken on adjacent or nearby lands." A determination that a lot or parcel is not agricultural land requires findings supported by substantial evidence that addresses each of the factors set forth in 660-033-0020(1).

(3) Goal 3 attaches no significance to the ownership of a lot or parcel when determining whether it is agricultural land. Nearby or adjacent land, regardless of ownership, shall be examined to the extent that a lot or parcel is either "suitable for farm use" or "necessary to permit farm practices to be undertaken on adjacent or nearby lands" outside the lot or parcel.

Findings: Numbers (2) and (3) of this section address adjacent lands, nearby lands, and lands necessary to permit farm practices on adjacent or nearby lands. This addresses the 750 ft. analysis area previously addressed within this document. All of the findings made under *OAR 660-033-0020 (C) Land that is necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands* apply.

The overall land use pattern in the vicinity is mixed. Assessor's records show that only a few of the adjacent properties are utilizing tax exemptions for farm and forestry; when such tax exemptions are used, they apply to specific acreage on the lots, rather than to the extent of the parcel. The estimated acreage for farm and forest for lands within the buffer polygon of 133 acres is approximately 7% of the buffer area, or 9.5 acres as shown on Attachment N.

The proposed Comprehensive Plan amendment and rezone will permit only those uses that are consistent with patterns that existed within the vicinity of Subject Property at the time of acknowledgment of the Comprehensive Plan and zoning by the Land Conservation and Development Commission (now DLCD) and two additional residences from what is currently permitted on Subject Property. The ridge on the east and southeast sides of Subject Property can serve as a barrier to mitigate any effect from additional human activity on adjacent properties. See 750-ft. perimeter buffer polygon with ownership and lots, Attachment L.

Statewide Planning Goal #4 Forest Lands; OAR 660-006-0005

For the purpose of this division, the following definitions apply:

(1) Definitions contained in ORS 197.015 and the Statewide Planning Goals.

(2) "Commercial Tree Species" means trees recognized for commercial production under rules adopted by the State Board of Forestry pursuant to ORS 527.715.

Findings: Analysis within this document is provided for applicable Statewide Planning Goals, and commercial tree species. Commercial Tree Species are addressed relative to Subject Property within the report provided to address *Land Use Planning Notes, Number 3, April 1998 and updated for Clarity April 2010.* See Attachment P, Forest Productivity/ Suitability Report. See Land Use Planning Notes, Attachment Q.

Scope, findings and conclusions presented in Attachment P were prepared utilizing the methodology set forth in the guide, *Land Use Planning Notes, Number 3, April 1998 and updated for Clarity April 2010,* which was organized by the Oregon Forestry Department to provide methodology for land use planning analysis.

This step by step guide was utilized for all of the analysis undertaken onsite on Subject Property by the professional foresters associated with Farm Unlimited who are familiar with the guidelines and the methodology presented. Here are some findings and conclusions provided in the *Forest Productivity/Suitability Report by Farm Unlimited,* and highlighted in gray below:

***5. Findings:**

a. "Entire tract is fully stocked with shore pine, a species with no commercial uses. An increment borer and laser were used to determine the age and height of the trees. They were found to be 32 – 46 years old, and 25 – 50 feet tall. See Exhibit 2 – Picture 1 & 2"

b. Five Sitka spruce trees are found growing along the east side of the property. These trees are highly defective with very large limbs. The Sitka spruce were estimated to be 45 inches DBH and approximately 75 feet tall. Their DBH exceeded the ability of our increment borer And therefore we were unable to determine the age of the Sitka spruce trees found along the east side of the property. Due to their large size and high defect, these trees have no commercial use or value. See Exhibit 2 -Picture 3.

d. Gorse, an invasive and noxious weed, was growing across the entire tract as the understory brush component. The gorse was approximately 10 feet tall and made any access on the tract difficult. See Exhibit 2 – Picture 5.

p. No site index table for shore pine has been published that is applicable to Western Oregon.

r. No local sawmills, veneer mills, or wood chip manufacturer will accept shore pine. Additionally, mills will not pay for a load with shore pine included and may reject the load entirely and not accept/unload a truck that arrives at the mill with shore pine included on the load. It is not foreseeable that any mill will accept delivery of shore pine in the future.

s. Shore pine meets the definition of a Non-commercial Tree Species.

t. There are no visible commercial forest uses on adjacent tax lots based on both field observations and orthophotograph interpretation.

u. The Oregon Forest Practices Act has a rule for "Acceptable Species for Reforestation" (OAR 629-610-0050(1) which states, "The State Forester shall determine if tree species are acceptable for artificial reforestation, natural reforestation, and residual seedling, sapling and pole, or larger tree stocking based on all of the following criteria:
   i. (a) The species must be ecologically suited to the planting site;
   ii. (b) The species must be capable of producing logs, fiber or other wood products suitable in size and quality for the production of lumber, sheeting, pulp or other commercial forest products.
   iii. (c) The species must be marketable in the foreseeable future.

6. Conclusions:

a. Shore pine and five of the very defective Sitka spruce appear to be the only tree species capable of growing on the tract due to the wind and extremely poor soil conditions.
b. Shore pine meets the definition of a Non-commercial Tree Species.
c. Shore Pine is not an "Acceptable Species for Reforestation" in Oregon.
d. The salt spray and intense wind coming from the Pacific Ocean preclude the growing of any commercial tree species on subject property. Any efforts to grow any other tree species will either fail or result in timber that is so defective that it will not be of commercial quality.
h. The standing water and high water table on this site will not allow the production of commercial timber species.

*Note: The entire report from the professional forester is included as Attachment P with images and further detail.

Subject Property does not comply with the definitions of "Commercial Tree Species" recognized for commercial production under rules adopted by the State Board of Forestry

pursuant to ORS 527.715 or to definitions contained in ORS 197.015 and the Statewide Planning Goals.

(3) "Cubic Foot Per Acre" means the average annual increase in cubic foot volume of wood fiber per acre for fully stocked stands at the culmination of mean annual increment as reported by the USDA Natural Resource Conservation Service (NRCS) soil survey.

Findings: A header on page 55 of the NRCS Report leads to the explanation of forest productivity:

Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520) (Coos County Oregon Taxlot 1300 T29/s R15W, Sec35: Forest productivity is the volume of wood fiber that is the yield most likely to be produced by the most important tree species.

Table – Forest Productivity (Cubic Feet per Acre per Year: shore pine (Alexander 1966 (520) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Findings: The table has ratings for only two of the five soil types listed for Subject Property on page 58. The rating of 86.00 is provided for Map units 59D and 61D as follows:

- 59D Waldport fine sand, 0 to 30% slopes: Rating - 86.00
- 61D Waldport-Heceta fine sands, 0 to 30 % slopes: Rating – 86.00

(4) "Cubic Foot Per Tract Per Year" means the average annual increase in cubic foot volume of wood fiber per tract for fully stocked stands at the culmination of mean annual increment as reported by the USDA Natural Resource Conservation Service (NRCS) soil survey.

Findings: The ratings in the NRCS Report are inconclusive. The applicant will rely on the Forest Productivity/Suitability Report provided by Farm Unlimited, Attachment P, where foresters visited the site and provided findings from onsite analysis. See Excerpts below, highlighted in gray:

5. Findings:

l. The NRCS soil survey assigns no site index or CuFt/Ac/Yr value to two soil types on this tract. See Exhibit 4.

m. The NRCS soil survey does assign a site index value to remaining two soil types based on the Alexander 100-year Lodgepole Pine Site Index Table. See Exhibit 4.

n. Alexander's lodgepole pine site index paper (Page 1, Paragraph 1) indicate that the published site index table is "applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and

Eastern Washington and Oregon". Western Oregon is specifically excluded as an applicable region to use the Alexander site index table. See Exhibit 5.

o. Trees on this site have reached their full height potential given the constraints of the soil and environmental factors present on the site. Given their current height range of 25 – 50 feet tall, at 35 – 50 years old, the measured site index for this tract will be no more than 50 assuming a base 50-year site index table. And since the height will not increase over time, the site index would still be 50 if we used a base 100-year site index table such as the one Alexander developed for lodgepole pine.

p. No site index table for shore pine has been published that is applicable to Western Oregon.

The Custom Soil Resource Report for Subject Property is inconclusive; the professional forester has explained the reasoning. "Cubic Foot Per Tract Per Year" is a measurement that is not applicable to this site. No published site index is applicable. This is a Non-commercial species. The following conclusions (highlighted in gray) from the professional foresters who provided the site report following the guidelines provided by the State of Oregon are relevant:

6. Conclusions:

k. The absence of a forest productivity value for three of the soil types found on this tract indicate that the NRCS concludes that these beach/dunes soils are not suitable for the production of timber, commercial or otherwise.

(5) "Date of Creation and Existence." When a lot, parcel or tract is reconfigured pursuant to applicable law after November 4, 1993, the effect of which is to qualify a lot, parcel or tract for the siting of a dwelling, the date of the reconfiguration is the date of creation or existence. Reconfigured means any change in the boundary of the lot, parcel, or tract.

Findings: Subject Property is acknowledged as a lawfully created parcel pursuant to the CCZLDO, Section 6.1.125 (8) as confirmed by County Planning Director Jill Rolfe. Subject Property is described by legal description in Deed Document # Book 115, page 437, conveying real property prior to 1986. There is no record of reconfigurations.

(7) "Forest lands" as defined in Goal 4 are those lands acknowledged as forest lands, or, in the case of a plan amendment, forest lands shall include:

(a) Lands that are suitable for commercial forest uses, including adjacent or nearby lands which are necessary to permit forest operations or practices; and

Findings: The forestry report provides the following:

5. Findings:

m. The Oregon Department of Revenue did not classify this 40 acre tract in its Forestland Class Code Assessment for tax assessment purposes. Additionally, the adjacent 40 acre tracts to the west and north of subject property also did not receive a DOR forestland class code. The tract to the east received a "FG" forestland class code, the lowest productivity class code for forested lands. See Exhibit 6.

Subject Property was included as forest lands in Coos County's zoning, and the zoning was acknowledged by DLCD. This application is for the purpose of rezoning Subject Property to nonresource use due to unsuitability for commercial forest uses or agriculture, taking into consideration farm/forest use of approximately 9.5 acres representing approximately 7% of the 133 acres identified by the perimeter buffer polygon organized for analysis purposes. It is important to protect farm and forest uses on the northeast and southeast from any encroachment of nonresource uses. The topography provides a barrier that could serve as a natural buffer between any dwellings and nearby farm and forest uses to the east and southeast. This would require a condition that could prohibit dwellings and other structures, improvements or modifications on the top of the narrow ridge, and on the east side of the ridge.

The findings within this document show that nearby lands will not be impacted by three residential uses, and where there may be concerns, specific development standards will be involved in protecting properties. One example is setbacks and to prevent wildfire hazards.

(b) Other forested lands that maintain soil, air, water and fish and wildlife resources.

(8) "Forest Operation" means any commercial activity relating to the growing or harvesting or any forest tree species as defined in ORS 527.620(6).

Findings: There are no forest operations or commercial activity relating to the growing or harvesting of any forest species as defined in ORS 527.620 (6). The analysis of forest productivity provided in the previous section in response to OAR 660-006-0005 provides specificities and analysis that explain why forest operations are not viable.

Statewide Planning Goal #4: OAR 660-006-0010
Identifying Forest Land

(1) Governing bodies shall identify "forest lands" as defined by Goal 4 in the comprehensive plan. Lands inventoried as Goal 3 agricultural lands, lands for which an exception to Goal 4 is justified pursuant to ORS 197.732 and taken, and lands inside urban growth boundaries are not required to planned and zoned as forest lands.

Findings: Subject Property is currently identified as farm/forest land by Coos County, with a Forest Mixed use Overlay.

(2) Where a plan amendment is proposed:

(a) Lands suitable for commercial forest uses shall be identified using a mapping of average annual wood production capability by cubic foot per acre (cf/ac) as reported by the USDA Natural Resources Conservation Service. Where NRCS data are not available or are shown to be inaccurate, other site productivity data may be used to identify forest land, in the following order of priority:

Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520) Coos County Taxlot 1300. T29S R15W, Sec 35:

> *The "site Index" is the average height, in feet that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands.*

Table 6. – Woodland Management and Productivity Only the soils suitable for production of commercial trees are listed, except for those that are in map units that include such soils. Absence of an entry indicates that information was not available.

Map Unit Name and Symbol	Common Trees Site Index	Acres	Percent of AOI
9 - Chetco silty clay loam	No Listing – Not Available	.4	1.1%
59D – Waldport fine sand, 30 % slopes	Shore Pine -90	3.6	9.2%
60D – Waldport-Dune land complex, 12-30% slopes	No Listing – Not Available	13.3	33.5%
61D – Waldport-Heceta fine sands, 0-30% slopes	Shore Pine-90	22.2	56.2%

Findings: A higher site index value means that the forest is more productive and the trees will grow faster. While the Custom Soil Report shows site indexing the chart copied above, the information is not conclusive. This is because shore pine is not a commercial forest species, and Alexander's site index table is not applicable to western Oregon.

This application is for a plan amendment, with the requirement to identify commercial forest uses using a mapping of average annual wood production capability by cubic foot per acre (cf/ac) as reported by the USDA Natural Resources Conservation Service. Cubic foot per acre (cf/ac) information is provided for on pages 55 - 59 in the Custom Soil Resource Report. The information provided by the NRCS has been included within this analysis, but it is not conclusive for purposes of this report.

The applicants utilized the services of Farm Environmental Services LLC dba Farm Unlimited, Eric Farm, PE, ACF to do the onsite analysis that is needed. Findings

regarding cf/ac is within the analysis previously presented within this document, and also with additional detail in Attachment P.

(A) Oregon Department of Revenue western Oregon site class maps;

Findings: Oregon Department of Revenue western Oregon site class maps are the highest priority. We started research for this finding with the Oregon Department of Revenue and who suggested that we get our information at the local Assessor's Office. Oregon Department of Revenue Western Oregon site class information was provided by Mary Jane Starks, farm and forest appraiser, of the Coos County Assessor's office. She provided the Coos County map associated with the Forestry grid with an arrow showing Subject Property, Tax Lot 1300, with the placement on the grid. Her response from training/expertise is that if the grid is not specified as having a timber class (A-G or X) , then it isn't considered as being timber viable. Here is an explanation regarding the analysis shown by the grid provided Wednesday, June 23, 2021 by email:

a. Page 1 of the Attachment is the email from Mary Jane Starks of the Coos County Assessor's Office.
b. Page 2 is a cover sheet identifying Coos County Forest Site Class Maps.
c. Page 3 shows Forestland Classifications.
d. Page 4 is a tax lot map that includes Subject Property, Tax Lot 1300.
e. Page 5 is a grid that applies the Forestland Classifications. Mary Jane Starks identified the location of Subject Property on the bottom row of the grid map, page 5.

Subject property is not on the grid classifications because it does not have a Forestland Classification (A-G or X). Mary Jane Starks shared that Subject Property is not specified with a forest land classification (A-G or X), which indicates that it is not viable forest land. Subject Property is not timber viable forest land. Because the Oregon Department of Revenue western Oregon site class maps are the highest priority resource; Subject Property does not qualify as forest land.

See Coos County, Oregon Forest Site Class Maps and information from the Oregon Department of Revenue Western Oregon site class information provided the by farm/forest specialist at Assessor's Office, Attachment R.

(B) USDA Forest Service plant association guides; or

Findings: Shore pine was not found on this listing. The USDA Forest Service plant association guides were not helpful for Subject Property.

(C) Other information determined by the State Forester to be of comparable quality.

(b) Where data of comparable quality under paragraphs (2)(a)(A) through (C) are not available or are shown to be inaccurate, an alternative method for determining productivity may be used as described in the Oregon Department of Forestry's Technical

Bulletin entitled "Land Use Planning Notes, Number 3 April 1998, Updated for Clarity April 2010."

Findings: The applicants utilized the data that is presented above. Eric Farm, PE, ACF of Farm Unlimited provided onsite analysis utilizing the Oregon Department of Forestry's Technical Bulletin entitled *Land Use Planning Notes, Number 3 April 1998, Updated for Clarity April 2010* as the basis of their on-site analysis, which has already been referenced for the forest analysis.

(c) Counties shall identify forest lands that maintain soil air, water and fish and wildlife resources.

Findings: Coos County has identified forest lands that maintain soil, air, water and fish and wildlife resources. Such resources that are part of this property include special considerations such as wetlands and riparian areas, floodplain, and Shorelands in close proximity. The acknowledged Comprehensive Plan and CCZDLDO include the protections that are necessary to maintain soil, air, water and fish and wildlife resources. None of the Overlays that provide protection for such resources will be removed except that two additional rural residential lots will exist on Subject Property. Development Standards in place for rural residential are expected to provide more protection on Subject Property which is covered with gorse, and is not currently required to comply with such development standards.

Statewide Planning Goals and Coos County Comprehensive Plan

Goal 1: Citizen Involvement: To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

Finding: Coos County details its process for citizen involvement and balancing goals within Volume 1, Part 1 of the Comprehensive Plan. Section 1.3 provides Historical Perspective. The plan states:

Since that time, many hundreds of dedicated citizens have contributed thousands of hours towards accomplishing the product represented in part by this plan.

The plan itself provides many pages of step-by-step background information describing the citizen involvement that went into developing the Comprehensive Plan and implementing ordinances. The Plan provides for uses including both rural residential, and resource-based uses. Citizen-proposed land use alternatives were considered and incorporated to select the alternative that best addressed citizen involvement. Through this process, problems and planning issues were raised, and local goals and plan implementation strategies were organized to comply with the Statewide Planning Goals and local needs and wants. Plan Implementation Strategies were incorporated. Specific Plan Implementation strategies are addressed within this section in support of the application for the Comprehensive Plan and rezone of Subject Property.

The Coos County Planning Commission serves as an ongoing citizen involvement committee for Coos County; Coos County incorporates citizen advisory groups when working on amendments

to the planning codes. The Planning Commission takes the cumulative effects of any potential zone change and impacts on the community into consideration. The Planning Commission is familiar with the Coos County, having members from throughout the County. The Planning Commission is interested in citizen comments, taking time to understand all that is being presented. To ensure that the community's voice is heard, the Planning Commission and the Coos County Board of Commissioners, an elected body familiar with the needs of citizens and with the properties in Coos County, act upon all rezones. Each of these bodies will hold a public hearing as part of the process for this rezone and Comprehensive Plan redesignation application.

The Applicant is providing detailed information from recognized sources that are the criteria included in Oregon and Coos County law for information when decisions about this application are being made. This application and the exhibits are available to the public. This application complies with Goal 1.

Goal 2: Land Use Planning: Part 1 Planning
To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.

Coos County Comprehensive Plan, Volume 1, Part 1

PLAN IMPLEMENTATION STRATEGIES

3. Coos County shall:

b. amend its plan and implementing ordinance when studies are completed which affect land use planning in Coos County; and

c. base the review upon re-examination of data, problems and issues;

Implementing Zone(s), RR-5
**The RR zone implements the "Agriculture" designation solely to the extent permitted by Agricultural Land Strategy # 13.*

Findings: Agricultural Land Strategy #13 is provided below, along with findings pertinent to this application. Coos County has completed inventories and organized plans and ordinances that are acknowledged by DLCD. Coos County shows within their planning processes and background information that they understand the balance that is required when designating and redesignating properties to different zones. Coos County bases their decisions upon facts and findings, and maintains policies that are consistent with Oregon law. This was all part of the early process that went into organizing the acknowledged Coos County Comprehensive Plan, and the process continues today. In preparing this application, the applicants utilized various reputable sources that are part of Oregon's planning process and criteria to carry out the analysis and make findings.

This application has been organized to comply with Goal 2. Coos County has provided language with standards for amending the Comprehensive Plan and zone maps. Coos County and the State of Oregon have recognized that such redesignations will be part of an ongoing process to keep the plans current to meet the needs of the citizens and contribute to the economy.

Goal 3: Agricultural Lands: to preserve and maintain agricultural lands.

Findings: The *Coos County Comprehensive Plan Volume 1, Part 1, Plan Provisions* provides the following goals and strategies, which are in compliance with Statewide Planning Goal 3:

Coos County Comprehensive Plan Volume 1, Part 1

5.3 AGRICULTURAL LANDS

GOAL: *Coos County shall preserve and maintain agricultural lands for farm uses "consistent*

with existing and future needs for agricultural products, forest, and open space,. . . except where legitimate needs for nonfarm uses are justified.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall conserve those resources designated as "agricultural lands" on the Comprehensive Plan map by regulating uses and activities in such areas through requirements stipulated in the following Exclusive Farm Use (EFU) zone. The delineation of these zones shall be generally consistent with the locational criteria developed on the Agricultural Lands Inventory and Assessment. Land Divisions shall comply with criteria set forth in the Coos County Zoning and Land Development Ordinance. Implementation of this strategy shall be based on application of the statutory provisions governing uses in EFU zones.

13. Coos County shall permit a zone change to Rural Residential (RR-5) on lots within designated Exclusive Farm Use (EFU) that were physically developed for non-farm use prior to the establishment of the EFU zone. The applicant for such a zone change shall bear the burden of proof that such lot meets the preceding criterion.

This strategy recognizes:

a. *The provisions of ORS 215.215, which permit this strategy, and*
b. *The benefits of enabling uses on property rezoned in this manner to be considered conforming uses rather than non-conforming uses.*

Findings: Analysis within this document shows compliance with the criteria established by applicable Oregon laws, Oregon's Statewide Planning Goals, and the Coos County Zoning and Land Development Ordinance. Agricultural lands will be redesignated on the zoning and Comprehensive Plan Map to nonresource land status based upon the criteria that is established by the State of Oregon. The Coos County Comprehensive Plan policy #13 above recognizes the need to permit zone changes on lands that are designated for farm use that were physically developed for non-farm use prior to acknowledgment of the designated resource zoning. This allowed for exceptions in the case of physically developed land, and also recognizes the need for redesignation of resource-zoned land to nonresource zones. This application does not rely on an exception for physically developed land, but rather uses a process set forth in Oregon law and Coos County planning documents to amend the zoning. Subject Property is not physically developed.

Where it is determined that resource-zoned land is not supported as resource land through analysis and application of the goals, agricultural land strategies may be proven to no longer apply. Other important Comprehensive Plan policies that are addressed within this document will take precedence when the rezone and redesignation of resource lands has been adopted by ordinance by the Coos County Board of Commissioners. The application for a redesignation of Subject Property to Rural Residential, (RR-5) with a 10-acre minimum overlay is appropriate based upon the findings in this document, utilizing all of the information required by Oregon and Coos County laws.

The Coos County Comprehensive Plan Volume 1, Part 1 has a 1985 adoption date by the list of County Commissioners. The subdivisions that are adjacent to Subject Property were already developed prior to the adoption of the Plan. This includes Bussmann Subdivision platted in 1980, and Roaring Surf Estates in 1982. Adjacent properties were already recognized for rural residential use at the time of acknowledgment of the Coos County Comprehensive Plan and zoning by DLCD. It is appropriate to provide this rural residential opportunity for a few additional homesites on Subject Property, which does not meet the requirements of agricultural land, but can provide for other needs of Coos County. This application complies with Goal 3.

Goal 4: Forest Lands: To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Findings: The *Coos County Comprehensive Plan Volume 1, Part 1, Plan Provisions* provide the following goals and strategies in compliance with Statewide Planning Goal 4:

Coos County Comprehensive Plan, Volume 1, Part 1

5.4 FOREST LANDS

GOAL: *Coos County shall conserve forestlands* by retaining them for the production of wood fiber and other forest uses,* except where legitimate needs for non-forest uses are justified. [*Forestlands and forest uses are defined in the Forest Lands Inventory and Assessment.]*

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall conserve those resources designated as "Forest Lands" on the comprehensive plan map by regulating uses and activities in such areas through requirements stipulated in the Forestry zone ("F").

The delineation of this zone shall be generally consistent with the locational criteria developed in the Forest Lands Inventory and Assessment. Land divisions shall comply with criteria set forth in the Coos County Zoning and Land Development Ordinance.

This strategy recognizes that Coos County's forestlands are an extremely valuable resource, and that the above-referenced zones are (1) necessary and reasonable to respond to the varying situational characteristics addressed in the inventory, and (2) adequate to conserve the County's forest lands for forest uses.

Findings: The onsite forestry investigation concludes that Subject Property cannot be utilized as forest land for all of the reasons set forth in the findings utilizing the sources set forth in Oregon law, with onsite analysis conducted by Professional Forest Consultant Eric Farm included within this document and referenced as Attachment P.

Much of rural Coos County was placed in resource zones by the Comprehensive Plan in the early 1980's without on-site analysis of the suitability of lands that were included as resource land. This protective measure has been appropriate. Where amendments are proposed, more detailed analysis is expected. There are specific requirements for removing resource designations where detailed analysis of specific property designated as farm and forest is not proving useful for the resource designation. On-site analysis for suitability is provided within this document in response to land that appears to be noncontributing to the economy or livability of Coos County at this time. Subject Property is not useful farm or forest land; the zone change to residential can provide protections and opportunities that are not currently part of the planning for Subject Property.

2. Coos County shall ensure that new rural residential dwellings are compatible with adjacent forest and agricultural management practices and production.

Findings: Adjacent uses are for the most part, rural residential acreages of varying sizes. Within a 750-foot buffer Polygon of 133 acres, 9.5 acres are estimated to be in farm and forest land use. This is approximately 7% of the 750-foot perimeter line organized for evaluation of land necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands. . The proposed rezone from (FMU) to RR-5 with a Q-RR5 10-acre minimum size is appropriate to ensure that new rural residential dwellings are compatible with adjacent forest and agricultural management practices and production. The zoning would allow for three parcels from the 38.17-acre Subject Property parcel. Any condition that would require new homesites to be on the west side of the eastern ridge that is close to the Cranberry bogs to the northeast of Subject Property would separate the new uses from the farm land. Properties to the South could be separated by the same condition. Such conditions could be applied when Subject Property is surveyed and partitioned.

This strategy shall be implemented by requiring applicants for building and septic permits to sign a statement (to be added to the zoning clearance letter) acknowledging that the normal intensive management practices occurring on adjacent resource land will not conflict with rural residential landowner's enjoyment of his or her property.

i. That intensive forest and agricultural management practices could include herbicidal spraying, slash burning, or fertilization; and

ii. that the potential for conflicts between resource uses and rural residential uses will be reduced by alerting prospective rural residential landowners to the fact that intensive resource management uses are expected in rural areas.

3. Coos County shall require all new residential development that is on lots, parcels or tracts within or abutting the "F" zone to agree to construct and maintain a firebreak of at least 30 feet in radius around the dwelling prior to completion of the dwelling. A firebreak is defined as

an area free of readily inflammable material and may include lawns, ornamental shrubs, and scattered single specimen trees.

This strategy recognizes that these protection measures are the minimum necessary to prevent house fires from spreading to forested areas, and vice-versa.

9. Coos County shall define development to mean:

To bring about growth or availability; to construct or alter a structure, to conduct a mining operation, to make a physical change in the use or appearance of land into parcels, or to create or terminate rights of access excepting normal agricultural or forest management activities.

This strategy recognizes the important distinction between resource management and the conversion of land to more intensive uses.

Findings: Coos County has requirements to protect properties within farm and forest zones, including firebreaks and other measures to protect forest and farm land in the vicinity. The redesignation of Subject Property from resource land for three rural residential sites that will create lots similar in size or larger than the average size of adjacent properties. This is appropriate due to the unsuitability of Subject Property for farm and forest use. Adjacent properties were allowed to be subdivided prior to the adoption and acknowledgment of Coos County's Comprehensive Plan and zoning. Farm and forest zoning will remain on adjacent properties, which range in sizes from .90 acres to approximately 23 acres. Any division of Subject Property is not permitted today due to the resource zoning that was applied to Subject Property and adjacent properties.

It is important for any development that is permitted when the resource zoning is changed to Rural Residential will comply with the requirements that are set forth in the forest strategies in the Coos County Comprehensive Plan including, but not limited to fire breaks and fire safety measures. In addition new owners will be subject to signing statements that complaints about agriculture and forestry within any rural residential zone abutting a resource zone are inappropriate. Coos County has anticipated conflicts and has taken steps to minimize such conflicts within the policies of the Comprehensive Plan. This application complies with the Goal 4.

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources - To conserve open space and protect scenic resources.

Programs shall be provided that will:

1) *insure open space,*
2) *protect scenic and historic areas and natural resources for future generations, and*
3) *promote healthy and visually attractive environments in harmony with the natural landscape character.*

Coos County Comprehensive Plan, Volume 1, Part 1

5.6 FISH AND WILDLIFE HABITATS

GOAL: *Coos County shall value its identified significant fish and wildlife habitat and shall strive to protect them where practicable.*

PLAN IMPLEMENTATION STRATEGY

1. Coos County shall consider as "5c" Goal #5 resources (pursuant to OAR 660-16-000) the following"

- *"Sensitive and peripheral Big-game Range" (ORD 85-080010L)*
- *Bird Habitat Sites (listed in the following table)*
- *Salmonid Spawning and Rearing Areas*

2. Coos County shall manage its riparian vegetation and identified non-agricultural areas so as to preserve their significant habitat value, as well as to protect their hydrological and water quality benefits (ORD 85-08-010L). This strategy does not apply to forest management actions, which are regulated by the Forest Practices Act.

This strategy recognizes that protection of riparian vegetation and other wetland areas is essential to preserve the following qualities deriving from these areas:

Natural Flood Control *Flow stabilization of streams and rivers*	***Environmental diversity*** *Habitat for fish and wildlife, including fish and wildlife of economic concern*
Reduction of sedimentation	***Recreational opportunities***
Improved water quality	***Recharge of aquifers***

4. Coos County shall protect for agricultural purposes those land areas currently in agricultural use but defined as "Wet meadow" wetland areas by the U.S. Fish and Wildlife Service, and also cranberry bogs associated sumps and other artificial water bodies.

Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas.

The policy shall be implemented by:
c. (ORD 85.08.010L) Use of the "Special Considerations Map" to identify (by reference to the detail inventory map) salmonid spawning and rearing areas subject to special riparian vegetation protection; and sensitive and peripheral big game range.

6. Coos County shall consider the following to be ("5b) resources pursuant to the inventory information available in this Plan and OAR 660-16-000(5)(b):

- *Osprey Nesting Sites*
- *Snowy Plover Habitat (outside the CBEMP)*
- *Spotted Owl Nesting sites.*

Findings: Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces includes the following language:

To protect natural resources and conserve scenic and historic areas and open spaces. The following resources shall be inventoried:

a. Riparian corridors, including water and riparian areas and fish habitat;
b. Wetlands;
c. Wildlife Habitat;
d. Federal Wild and Scenic Rivers;
e. State Scenic Waterways;
f. Groundwater Resources;
g. Approved Oregon Recreation Trails;
h. Natural Areas;
i. Wilderness Areas;
j. Mineral and Aggregate Resources;
k. Energy sources;
l. Cultural areas.

Local governments and state agencies are encouraged to maintain current inventories of the following resources:

a. Historic Resources;
b. Open Space;
c. Scenic Views and Sites.

Findings: No fish and wildlife habitat or "Sensitive and peripheral Big-game Range are identified within the Coos County Comprehensive Plan on the "Special Considerations Map." Subject Property does not include rivers and streams, and there are no salmonid spawning and rearing areas. The chart referenced as ("listed in the following table") above refers to Bald Eagle nests, Great Blue Heron colonies and Band-Tailed Pigeon Mineral Springs sites, and lists the Township, Range, Section and area of Coos County where the habitat sites are found. There is no site listed within Township 29S, R15W, which includes Subject Property. See Attachment S.

The Coos County Planning Department has no identification of Osprey nesting sites, Snowy Plover Habitat (outside of the area that is within the jurisdiction of the Coos Bay Estuary Management Plan), or Spotted Owl nesting sites.

Coos County has protected Goal 5 resources of scenic, historic and open space value within its Comprehensive Plan. The language included within Section 5.6 Plan Implementation Strategy, addresses wildlife habitat and Sensitive and peripheral big-game range, bird habitat and salmonid spawning and rearing areas. There are no riparian corridors, federal wild and scenic rivers, state scenic waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, or energy sources within Subject Property. Coos County relies upon the Special Considerations Map with overlays to identify specific Goal 5 resources where Exhibits have already been provided in this document.

The site has scenic views from the ridge on the east side of the property. These are scenic views views that contribute to the property and many surrounding properties and provide passive recreation for residents and their visitors.

Special Development and Considerations Overlays include the following:

- Archaeological Sites (ARC).
- Beaches/Dunes – Limited (BDL)
- Natural Hazards Wind Erosion (HZW)
- Archaeological Sites (Arc)
- Farm and Forest Mixed Use (FMU)

The site includes the following additional development considerations:

- Floodplain (FP)
- National Wetland Inventory Site (NWI)
- NATURAL Hazard – Earthquake – Liquefaction (NHEQL)
- Natural Hazard – Tsunami (NHTHO)

Findings: Special Development and Considerations Overlay requirements will continue to be implemented. Farm and Forest use is addressed throughout this document. Any structures placed on future properties will be subject to the flood ordinance. While wetlands exist on the property, none have been delineated at this time. The location of wetlands on the property will be applicable at the time that any development is proposed on the site. Wetlands will be avoided with setbacks set forth by the Coos County Zoning and Land Development Ordinance including the 50-foot riparian setback and requirements of the Oregon Department of State Lands.

Subject Property has an area of archaeological significance, but no specific site has not been identified at this time. The rezoning and Comprehensive Plan map amendments proposed for Subject Property will not preclude future identification and protection of specific resources that are applicable at the time of the siting of any dwelling or other structures on Subject Property. The rezoning and Comprehensive Plan map amendments proposed for Subject Property will not preclude future identification and protection of specific resources that are applicable at the time of the siting of any dwelling or other structures on Subject Property. Notice will be provided to the local Indian Tribe having jurisdiction so that they can respond, and participate if and when ground disturbance takes place.

See Section 5.7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS as follows for further detail and implementation strategies.

Coos County Comprehensive Plan, Volume 1, Part 1

5.7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS

ISSUES:

1. The historical sites and structures have been identified in unincorporated Coos County by Dr. Stephen Dow Beckham for OCC&DC and the State Parks Division. Of these, the Philpott Indian Village site, the Bandon Lighthouse, and Cape Arago Lighthouse are in the National Register of Historic Places. In other cases, however, the presence of historical resources are either not

generally known to the public or the resources may be located in areas under pressure for development. What measures can the County take to protect the value of these resources while permitting development of non-conflicting uses? 2. Both the State Office of Historic Preservation (SOHP) and local tribal authorities are aware of the exact) location of relic archaeological sites. However, once publicly identified, the sites often fall prey to amateur "pot hunters" that could desecrate gravesites and diminish the value of the resource. What can Coos County do to protect these archaeological resources without inadvertently endangering them through widespread public dissemination of site-specific inventory information?

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall manage its historical, cultural and archaeological areas, sites, structures and objects so as to preserve their original resource value.

This strategy recognizes that preservation of significant historical, cultural and archaeological resources is necessary to sustain the County's cultural heritage.

2. Coos County shall permit the expansion, enlargement or other modification of identified historical structures or sites provided that such expansion, enlargement or other modification is consistent with the original historical character of the structure or site.

3. Coos County shall continue to refrain from widespread dissemination [sic] site specific inventory information concerning identified archaeological sites. Rather, Coos County shall manage development in these areas so as to preserve their value as archaeological resources.

This strategy shall be implemented by requiring development proposals to be accompanied by documentation that the proposed project would not adversely impact the historical, cultural and archaeological values of the project's site. "Sufficient document" shall be a letter from a qualified archaeologist/historian and/or duly authorized representative of a local Indian tribe(s). . . . "Appropriate measures" are deemed to be those which do not compromise the integrity of remains, such as (1) paving over the sites, (2) incorporating cluster-type housing design to avoid the sensitive areas, or (3) contracting with a qualified archaeologist to remove and re-inter the cultural remains or burial(s) at the developer's expense. If an archaeological site is encountered in the process of development, which previously had been unknown to exist, then these three appropriate measures shall still apply. Land development activities found to violate the intent of this strategy shall be subject to penalties prescribed by ORS 97.745.[4]

4Coos Bay Plan.

Findings: Goal 5 requires protection of "Natural Resources, Scenic and Historic Areas, and Open Spaces." The Coos County Comprehensive policies and strategies have been organized to comply with Goal 5. Goal 5 resources identified on Subject Property include archaeological sites and wetlands. Archaeological sites will be handled by the Planning Director consistent with the policies set forth in section *5.7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS,* included as part of this analysis.

Goal 5 resources including archaeological sites and wetlands (National Wetlands Inventory) are identified on Subject Property, but they are not specific as to their location at this time. The rezoning and Comprehensive Plan map amendments proposed for Subject Property will not preclude future identification and protection of specific resources that are applicable at the time of the siting of any dwelling or other structures on Subject Property.

The applicant is requesting three parcels from 38 acres. Subject Property includes land that is identified on the Special Development Considerations and Overlay map that includes Floodplain on what appears at least two-thirds of Subject Property.

Notice will be provided to the local Indian Tribe having jurisdiction so that the Tribe(s) can respond and have an opportunity to be present when ground disturbance takes place. This procedure is required for all archaeologically identified areas in Coos County.

Wetland areas will be identified when site development is planned. The Oregon Department of State Lands will review the proposals and respond to Coos County regarding any need for delineation of wetlands, and Coos County will require compliance with riparian requirements. The application will comply with Goal 5.

Goal 6: Air, Water, and Land Resources Quality: to maintain and improve the quality of the air, water, and land resources of the state.

2. Plans should designate areas for urban and rural residential use only where approvable sewage disposal alternatives have ben clearly identified in such plans.

Findings: Subject Property will maintain soil, air and water quality. Subject Property is within an area where nature dominates and the special considerations map takes priority. Fifty foot (50-foot) riparian overlays adjacent to the wetlands will be maintained. Floodplain areas are located on Subject Property with a number of standards that will apply for any construction. While no specific fish and wildlife habitat have been identified for protection on Subject Property, which will continue to contribute to soil, air and water quality. There is no intent, and there will be no opportunity to create subdivisions on the property as development will be limited by the 10-acre minimum zoning that is consistent with averaging the sizes of adjacent and nearby properties. The shorelands will be protected. The Pacific Ocean winds will continue to blow. The land will remain somewhat wild with heavy rains, wild winds, salt spray from the Pacific Ocean, and the attributes of the land. It is doubtful that the land will be cleared, unless an owner determines that he/she can manage the property and make it more productive or maximize fire safety. There is no big game; the Consulting Forester has explained that the understory on Subject Property is not conducive to big game habitat. Small creatures including birds and rodents will continue to exist. Firebreaks are required. These protections along with the location of the property close to the Pacific Ocean and the identified Shorelands set the landscape for maintaining soil, air, water and fish and wildlife resources where they currently exist.

The proposed amendments will not have any negative effect on air, water, and land resources for a number of reasons that have already bee addressed within this document. As shown by the Special Development Consideration on Subject Property, there are many natural forces at work

that will "have their way" with nature. Taming Subject property with all of these forces of nature at work is not a likely scenario. People who want to live in a rural setting with the aesthetics and ambiance of the Oregon Coast will be more interested in such property than those who are looking for a gently rolling river valley. All of the special considerations provide requirements of their own including special development standards. If purchasers can be part of clearing gorse from the property, which is a wildfire hazard, it would be a positive improvement for all.

The applicant understands that DEQ requirements for sewage disposal will be necessary for any residential use. This could be required as a condition of any partitioning into three lots or required prior to enactment of final approval of the rezone. With such a condition, the application complies with Goal 6.

Goal 7: Areas Subject to Natural Disasters and Hazards: To protect life and property from natural disasters and hazards.

Finding: Special Development Considerations have been identified on Subject Property by the County Planning Department as identified within the Comprehensive Plan.

a. Natural Hazard Earthquake – Liquefaction (NHEQL)
b. Natural Hazard - Tsunami
c. Beaches / Dunes – Limited (BDL)
d. Natural Hazards Wind Erosion (HZW)
e. Floodplain (FP)

Coos County will raise awareness of the hazards and Special Development Considerations when approving land partitions, planning clearance forms, and other local permits. All requirements that respond to such Special Development Considerations will be part of future permitting. The application complies with Goal 7.

Goal 8: Recreational Needs: To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Finding: This goal is not applicable to this application as the Subject Property is not proposed for recreational purposes. The Pacific Ocean and all of the ambiance and wonder that it entails are at the front doorstep of Subject Property, providing for the recreational needs of rural residents. The application does not conflict with Goal 8.

Goal 9: Economic Development: To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare and prosperity of Oregon's citizens.

Finding: The Economic goals of Coos County that have been acknowledged by the State of Oregon to comply with Goal 9. Coos County Forestry is proposing to find a suitable economic use for property that has previously been sitting vacant. Economic opportunities within Coos County are dependent upon finding employees who can live and work within the community; rural homesites are desired. Subject Property can contribute several homesites that are much

needed for the community to grow. New development can enhance the tax base and contribute to the business climate of the community. The application complies with Goal 9.

Goal 10: Housing: To provide the housing needs of the citizens of the state.

B. Implementation
1. Plans should provide for a continuing review of housing need projections and should establish a process for accommodating needed revisions.

Coos County Comprehensive Plan, Volume 1, Part 1

5.17 HOUSING

ISSUES

Coos County strongly desires to protects its valuable farm and forest lands, yet the County has conclusively established a legitimate need for acreage homesites.

What can the County do to achieve both objectives?

Local citizens have expressed the concern that plans should provide for different types and densities of housing in a variety of urban and rural locations.

What can the County do to respond to its citizens' concerns?

GOAL: *Coos county shall provide for the housing needs of its residents.*

PLAN IMPLEMENTATION STRATEGIES

1. *Coos County shall provide zoning for adequate buildable lands and shall encourage the availability of adequate numbers of housing units for future housing needs at price ranges and rent levels, which are commensurate with the financial capabilities of Coos County households.*

2. *Coos County shall encourage the availability of a wide variety of housing locations in urban and rural areas. For urban and urbanizable areas, this strategy shall be implemented through urban growth management agreements and appropriate coordinated land use designations. For rural areas this strategy shall be implemented through appropriate land use designations for acreage homesites as selected and justified in the County's rural housing exception.*

3. *Coos County shall structure its implementing zoning ordinance such that it: (1) permits mobile homes, (2) permits mobile homes and clustering of dwellings under a Planned Unit Development concept in most residential zones, (3) permits multiple family dwellings in selected locations within urban growth boundaries (UGB's), and (4) permits multiple family dwellings outside UGB's when part of a Recreation Planned Unit [sic] development. This strategy recognizes that such flexibility of housing type provides greater choice and enhanced ability to meet the housing needs of the citizens of Coos County.*

Findings: While complying with the criteria of applicable Oregon laws, Oregon's Statewide Planning Goals, and the CCZLDO, Subject Property can be recognized as nonresource land. Subject Property can be redesignated on the zoning and Comprehensive Plan Maps to nonresource land status. The applicability of the Statewide Planning Goals for farm and forest land as provided within the strategies of the Coos County Comprehensive Plan and Oregon laws provide a basis for reevaluating lands that have been zoned for farm and forest use to determine whether the resource zones are applicable. That process has been the subject of this application, and the applicants have been diligent in utilizing all of the applicable laws.

A need for housing is recognized at all levels within the State of Oregon. Statewide Planning Goal 10 addresses housing, and the Coos County Comprehensive Plan, Volume 1, Part 1 includes strategies for housing that are acknowledged to be in compliance with the Statewide Planning Goals. It is appropriate that the housing goals included within this document take precedence when the rezone and redesignation of resource lands to rural residential use is justified by findings and adopted by the Coos County Board of Commissioners.

Subject property can contribute to the needs of Coos County where data and analysis of farm and forest suitability has shown that Subject Property is not capable of contributing to the economy under the current resource zoning. Resource zoning was applied broadly in the development of the Comprehensive Plan. This application provides more detailed analysis of the specific Subject Property to remove the broad designation that has rendered Subject Property with no contributing use or on-site management over the years.

The acknowledged Comprehensive Plan thus contemplates that appropriate land shall be rezoned to allow for rural residential use. Rural housing can be provided on lands that are not suitable for commercial farm and forest uses by redesignation of resource lands to rural residential where residents will utilize the land and provide care-taking that is part of the rural lifestyle.

The site can provide housing for rural workforce housing. Workforce housing is recognized as a need throughout the Oregon Coast. The Comprehensive Plan strategies recognize that there is a need for flexibility of housing types within Coos County.

Subject Property is adjacent to a number of homesites that have been organized over the years with two adjacent subdivisions. Subject property is well situated to provide rural housing on land that is otherwise not utilized or enjoyed. Housing shortages are well documented on the Oregon Coast, and are contributing to employee shortages. According to Tom Lahey, a broker with North Point Realty, there is a shortage of houses on the market and typically there are multiple offers for housing units, which are being accepted over listing price, October 12, 2021. Subject Property is in close proximity to the City of Bandon and, within driving distance of employment that could be available within other Coos County communities. The application complies with Goal 10.

Goal 11: Public Facilities and Services: To plan and develop timely, orderly, and efficient arrangement of public facilities and services that serve as a framework for urban and rural development.

Findings: Public facilities and services will not be available to housing that is located on Subject Property. Wells and septic tanks will provide for water and sewage. Subject property is within the Bandon Rural Fire Protection District and the Port Orford Langlois School District. These districts exist to serve rural properties. Coos Curry Electric serves Subject Property. While Goal 11 is not directly applicable, Subject Property is served by special districts that have been organized to serve rural development. This application is not in conflict with Goal 11.

Goal 12: Transportation: To provide and encourage a safe, convenient and economic transportation system.

Findings: Highway 101 is the main transportation route within Coos County. Subject property is accessed by Lower Fourmile Road which connects to Subject Property from Highway 101. Goal 12 is not directly applicable; the application is not in conflict with Goal 12.

Goal 13: Energy Conservation: Land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles.

B. Implementation
1. Land use plans should be based on utilization of the following techniques and implementation devices which can have a material impact on energy efficiency.
d. Availability of light, wind and air;
e. Compatibility of and competition between competing land use activities.

Findings: Any rural residential uses on Subject Property will have the opportunity for energy savings from close proximity of communities on the South Coast of Oregon. The communities of Bandon, Coos Bay, and Coquille in Coos County are all within less than an hour's drive. Port Orford and the unincorporated community of Langlois in Curry County are also within less than an hour's drive. This provides for energy efficient trips for employment and utilization of local goods and services.

Subject Property provides availability of light, wind and air and the Pacific Ocean at the "front door" of the property. This application for a rezone has required the applicant to assure that compatibility between competing land use activities where analysis for any negative effects on farm and forest uses are part of the criteria.

This application is consistent with the energy conservation goal of Goal 13.

Goal 14: Urbanization: To provide for an orderly and efficient transition from rural to urban land use.

Findings: Goal 14 has to do with the layout of cities, and the location of areas for future growth. Goal 14 does not apply.

Goal 15: Willamette River Greenway: To protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic, and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Finding: The Willamette River Greenway goal is not applicable to this application. Goal 15 does not apply.

Goal 16: Estuarine Resources: to recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Findings: Goal 16 is not applicable to this application for proposed amendments.

Goal 17: Coastal Shorelands: To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and to reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Findings: The Shorelands have been mapped and identified by Coos County close to this property as shown on the maps. The Coastal Shorelands are valued and protected for all of the reasons set forth in the Statewide Planning Goals. The Shorelands of the Pacific Ocean are one of the reasons that Subject Property can be enjoyed and valued by any future property owner of Subject Property for their recreation and aesthetic value. Any residential use of Subject Property will result in property taxes to Coos County that will enhance the economic impact of Subject Property. In addition, the Shorelands are to be respected for the hazards that they present. Coos County has identified all of the hazards that are inherent on Subject Property. Development of Subject Property will be required to carry out measures that protect property and respect the natural features, as explained elsewhere within this document.

Goal 18: Beaches and Dunes: To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man-made induced actions associated with these areas.

Finding: There are no dune areas identified though this application. Goal 18 applies only where the beach is in close proximity to Subject Property. Coastal beach areas and hazards are discussed in the findings for Goal 17 above. Coastal beach areas are to be enjoyed and respected through adherence to all of the Coastal Goals and property development standards that have been incorporated by Coos County. This application complies with Goal 18.

Goal 19: Ocean Resources: To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.

Finding: The ocean resources goal is about respect for the ocean and its functions. While the Pacific Ocean is an imminent part of the landscape for Subject Property, there are not direct requirements that are not already applied through other Statewide Planning Goals. Goal 19 does not apply directly.

Coos County Zoning and Land Development Ordinance

SECTION 5.1.275 STANDARDS FOR COMPREHENSIVE PLAN AND REZONE FOR NONRESOURCE LAND:

1. The subject property does not meet the definition of Agricultural Land under Statewide Planning Goal 3 and /or Forest Land under Statewide Planning Goal 4.

> *NOTE:If the subject property is predominantly Class 1-IV soils or if it predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.*

Findings: Subject Property does not meet the definition of Agricultural Land under Statewide Planning Goal 3 and/or Forest Land under Statewide Planning Goal 4. All of the findings are included within this application based upon the criteria within Statewide Planning Goals 3 and 4, the Coos County Comprehensive Plan, and the Coos County Zoning and Land Development Ordinance.

2. The subject property does not contain any natural resources defined in Statewide Planning Goal 5 which are identified in the Coos County Comprehensive Plan;

Findings: Subject Property does contain Goal 5 resources, but those resources that do exist, would not be negatively affected by the rezone from the Forest Mixed Use zone to a Rural Residential (RR-5) zone with a Qualified 10-acre minimum lot size. This is explained under the Goal 5 analysis in the previous section of this report that responds to Statewide Planning Goal 5

and Coos County Comprehensive Plan policies. Resources that exist are already protected by Overlay zones, and by specific development policies that will apply at the time of development. Subject Property does not include big game, fish bearing streams, or identified bird habitat.

3. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract.

Findings: Subject Property is generally unsuitable for production of farm crops and livestock or merchantable tree species. Farm and forest analysis is provided in detail within this document, and Attachments including the NRCS Report, Attachment M, and the *Forest Productivity/Suitability Report*, Attachment P.

Findings: Findings to respond to soil suitability for production of farm crops and livestock, merchantable tree species, considering terrain, adverse soil conditions, drainage and flooding, and vegetation, are presented throughout this report in response to Oregon farm and forestry laws, and with the use of the Soil Survey of Coos County and Custom Soil reports and other methodology specified by Oregon law. The location and size of tract have been provided as introductory information to explain the property. The application for the rezone will permit Subject Property to have a use in addition to contributing to air, land and water quality by making it available for a few homesites that are more consistent in size with a number of the adjacent properties, and with the average size of surrounding properties.

4. The subject property is not considered to be nonresource land simply because it is too small to be farmed or forest managed profitably by itself. If the subject property can be sold, leased, rented or otherwise managed as part of a commercial farm, ranch or other forestland it is not considered to be nonresource land.

Findings: There is no attempt to consider Subject Property nonresource land based upon size. In fact, if Subject Property of 39+ acres were capable of producing marketable forest products, the Coos County Forestry Department would have been able to utilize the property that they have managed for Coos County since 1929 over the decades. Instead, Subject Property remains vacant and unused. None of this lack of use is based upon size, but rather upon the suitability of the Subject Property itself, which is not in sync with the resource zoning that exists.

In 2009, Coos County Forestry attempted to sell the property, but with no viable uses allowed, there was no purchaser. Coos County Forestry has offered Subject Property or portions thereof, that can be organized with adjacent properties through a lot line adjustment for sale. Information that was used for the 2009 proposed sale is included as Attachment H.

5. The subject property is not considered to be nonresource land if it has been given a special tax assessment for farm use or as designated forestland at any time in the past five years.

Findings: There has been no special tax assessment for farm or forest use.

6. If the subject property is found to meet all of the standards above to be considered nonresource land the county shall also determine that rezoning the property to a nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.

7. The subject property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use. Any proposal of at least 2 acres but less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040.

Findings: Subject Property is not contiguous to an area zoned for nonresource use. However, it is contiguous to numerous rural residential properties that have existed within the farm and forest mixed use zone for decades. Subject Property is 38+ acres in size, and the intent is to divide it into three parcels, all of which should be more than 10 acres. Three lots of over 10 acres each will be of a size similar to averages of adjacent properties and other properties within the 750-ft. perimeter barrier polygon utilized for analysis within this document. Adjacent properties have been identified within this document, shown on maps and incorporated through appropriate analysis.

8. Rezoning of land that is found to be nonresource land shall be to a "rural" zone that is appropriate for the type of land and its intended use.

Rural commercial or industrial development must comply with standards for small-scale, low impact commercial and industrial use.

Findings: The applicant understands that Subject Property suitable for 10-acre zoning in that it is not contiguous to an area that is zoned for nonresource use. No commercial or industrial development is proposed as part of this rezone application. Coos County has completed analysis of Subject Property and its highest and best use over a number of years. There should be no negative impacts from any use that is permitted for Subject Property due to the applicant's zoning proposal that will conform to Coos County's acknowledged Comprehensive Plan, the CCZLDO and all development standards that show respect for and solutions to minimize hazards, wildfires and other impacts from rural residential management of Subject Property.

Development of property rezoned from Forest or Forest Mixed use to a nonresource zone shall comply with the resource development and siting standards. (ORD NO. 04-01- 001PL February 10, 2004)

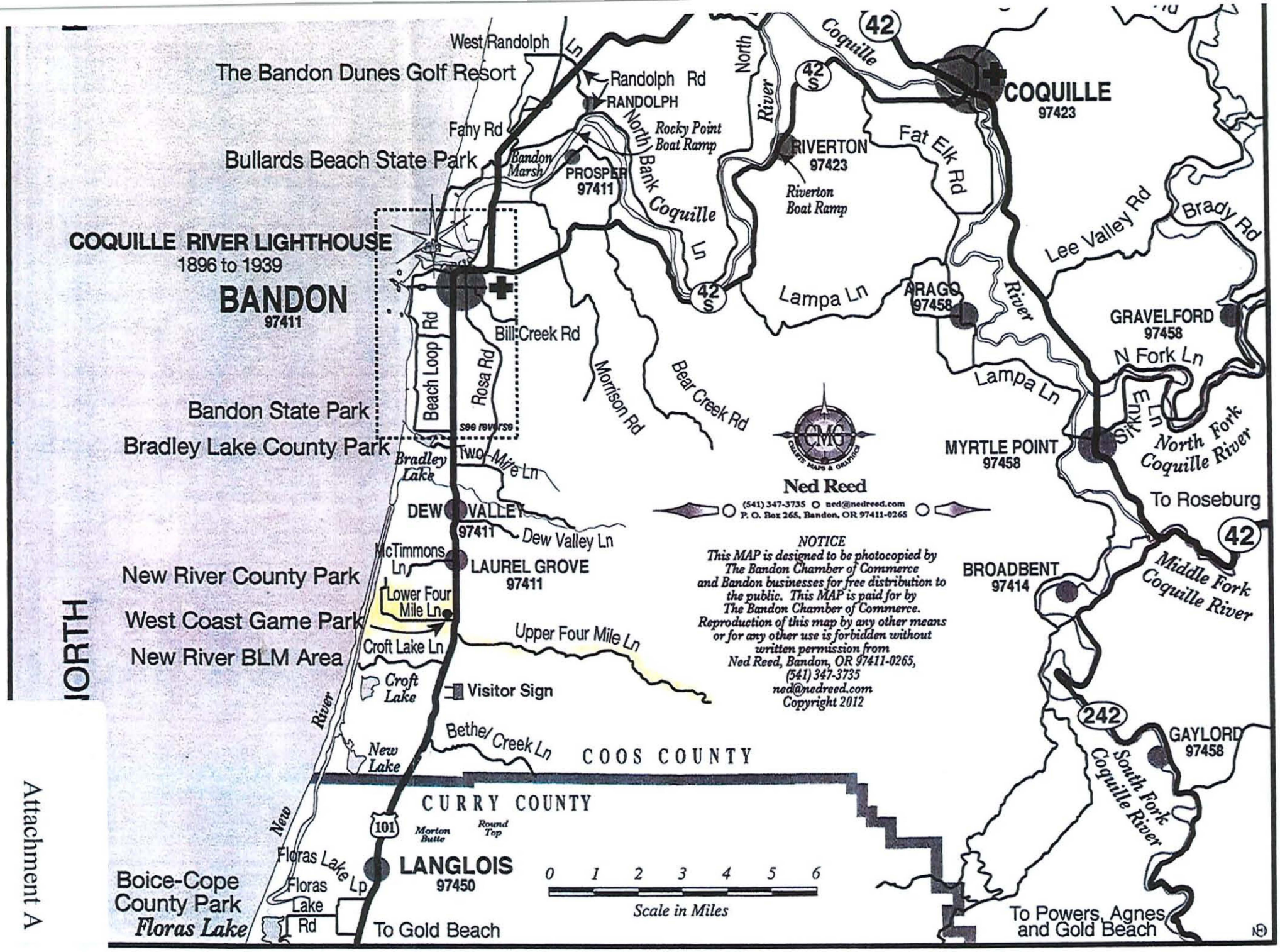
Findings: The Coos County Forestry Department will work with Coos County Planning Department to assure that purchasers understand all that is required in any future development and siting on Subject Property.

Conclusion

This application provides consideration of County and State criteria, resource analysis, and findings to support the rezone of Subject Property.

The applicant understands that safeguards to protect and enhance Subject Property and neighboring properties are in place.

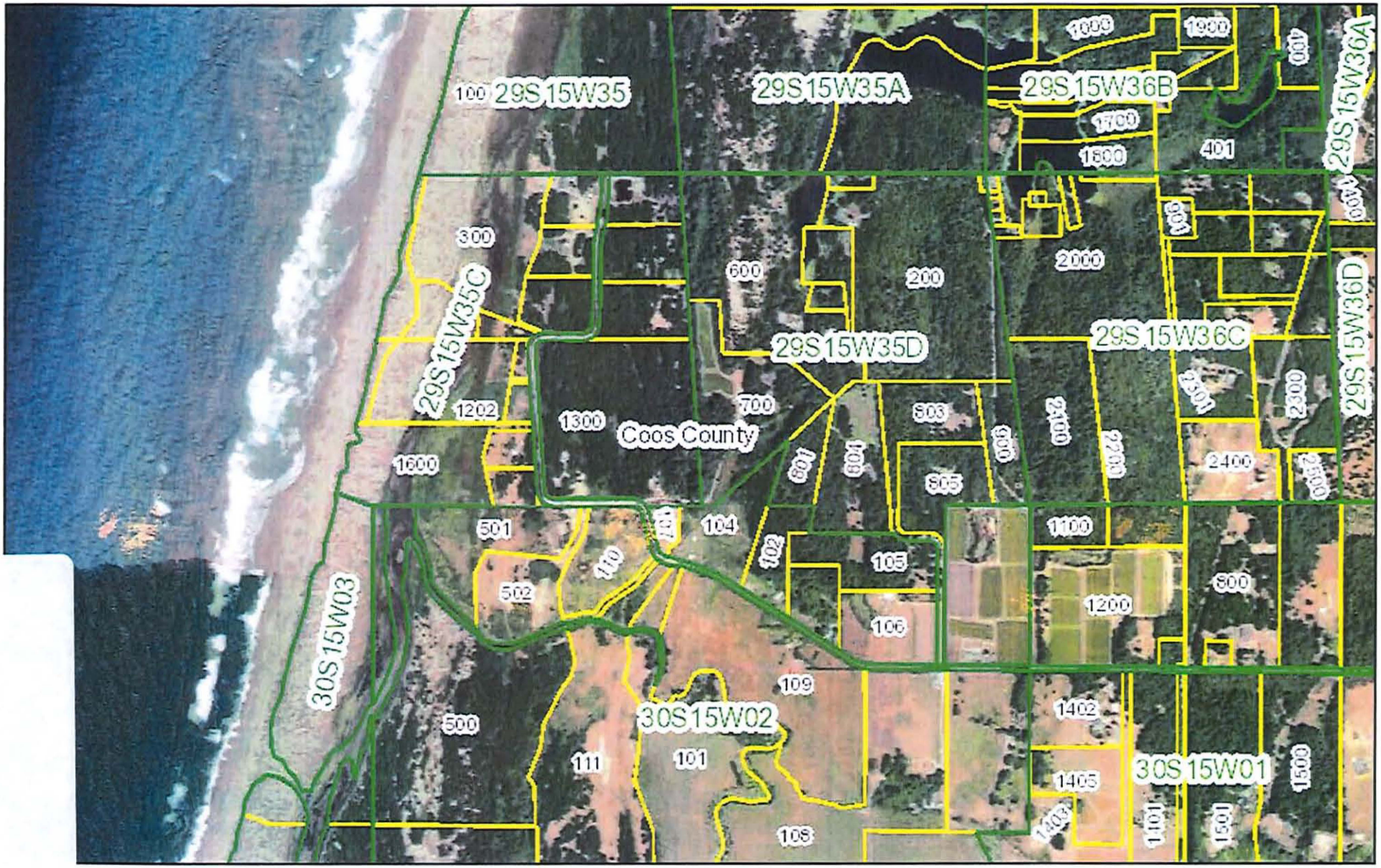
The applicant respectfully requests approval of this application along with any conditions that may be applied as part of the approval.



Attachment A

Attachment B

ArcGIS Web Map



Attachment C

:1, 11:33:20 AM

taxlot mapIndex CountyLines

1:18,056

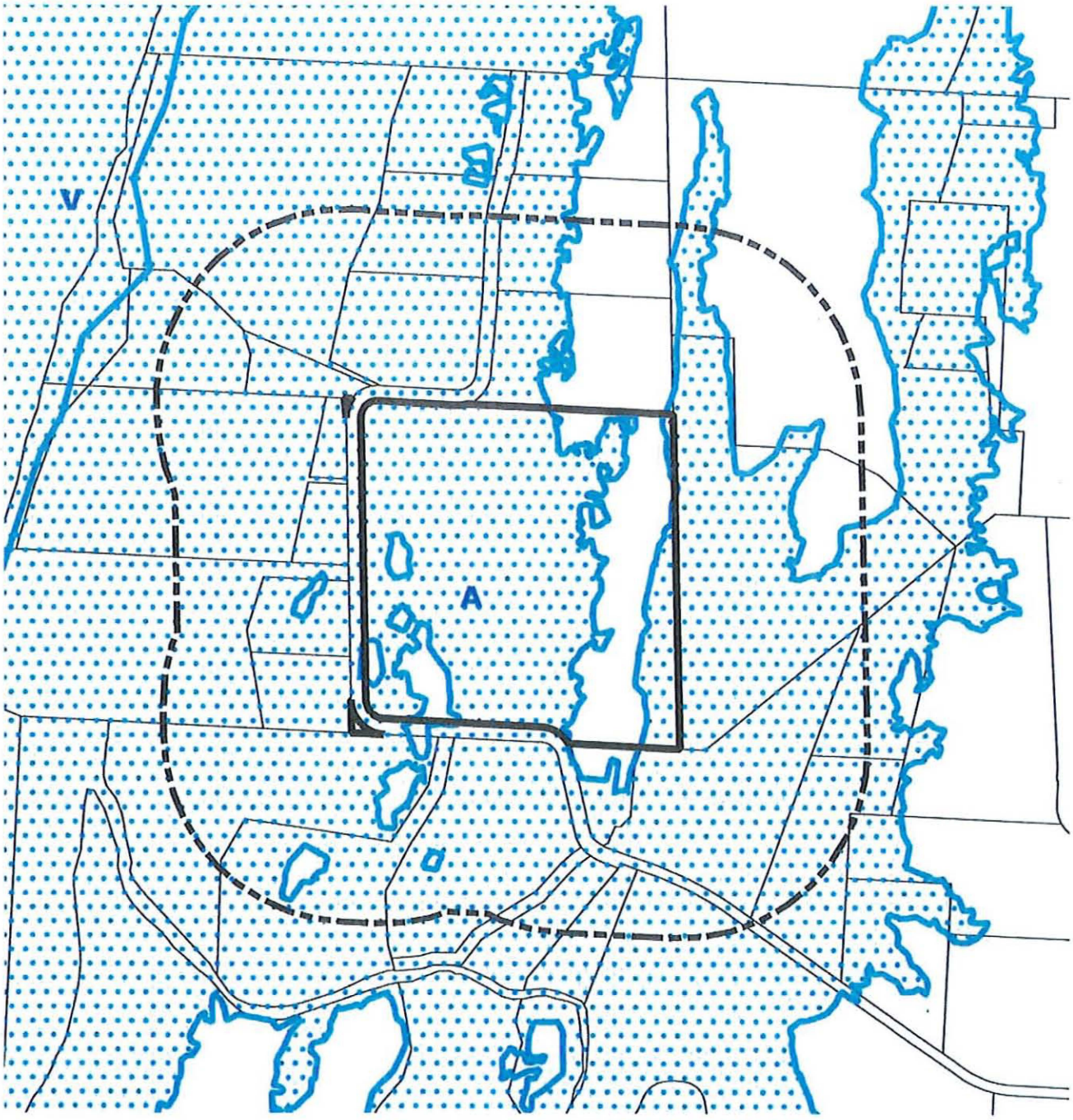
0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

OREGON DOR, GEO, Maxar

Web AppBuilder for ArcGIS
Maxar | OREGON DOR, GEO |

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300



0 500 1,000 ft

750ft Buffer
Subject Property
FEMA Floodplain
Floodplain Zones

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

Attachment D

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300

750ft Buffer

Subject Property

Beaches and Dunes - Goal 18

Limited Suitability; Special Measures Required For Most Development

Not Suitable For Residential,Commerical,Or Industrial Structures

Suitable For Most Uses; Few Or No Constraints

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

0 500 1,000 ft

Attachment E

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300

0 500 1,000 ft

750ft Buffer
Subject Property
Liquefaction Susceptibility - High & Very High

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

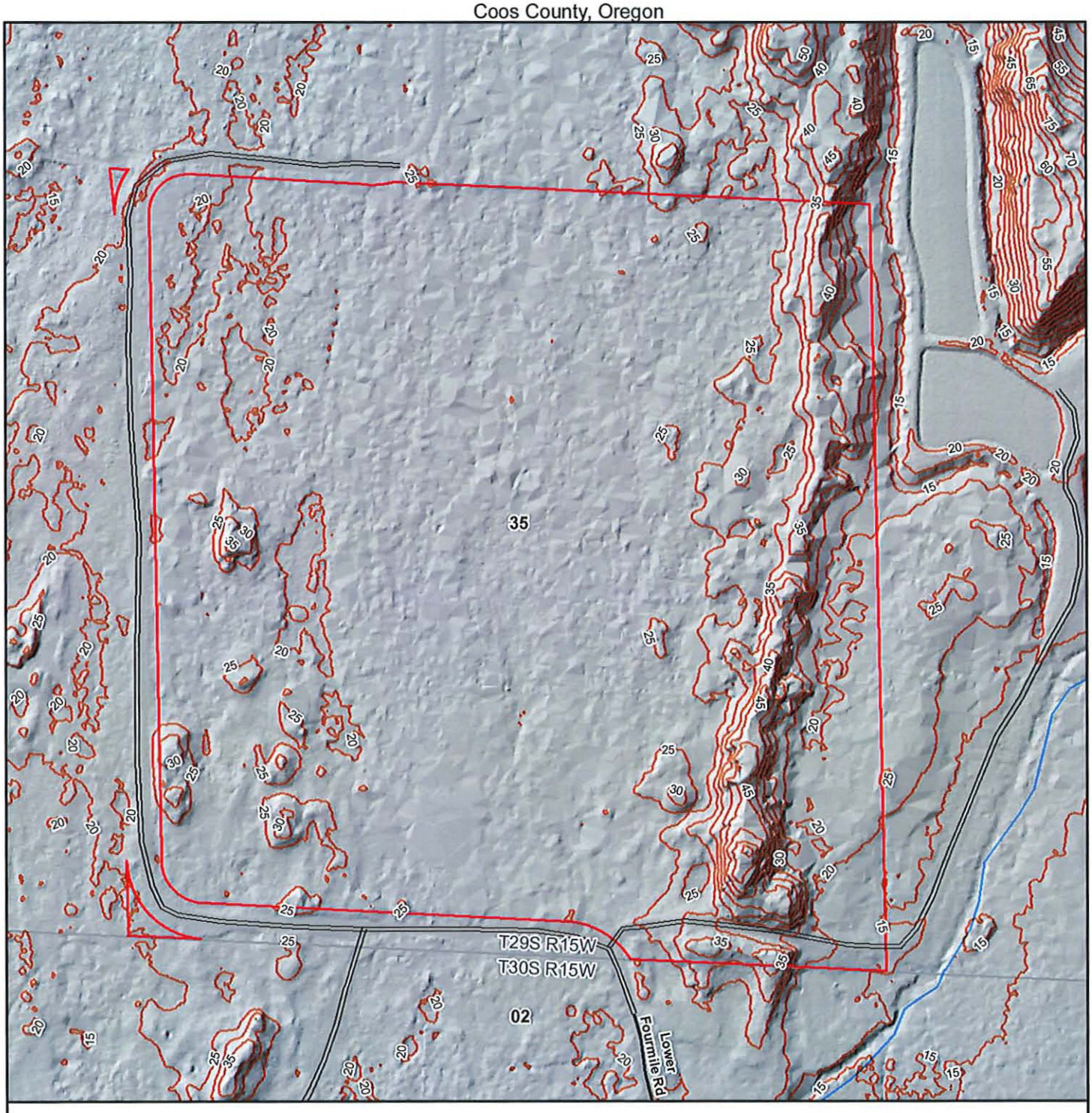
Attachment F

Farm Unlimited
P.O. Box 761
North Bend, OR 97459

Subject Property
Hillshade and Contour Map

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Paved
Rock
Medium, Fish
5 ft Contour Lines
Subject Property

N
1 " = 250 ft.
Created: 1/17/2022
by Barbara McIntosh

Contour Intervals = 5 ft. Contours and Hillshade derived from Lidar Bare Earth DEM

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Attachment G

BOC only:
Consent Agenda _____

Regular Agenda _____

AGENDA ITEM COVERSHEET

Agenda Item Title: Public Hearing on the Sale of County Forest Land

Department: Forestry/Land Agent **Requested Agenda Date:** 2/18/09

Contact Person: Bob Laport **Phone/Ext.:** 352

Background and description of need or problem: The purpose of this hearing will be to hear public comments on the sale of two parcels of County Forest land on Lower Fourmile Road, near the mouth of New River. Tax Acct. 12433.02 T29S, R15W, Section 35C TL1300 (approx. 38.17 ac.) and Tax Acct. 12433.00 T29S, R15W Section 35 TL100 (Approx 111.30 ac.). At a Lands Worksession held on 1-20-09 the Board of Commissioners directed that a hearing be set to consider the sale of these parcels at County Land Sale on 4-18-09. In accordance with ORS 275.330 B(2) the Board must make a finding that the sale or conveyance is in the public interest. As required under 275.330 B(3) notice of the hearing was published for 2 consecutive weeks. At the Lands Worksession, the Board discussed setting minimum prices of $800,000 on each parcel. In accordance with ORS 275.330 the proceeds from sale of these parcels would be held in the Forestry/Parks Trust Fund. If a serious offer of a trade for timberland were made before 4-18-09, the Board could exercise its discretion to remove either or both of the parcels from the sale list and enter into trade negotiations in accordance with ORS 275.335.

Funding Source: N/A

Requested Action: Receive and review public comments. If it is found to be in the public interest to sell these parcels, the Board should direct the Land Agent to place them on the land sale scheduled for 4-18-09 and set minimum prices.

Date 2/11/09 Signature of Dept. Head: _____

If this is a Human Resources issue, forward to the Treasurer who will forward it to Human Resources. For all other matters, forward the document to Counsel **no later than the Monday prior to the Agenda deadline.** Counsel will forward to Treasurer.

If this is a contract or grant:

- ☐ Is the contract or grant an original?
- ☐ Is the Contract/Grant Summary Form attached?
- ☐ Is the contract signed first by the vendor (except state/federal grants or contracts)?
- ☐ If insurance is required, is the insurance certificate attached?
- ☐ Is the Clerk's Coversheet attached or do you want it returned to you for filing?

Departments Affected:

COUNSEL:_____

_____

COOS COUNTY FORESTRY DEPARTMENT

250 N. Baxter Street, Coquille, Oregon 97423

(541) 396-3121 Ext.349 FAX (541) 396-3560 / TDD (800) 735-2900

Bob Laport, CF
Coos County Forester/Land Agent

Lance Morgan, Forestry Field Foreman
Kathy Hathaway, Timber Specialist

In the Matter of the Sale of County Forest Lands) NOTICE
) PUBLIC HEARING

TO: ALL INTERESTED PERSONS

Notice is hereby given that the Coos County Board of Commissioners will hold a public hearing on February 18, 2009 at 9:30 a.m. in the Commissioner's Courtroom, Courthouse, Coquille, Oregon.

The purpose of this hearing will be to hear public comments on the sale of County Forest land. The property cannot be sold unless the Board finds it is in the best interest of the public to do so. Proceeds from any sale will be used to maintain or improve existing County Forest or Park lands or for the future acquisition of lands to be set aside as County Forest or Park lands.

The County Forest lands are described as follows:

PARCEL "A":

The SE ¼ of the SW ¼ of Section 35, T29S, R15W, W.M. except dedicated public road, deed reference 81-4-1765.
[Account #12433.02, T29S, R15W, S35C, TL#1300; containing approximately 38.17 acres, as described in the Coos County deed records at #109-563]

PARCEL "B":

Government Lots 1 and 2 of Section 35, T29S, R15W, W.M.
[Account #12433.00, T29S, R15W, S35, TL#100; containing approximately 111.30 acres, as described in the Coos County deed records at #109-563]

This hearing is open to the public and all interested persons may appear and be heard.

Date: 1/22/09

County Forester
Bob Laport

PUBLISH: THE SENTINEL - January 28 and February 4, 2009.

Coos County is an Affirmative Action/Equal Opportunity Employer and complies with section 504 of the Rehabilitation Act of 1973

Coos County's Only Independent Newspaper

The Sentinel

February 4, 2009

coquillevalleysentinel@yahoo.com Phone (541) 396-3191 FAX

AFFIDAVIT of PUBLICATION

STATE OF OREGON
COUNTY OF COOS, SS:

I, Jean Ivey

being first duly sworn, depose and say that I am t publisher of The Sentinel, a newspaper of general circulation as defined by ORS 193.010 and 193.2(published at Coquille in the aforesaid county a state; and that the

LEGAL NOTICE, A printed copy of which is her annexed, was published in the entire issue of s newspaper for 2 successive and consecut weeks in the following issues:

January 28, 2009
February 4, 2009

Subscribed and sworn before me this

11 Day of 2 2009

OFFICIAL SEAL
DARLENE L. ANDREWS
NOTARY PUBLIC - OREGON
COMMISSION NO. 399085
MY COMMISSION EXPIRES JAN. 28, 2010

C E S

PUBLIC NOTICE

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Forest Lands) PUBLIC HEARING

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This hearing is open to the public and all interested persons may appear and be heard.

Date: January 28, 2009
County Forester
Bob Laport

CVS#012309 Publish 1/28 & 2/4/2009

Serving Coos County Since 1882

The Sentinel

The County Seat Newspaper

PHONE (541) 396-3191 FAX (541) 396-3624
61 E. First St., COQUILLE, OR 97423

LEGAL CONFIRMATION

You are receiving this FAX as a notification that we have received a request to publish in The Sentinel a LEGAL PUBLICATION.

DATE RECEIVED 1/23/09

BY FAX _____ E-MAIL X or HARDCOPY _____

FROM DEPARTMENT (ATTORNEY) Coos County Forestry Dept.

SENTINEL ACCOUNT # 010

PUBLISH DATE(S) 1/28 & 2/4/2009

ORDERED BY Kathy Hathaway

LEGAL PUBLICATION TITLE Sale of County Forest

PLEASE LOOK OVER THE ABOVE INFORMATION AND MAKE SURE THAT WHAT YOU REQUESTED IS CORRECT. THERE IS NO NEED TO RESPOND TO THIS FAX. KEEP A COPY FOR YOUR RECORDS AS CONFIRMATION THAT IT WAS RECEIVED AND PROCESSED FOR PUBLICATION. IF YOU HAVE QUESTIONS, PLEASE REFERENCE THE *"SENTINEL PUBLISHING CODE"* BELOW.

THIS PUBLICATION HAS BEEN ASSIGNED THE FOLLOWING SENTINEL PUBLISHING CODE

CVS# 012309

publish 1/28 & 2/4/09

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PUBLISH DATE(S) 1/28 & 2/4/2009

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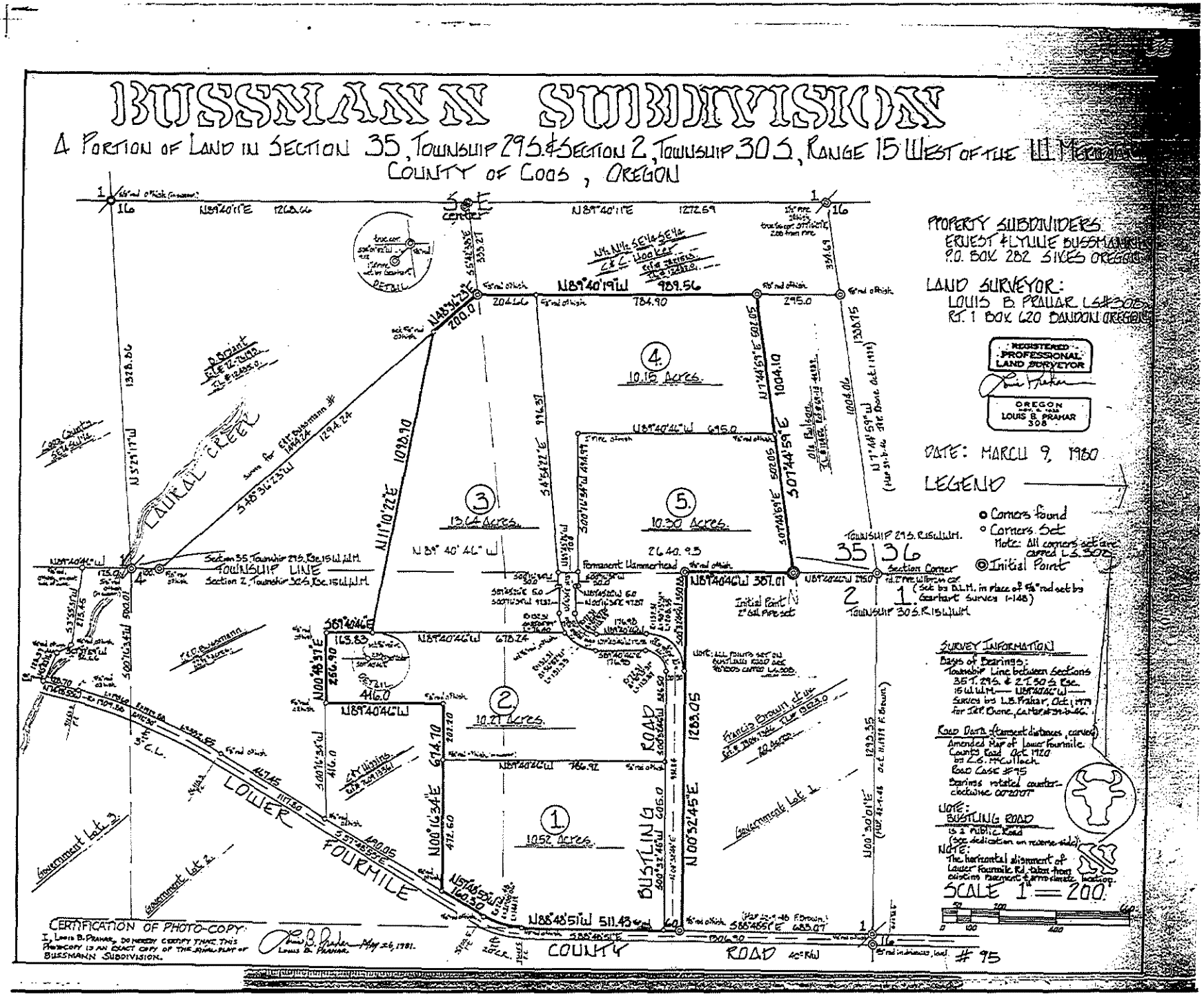

BUSSMANN SUBDIVISION
A PORTION OF LAND IN SECTION 35, TOWNSHIP 29S. & SECTION 2, TOWNSHIP 30S., RANGE 15 WEST OF THE W. M.
COUNTY OF COOS, OREGON
PROPERTY SUBDIVIDERS:
ERNEST & LYNILE BUSSMANN
P.O. BOX 282 SIXES OREGON
LAND SURVEYOR:
LOUIS B. PRAHAR LS#308
RT. 1 BOX 620 DANDON OREGON
REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
LOUIS B. PRAHAR
308
DATE: MARCH 9, 1980
LEGEND
Corners found
Corners Set
Note: All corners set are carried L.S. 308
Initial Point
Section Corner
SURVEY INFORMATION
Basis of Bearings:
Township Line between Sections 35 T. 29 S. & 2 T. 30 S. R. 15 W. W.M. — N89°40'46"W — Survey by L.B. Prahar, Oct. 1979 for Ist. Bank, Gearhart Survey 1-148
Road Data (Horizontal distances, curves)
Amended Map of Lower Fourmile County Road Oct. 1920 by Z.G. McCulloch. Road Case #75
Bearings rotated counter-clockwise 00°20'07"
NOTE: BUSTLING ROAD is a PUBLIC Road (See dedication on reverse side)
NOTE: The horizontal alignment of Lower Fourmile Rd. taken from existing pavement & approximate location.
SCALE 1" = 200'
CERTIFICATION OF PHOTO-COPY:
I, Louis B. Prahar, do hereby certify that this Photocopy is an exact copy of the original plat of Bussmann Subdivision.
Louis B. Prahar May 26, 1981.
LOWER FOURMILE
BUSTLING ROAD
COUNTY ROAD 40' R/W
CAUREAL CREEK
TOWNSHIP LINE
Section 35 Township 29S. R.15W. W.M.
Section 2 Township 30S. R.15W. W.M.
TOWNSHIP 29S. R.15W.W.M.
TOWNSHIP 30S. R.15W.W.M.
1 10.52 Acres.
2 10.21 Acres.
3 13.64 Acres.
4 10.15 Acres.
5 10.30 Acres.
Permanent Hammerhead
Government Lot 3
Government Lot 2
Government Lot 1
Francis Brown et ux
Gearhart Survey 1-148
Gearhart Survey 1-148
Gearhart Survey 1-148

DEDICATION

Know all men by these presents that Ernest A. and Lynne Bussmann are the Vendees of the land described in the "Surveyor's Affidavit" hereon and do hereby Subdivide and Plat the same as shown, and do hereby dedicate to the public forever Bustling Road, and do hereby execute and offer for filing and record in the office of the Clerk of Coos County, Oregon, in testimony whereof we, Ernest A. and Lynne Bussmann, have caused these presents to be signed this 10th day of March, 1981.

Ernest A. Bussmann

Lynne Bussmann

Know all men by these presents that Thomas Wilbur Brown, Robert Hartman Brown, and Francis Wilbert Brown are the record title holders of the land described in the "Surveyor's Affidavit" and are also Vendors of said described properties and do authorize Ernest and Lynne Bussmann, Vendees, to subdivide and Plat the same as shown, and do authorize said Vendees to dedicate and offer for filing and record in the office of the Clerk of Coos County, Oregon, in testimony whereof we, Thomas Wilbur, Robert Hartmen, and Francis Wilbert Brown have caused these presents to be signed.

Thomas Wilbur Brown

State of Oregon
County of Coos

Thomas Wilbur Brown, Date March 17, 1981

This is to certify that on this 17th day of March, 1981 Before me appeared Thomas Wilbur Brown to me personally known and being sworn did say that the above testimony is his free and voluntary act; in testimony where I have hereon to set my seal this 17th day of March, 1981.

Notary Public for Oregon

My Commission expires 2-24-84

Robert Hartmen Brown

State of Oregon
County of Coos

Robert Hartmen Brown, Date March 17, 1981

This is to certify that on this 17th day of March, 1981, before me appeared Robert Hartmen Brown to me personally known and being sworn did say that the above testimony is his free and voluntary act in testimony where I have hereunto set my seal this 17th day of March, 1981.

Notary Public for Oregon

My Commission expires 2-24-84

Francis Wilbert Brown March 17, 1981

State of Oregon
County of Coos

Francis Wilbert Brown, Date

This is to certify that on this 16th day of March, 1981, before me appeared Francis Wilbert Brown to me personally known and being sworn did say that the above testimony is his free and voluntary act in testimony where I have hereunto set my seal this 16th day of March, 1981.

Notary Public for Oregon

My Commission Expires 5/28/84

State of Oregon
County of Coos

This is to certify that on this 10th day of March, 1981, before me appeared Ernest A. and Lynne Bussmann to me personally known and being sworn did say that the above testimony is their free and voluntary act in testimony where I have hereunto set my seal this 10th day of March, 1981

Notary Public for Oregon

My Commission Expires 7-30-82

CERTIFICATE OF THE COUNTY COURT

1. Commissioner
2. Commissioner
3. Commissioner

County Assessor

5. Planning Department

6. N/A
Roadmaster

7. Surveyor 27 May 81

7. Chairman, Planning Commission

BUSSMANN SUBDIVISION

SURVEYOR'S AFFIDAVIT

I Louis B Prahar, being duly sworn upon oath that I am a registered professional land surveyor, that I have correctly surveyed the following tract of land to wit: A parcel of land in the SE1/4 of Section 35, Township 29 South and Government Lots 1&2, Section 2, Township 30 South, Range 15 West of the Willamette Meridian, more particularly described as follows: Beginning at the Southeast Corner of said Section 35, thence proceeding N89°40'46"W along the Township Line between said Townships 29&30 a distance of 2950 feet to the true point of beginning; thence N1°44'59"W a distance of 1004.10 feet; thence N89°40'19"W a distance of 989.56 feet; thence S48°36'23"W, a distance of 200.0 feet; thence S11°16'22"W a distance of 1098.90 feet; thence N89°40'46"W, 163.83 feet; thence S00°48'31"W, a distance of 256.90 feet; thence S89°40'46"E, a distance of 416.0 feet; thence S00°16'34"W, a distance of 674.70 feet to a point on the North R/W line of Lower Fourmile County Road; thence S 57°48'55"E along said North line of said Co Rd, 160.30 feet to a point of curvature of a curve to the left (delta angle = 31°30'06" radius = 266.48 Ft); thence along said curve an arc distance of 144.19 feet; thence S85°45'51"E, a distance of 57.43 feet; thence N00°32'45"E, a distance of 1283.05 feet; thence S89°40'46"E a distance of 387.01 feet; here by returning to the point of beginning; also that I have marked with proper monuments the boundaries of parcels hereon shown; that the initial point is marked with a 2" iron pipe; that this map is drafted to scale, and the figures thereon are the dimensions intended.

Louis B. Prahar

LOUIS B PRAHAR P.L.S. #308

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
LOUIS B. PRAHAR
308

Subscribed and Sworn before me this 9th day of March, 1981

Notary Public for Oregon

My Commission expires 3/19/83

CERTIFICATE OF COUNTY CLERK, Counties of Coos, State of Oregon

I Mary Ann Wilson in and for the said County and state do hereby certify that the within Plat was recorded by me in the Coos County Records in Volume 12 Page 28 of the Coos County Plat Records this 8 day of June, 1981 at 11:45 AM

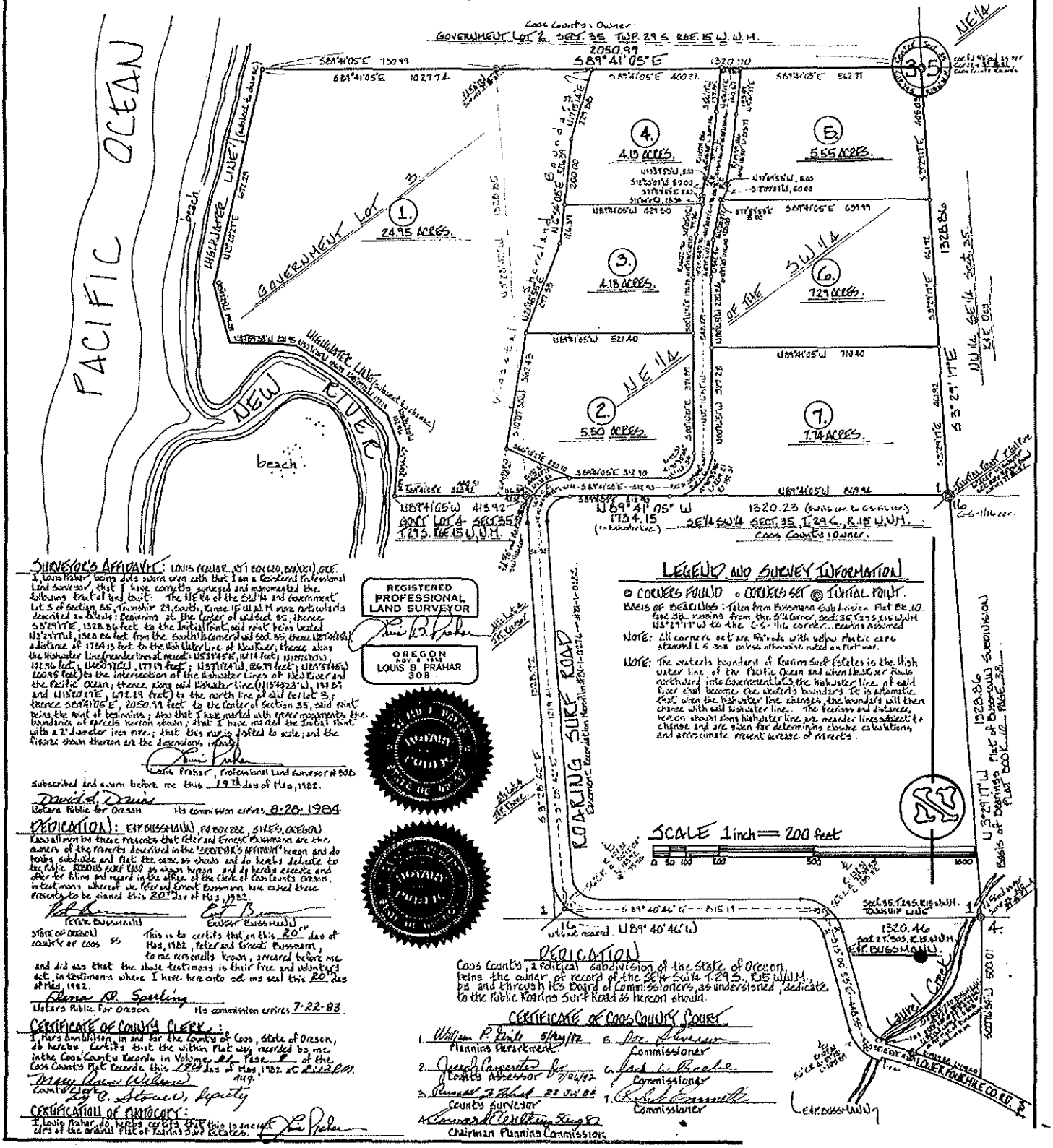
County Clerk by A. Bell, Deputy

CERTIFICATION OF PHOTO COPY:
I, LOUIS B. PRAHAR, DO HEREBY CERTIFY THAT THIS PHOTO COPY IS AN EXACT COPY OF THE FINAL PLAT OF BUSSMANN SUBDIVISION.

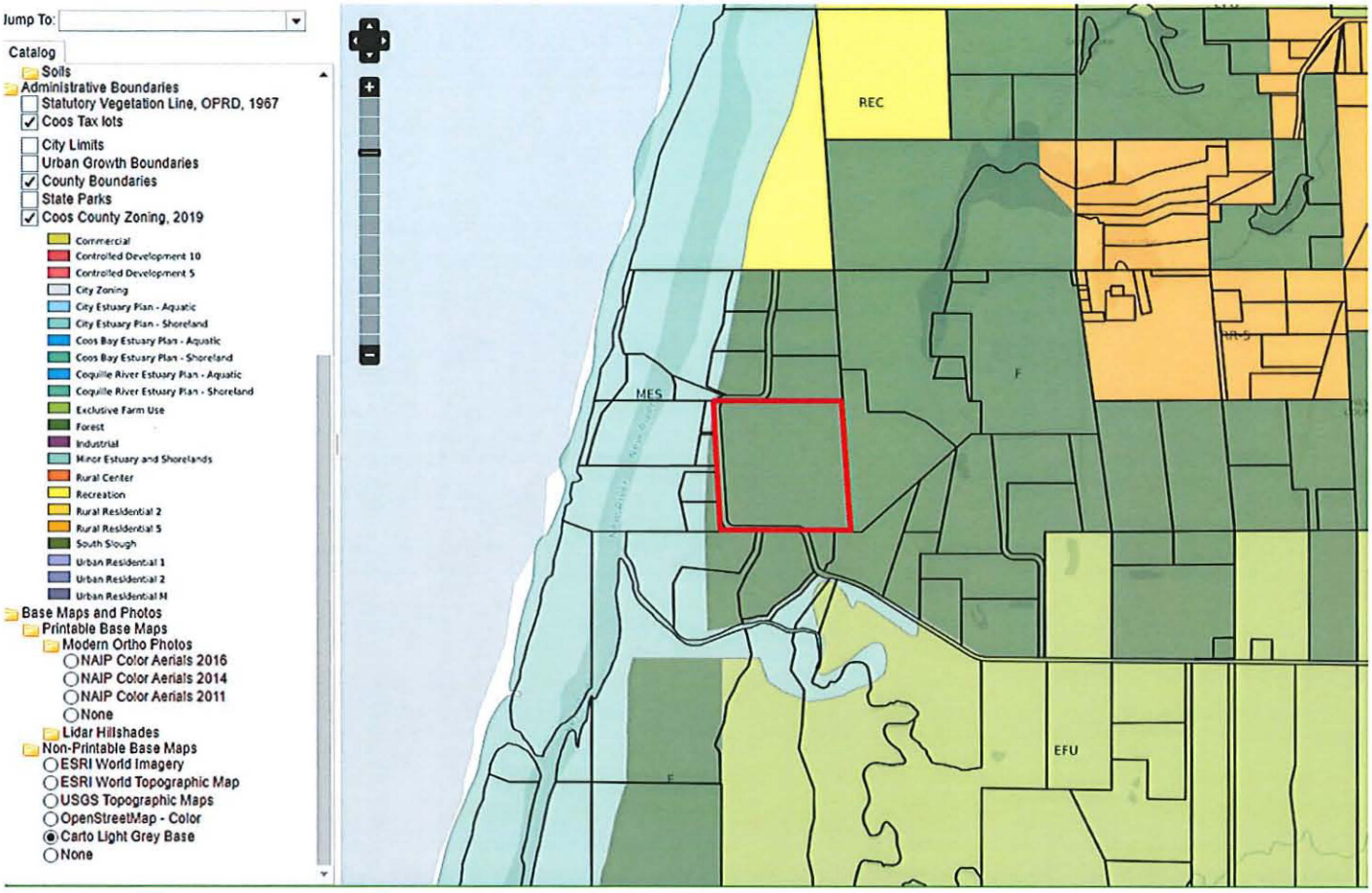
Louis B. Prahar May 26, 1981
LOUIS B. PRAHAR

Roaring Surf Estates

THE NE 1/4 OF THE SW 1/4 AND GOVERNMENT LOT 3 OF SECTION 35, TWP. 29 S., R. 15 W.W.M.
COUNTY OF COOS, STATE OF OREGON


PACIFIC OCEAN
NEW RIVER
beach
beach
MEAN HIGH TIDE LINE (Indirect by distance)
MEAN HIGH TIDE LINE (Indirect by distance)
GOVERNMENT LOT 3
NE 1/4 OF THE SW 1/4
NE 1/4
SE 1/4 SW 1/4
Coos County Owner
GOVERNMENT LOT 2 SECT. 35 TWP. 29 S. RGE. 15 W. W. M.
2050.99
S89°41'05"E
1320.30
1320.23 (Basis of Bearings)
1754.15 (to Meander line)
SE1/4 SW1/4 SECT. 35, T. 29 S., R. 15 W.W.M.
Coos County Owner.
1. 2.95 ACRES.
2. 5.50 ACRES.
3. 4.18 ACRES.
4. 4.15 ACRES.
5. 5.55 ACRES.
6. 7.29 ACRES.
7. 7.74 ACRES.
ROARING SURF ROAD
Easement Description Herein in Book M-10-0226
SCALE 1 inch = 200 feet
0 80 100 200 500 1000
Sect. 35 T29S R15 W.W.M. TOWNSHIP LINE
1320.46 Sect 2 T30S, R15 W.W.M. E.F. BUSSMANN
Basis of Bearings Plat of Bussmann Subdivision Plat Book 10 Page 32
LOWER FOUR MILE CO. RD.
Laurel Creek
S89°40'46"E 815.19
N89°40'46"W
S89°41'05"E 1320.30
S89°41'05"E 1027.72
S89°41'05"E 400.22
S89°41'05"E 562.71
S89°41'05"E 750.99
N89°41'05"W 415.92
N89°41'05"W 521.40
N89°41'05"W 710.40
N89°41'05"W 869.92
S89°41'05"E 312.10
S89°41'05"E 312.93
S89°41'05"E 609.99
S0°18'55"W 1328.86
S3°29'17"E 1328.86
N3°29'17"W 1328.86
N0°18'55"E 1328.86
N0°18'55"E 500.01
S0°18'55"W 500.01
N89°41'05"W 1328.86
S89°41'05"E 1328.86
S89°41'05"E 1320.30
S89°41'05"E 1320.30
S89°41'05"E 1320.30

Coos County Zoning Map



Subject Property

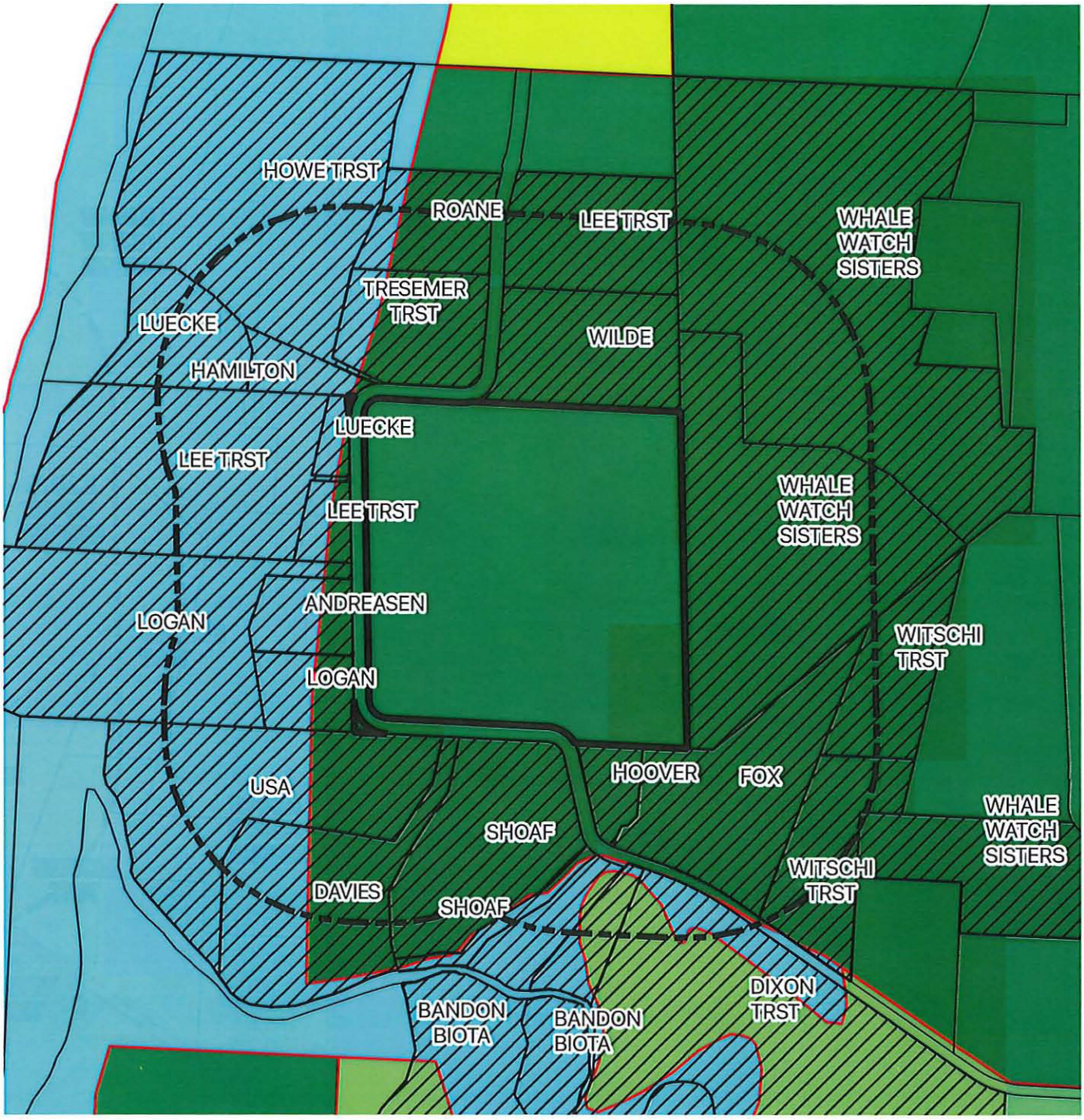
DISCLAIMER The spatial information hosted at this website was derived from a variety of sources. Care was taken in the creation of these themes, but they are provided "as is". The state of Oregon, or any of the data providers cannot accept any responsibility for errors, omissions, or positional accuracy in the digital data or underlying records. There are no warranties, expressed or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying any of these products. However, notification of any errors would be appreciated. The data are clearly not intended to include the authoritative location of property boundaries, the precise shape or contour of the earth or the precise location of fixed works of humans.

N

Printed 02/11/2022

Attachment K

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300



0 500 1,000 ft

750ft Buffer
Subject Property
Adjacent Properties (750 ft)

Coos County Zone District
Exclusive Farm Use
Forest
Minor Estuary and Shorelands
Recreation

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

Attachment L

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Coos County, Oregon

Attachment M
August 5, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

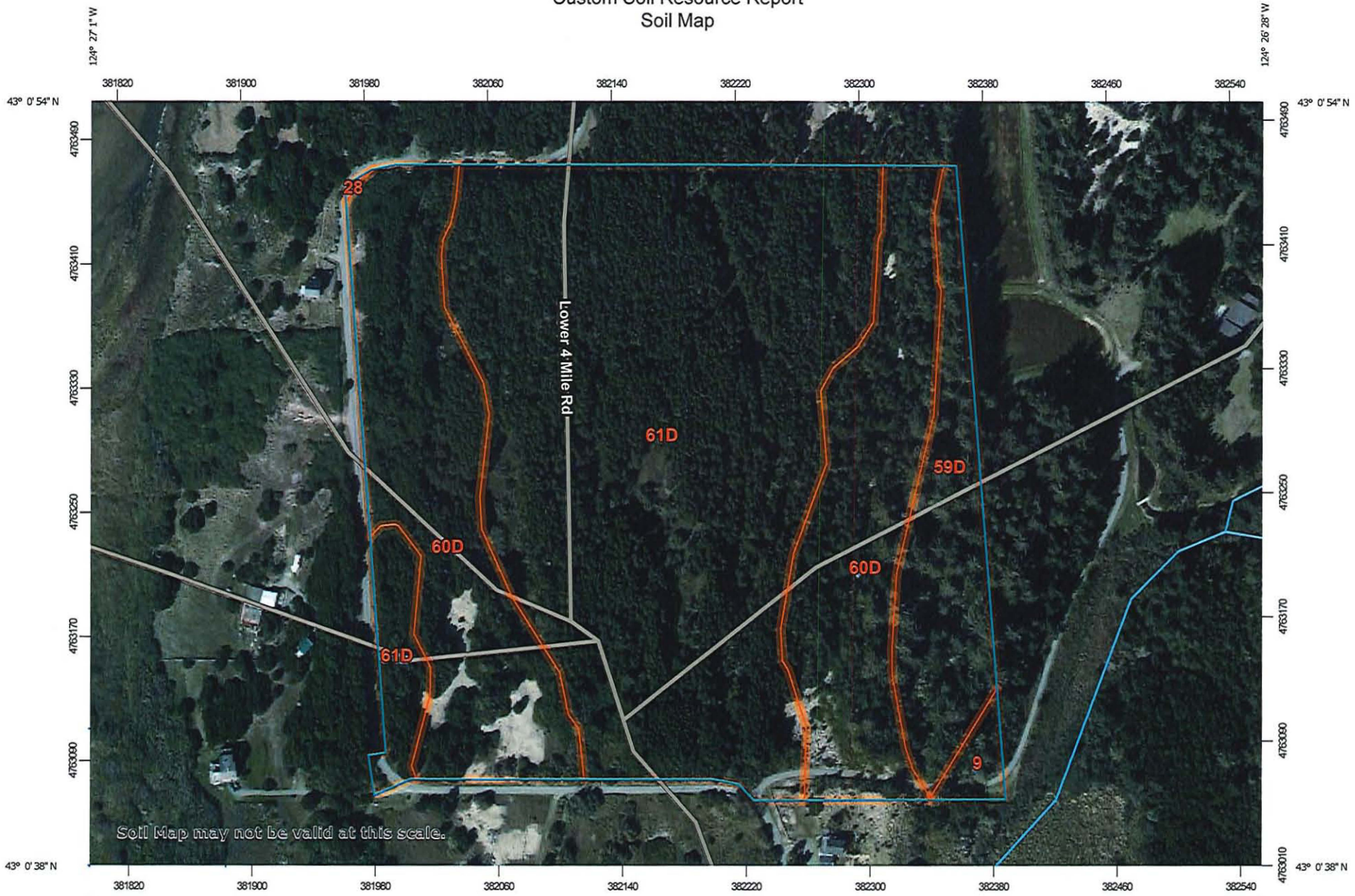
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,470 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.4	1.1%
28	Heceta fine sand	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	22.2	56.2%
Totals for Area of Interest		**39.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Coos County, Oregon

9—Chetco silty clay loam

Map Unit Setting

National map unit symbol: 21rh
Elevation: 0 to 40 feet
Mean annual precipitation: 50 to 80 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chetco and similar soils: 75 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chetco

Setting

Landform: Deltas, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: silty clay loam
H2 - 10 to 24 inches: silty clay
H3 - 24 to 60 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Forage suitability group: Very Poorly Drained (G004AY019OR)
Other vegetative classification: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

Minor Components

Coquille

Percent of map unit: 9 percent
Landform: Flood plains

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

Langlois

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

28—Heceta fine sand

Map Unit Setting

National map unit symbol: 21n8
Elevation: 0 to 80 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Heceta and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heceta

Setting

Landform: Deflation basins on dunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

H1 - 0 to 4 inches: fine sand
H2 - 4 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Poorly Drained (G004AY018OR)
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

59D—Waldport fine sand, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: 21q8
Elevation: 0 to 120 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Waldport and similar soils: 75 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Waldport

Setting

Landform: Dunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 7 inches: fine sand
H2 - 7 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Heceta

Percent of map unit: 9 percent
Landform: Deflation basins on dunes
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

60D—Waldport-Dune land complex, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: 21qd
Elevation: 0 to 80 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 180 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Waldport and similar soils: 60 percent
Dune land: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Waldport

Setting

Landform: Dunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 4 inches: fine sand
H2 - 4 to 60 inches: fine sand

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Dune Land

Setting

Landform: Dunes on marine terraces
Parent material: Eolian sands

Typical profile

C - 0 to 60 inches: fine sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Heceta

Percent of map unit: 10 percent
Landform: Deflation basins on dunes
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

61D—Waldport-Heceta fine sands, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: 21qf
Elevation: 0 to 80 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Waldport and similar soils: 50 percent
Heceta and similar soils: 30 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Waldport

Setting

Landform: Dunes

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 7 inches: fine sand
H2 - 7 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Heceta

Setting

Landform: Interdunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

H1 - 0 to 4 inches: fine sand
H2 - 4 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Poorly Drained (G004AY018OR)
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

Minor Components

Yaquina

Percent of map unit: 7 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Somewhat Poorly Drained (G004AY017OR)
Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

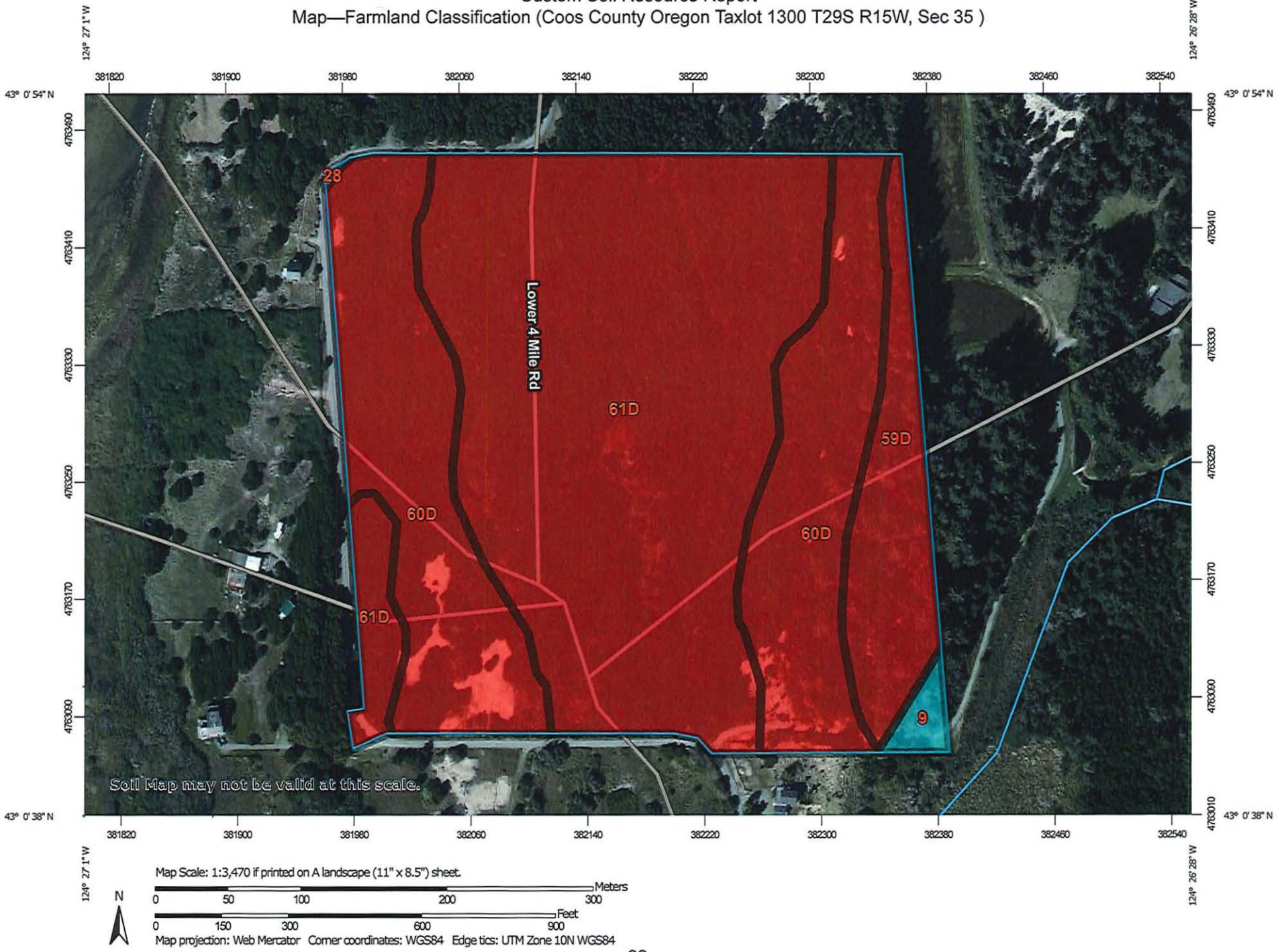
Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report

Map—Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

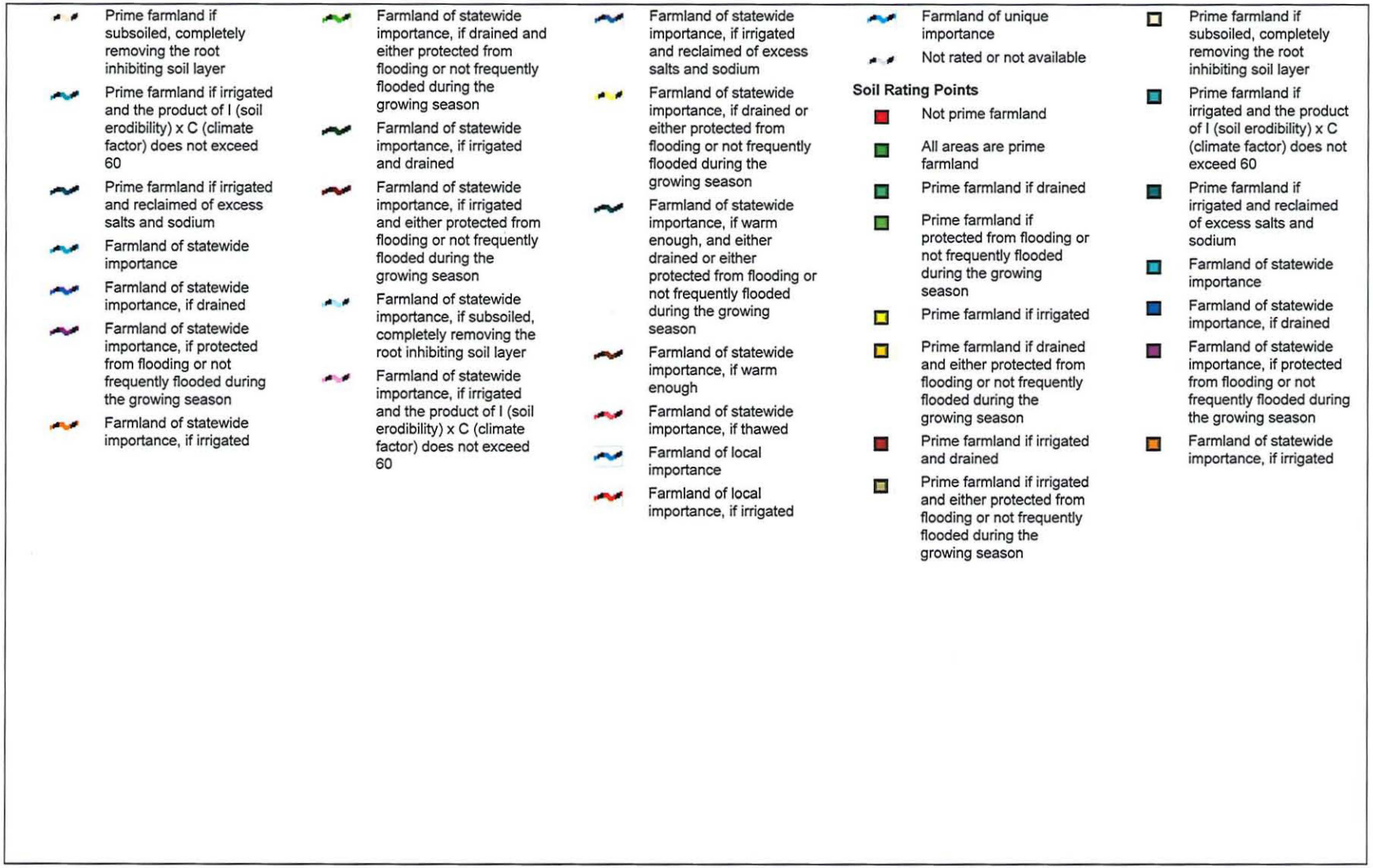
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	Farmland of statewide importance	0.4	1.1%
28	Heceta fine sand	Farmland of statewide importance	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	Not prime farmland	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	Not prime farmland	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	Not prime farmland	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding thematic map. Therefore, the "aggregation method" for any attribute of a map unit is referred to as "No Aggregation Necessary".

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

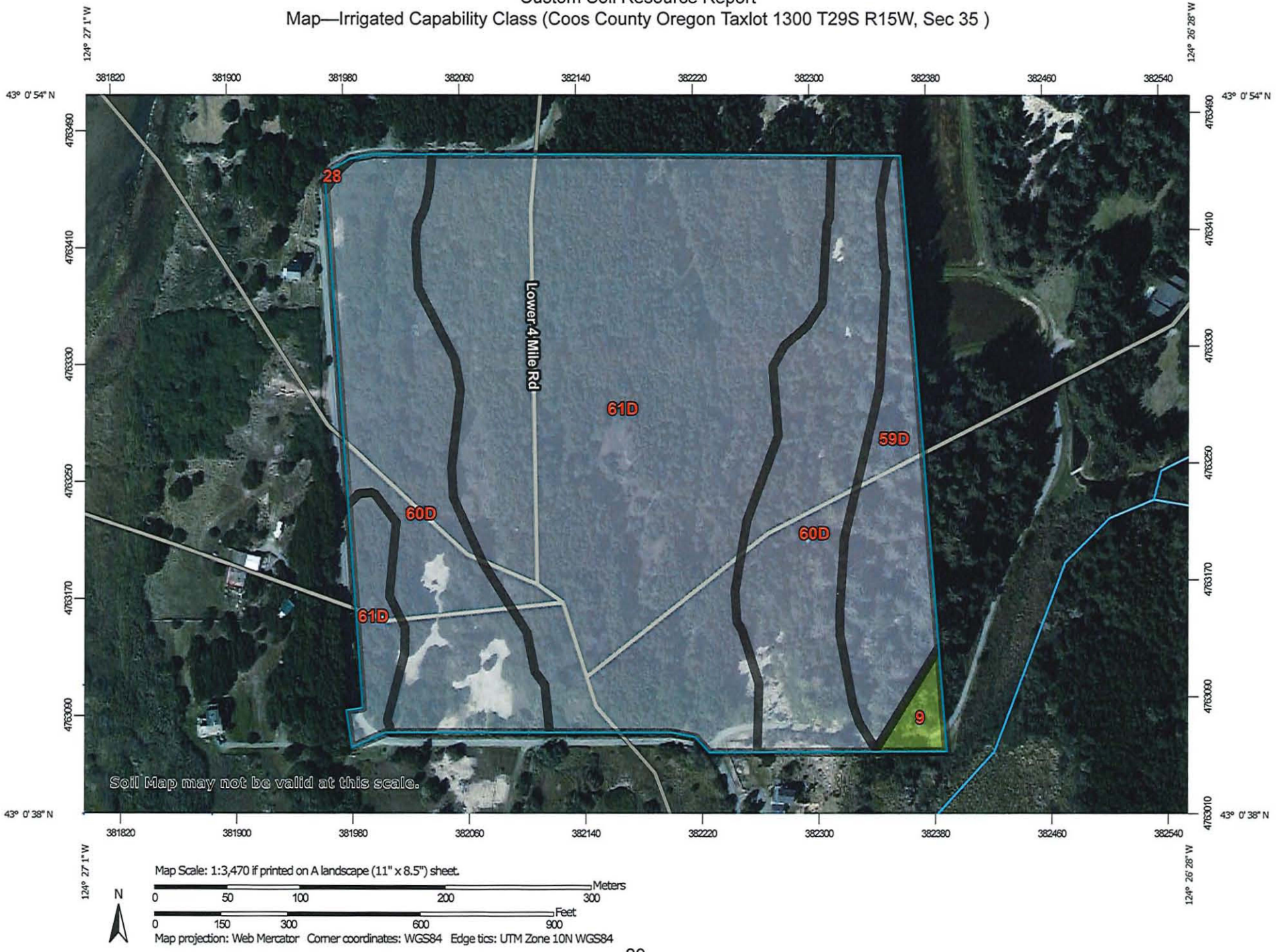
Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report

Map—Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	4	0.4	1.1%
28	Heceta fine sand	4	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

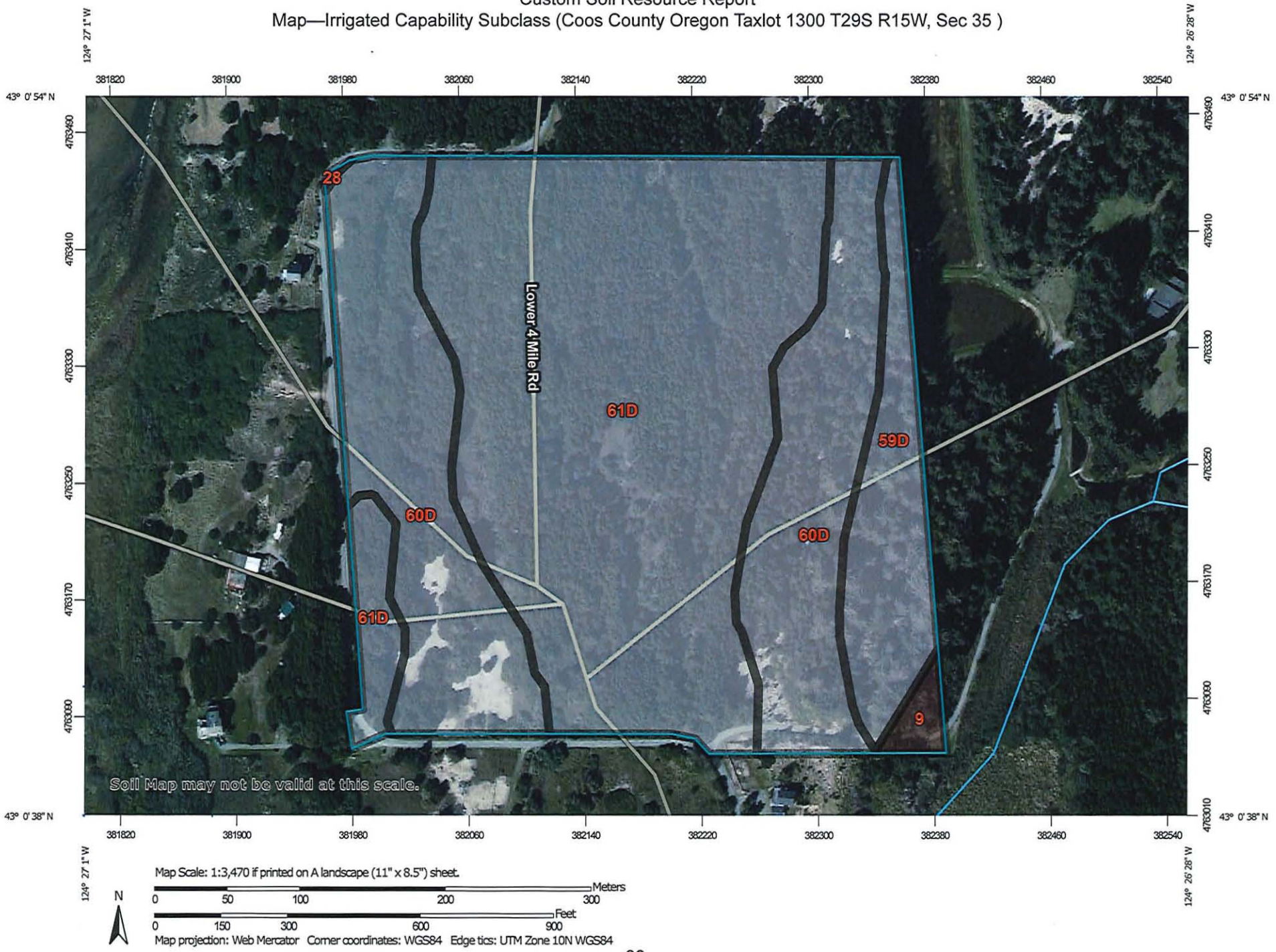
In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability subclasses are soil groups within one capability class. They are designated by adding a small letter, "e," "w," "s," or "c," to the class numeral, for example, 2e. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); "s" shows that the soil is limited mainly because it is shallow, droughty, or stony; and "c," used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by "w," "s," or "c" because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Custom Soil Resource Report

Map—Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Lines
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Points
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	w	0.4	1.1%
28	Heceta fine sand	w	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

National Commodity Crop Productivity Index is a method of arraying the soils of the United States for non-irrigated commodity crop production based on their inherent soil properties. This version features a separate index for soybeans. In the past, soybeans and corn were considered together. The rating a soil is assigned is the highest one of four basic crop group indices, which are based on the climate where the crop is typically grown. Cooler climates are represented by winter wheat, moderate climates are represented by corn and soybeans, and warmer climates are represented by cotton. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_050734.pdf)

The interpretation is applicable to both heavily populated and sparsely populated areas. Ratings are for soils in their present condition. The present land use is not considered in the ratings.

Ratings are based on properties and qualities to the depth normally observed during soil mapping (approximately 6 feet). Soil, site, and climate properties that influence the growth of crops are major considerations. Soil productivity is influenced by many soil properties. An ideal soil will store adequate amounts of water to nurture the crop between rains. This soil will have a near-neutral pH, will store nutrients, and lack toxic materials. The soil will have no barriers, either physical or chemical, to root growth. Water and gas transmission through the soil will be sufficient to maintain both water and oxygen at sufficient levels in the root zone. The soil will not be saturated with water during the growing season to the point that root growth is inhibited. The soil will not be subject to excessive flooding or ponding during the growing season. Slope is an important consideration because it affects erosion by water, runoff, and the operation of equipment. The climate must provide adequate water and heat to allow the desired crop to mature. A soil that differs from the ideal in any of these features will have lower inherent productivity for a particular crop. The further a soil differs from ideality in any one or all of the factors that determine inherent productivity, the lower its inherent productivity will be.

The ratings are both verbal and numerical. Rating class terms indicate the estimated productivity which is determined by all of the soil, site, and climatic features that affect crop productivity. "High inherent productivity" indicates that the soil, site, and climate have features that are very favorable for crop production. High yields and low risk of crop failure can be expected if a high level of management is

employed. "Moderately high inherent productivity" indicates that the soil has features that are generally quite favorable for crop production. Good yields and moderately low risk of crop failure can be expected. "Moderate inherent productivity" indicates that the soil has features that are generally favorable for crop production. Good yields and moderate risk of crop failure can be expected. "Moderately low inherent productivity" indicates that the soil has features that are generally not favorable for crop production. Low yields and moderately high risk of crop failure can be expected. "Low inherent productivity" indicates that the soil has one or more features that are unfavorable for crop production. Low yields and high risk of crop failure can be expected.

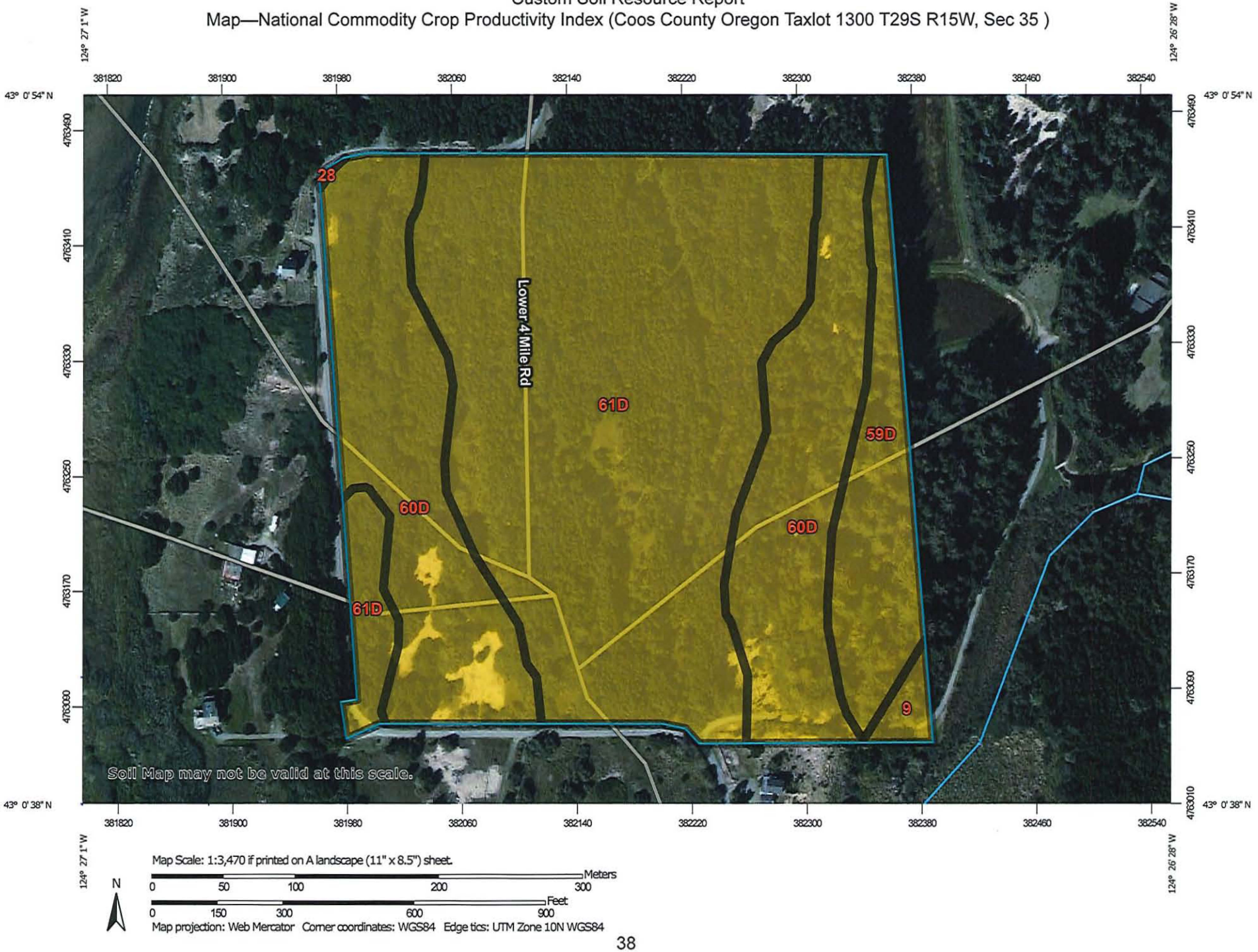
Numerical ratings indicate the overall productivity of the soil. The ratings are shown in decimal fractions ranging from 1.00 to 0.01. They indicate gradations between the point at which the combination of soil, site, and climate features has the greatest positive impact on inherent productivity (1.00) and the point at which the soil features are very unfavorable (0.01).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report

Map—National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Low inherent productivity
- Moderately low inherent productivity
- Moderate inherent productivity
- Moderately high inherent productivity
- High inherent productivity
- Not rated or not available

Soil Rating Lines

- Low inherent productivity
- Moderately low inherent productivity
- Moderate inherent productivity
- Moderately high inherent productivity
- High inherent productivity
- Not rated or not available

Soil Rating Points

- Low inherent productivity
- Moderately low inherent productivity
- Moderate inherent productivity
- Moderately high inherent productivity
- High inherent productivity
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.322			0.4	1.1%
28	Heceta fine sand	0.188			0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	0.284			3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	0.209			13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	0.249			22.2	56.2%
Totals for Area of Interest					**39.6**	**100.0%**

Rating	Acres in AOI	Percent of AOI
0.249	22.2	56.2%
0.209	13.3	33.5%
0.284	3.6	9.2%
0.322	0.4	1.1%
0.188	0.0	0.0%
Totals for Area of Interest	**39.6**	**100.0%**

Rating Options—National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

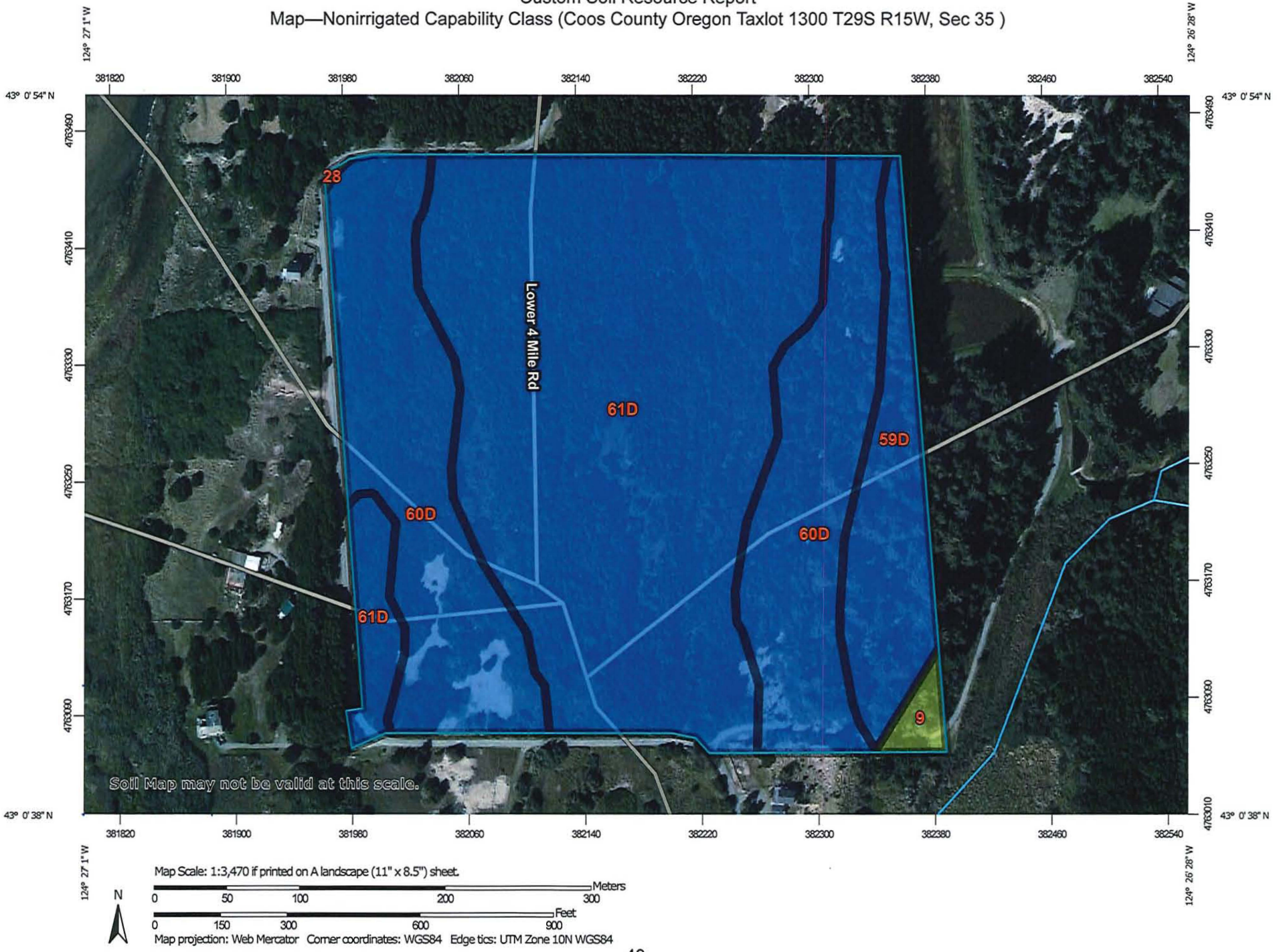
Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report

Map—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	4	0.4	1.1%
28	Heceta fine sand	4	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	7	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	7	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	7	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

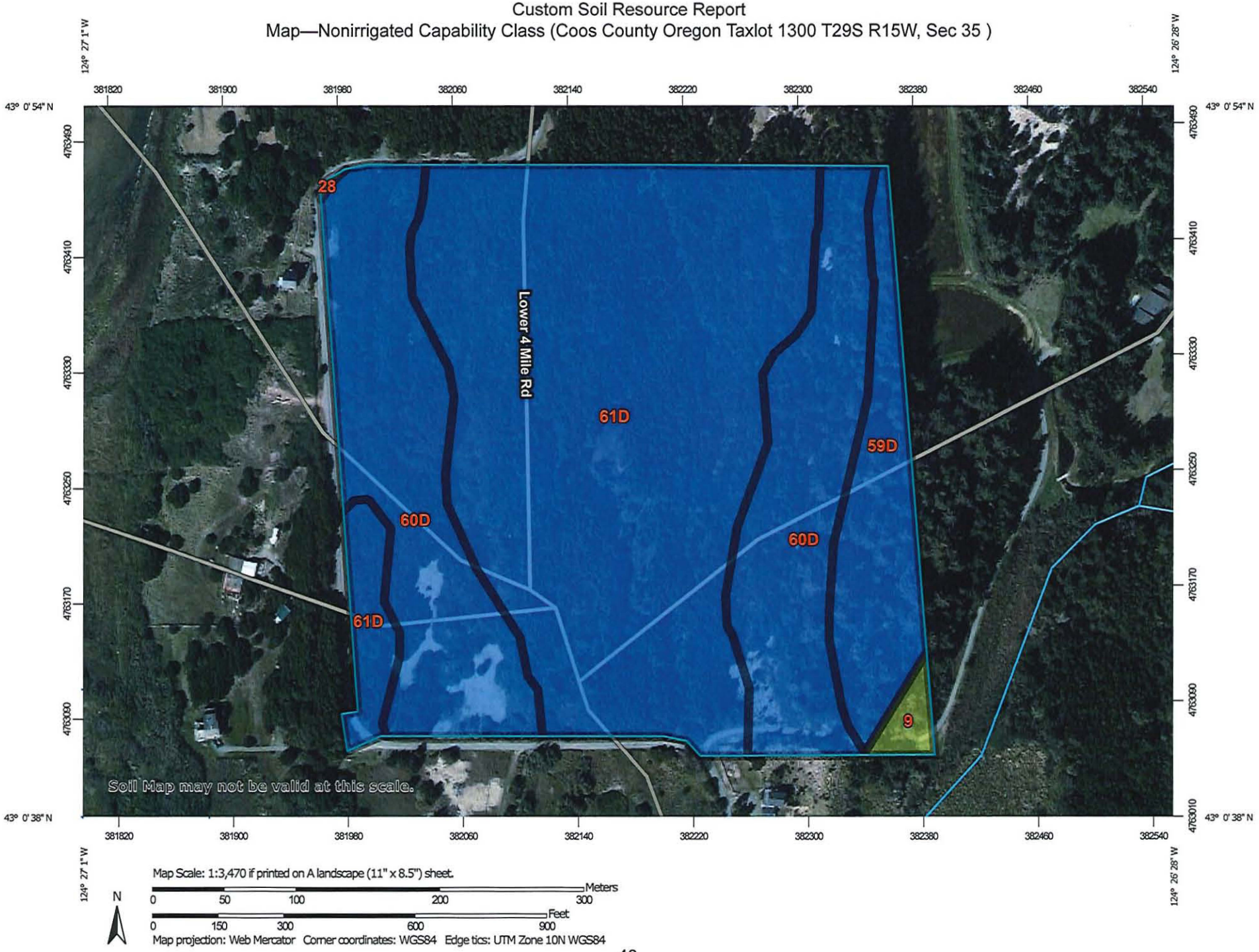
Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report
Map—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	4	0.4	1.1%
28	Heceta fine sand	4	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	7	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	7	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	7	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

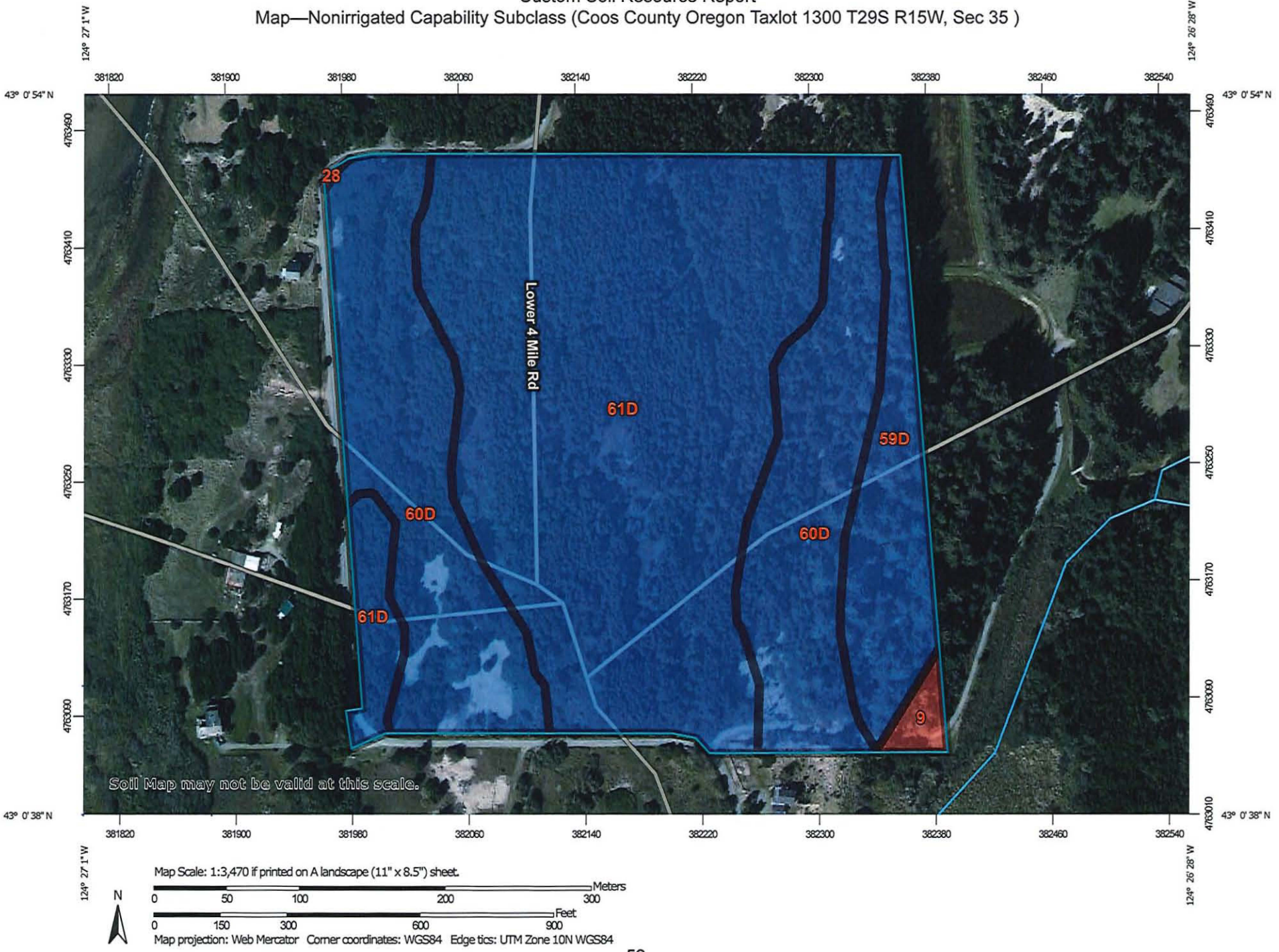
Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability subclasses are soil groups within one capability class. They are designated by adding a small letter, "e," "w," "s," or "c," to the class numeral, for example, 2e. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); "s" shows that the soil is limited mainly because it is shallow, droughty, or stony; and "c," used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by "w," "s," or "c" because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Custom Soil Resource Report
Map—Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Lines
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Points
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	w	0.4	1.1%
28	Heceta fine sand	w	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	e	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	e	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	e	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Vegetative Productivity

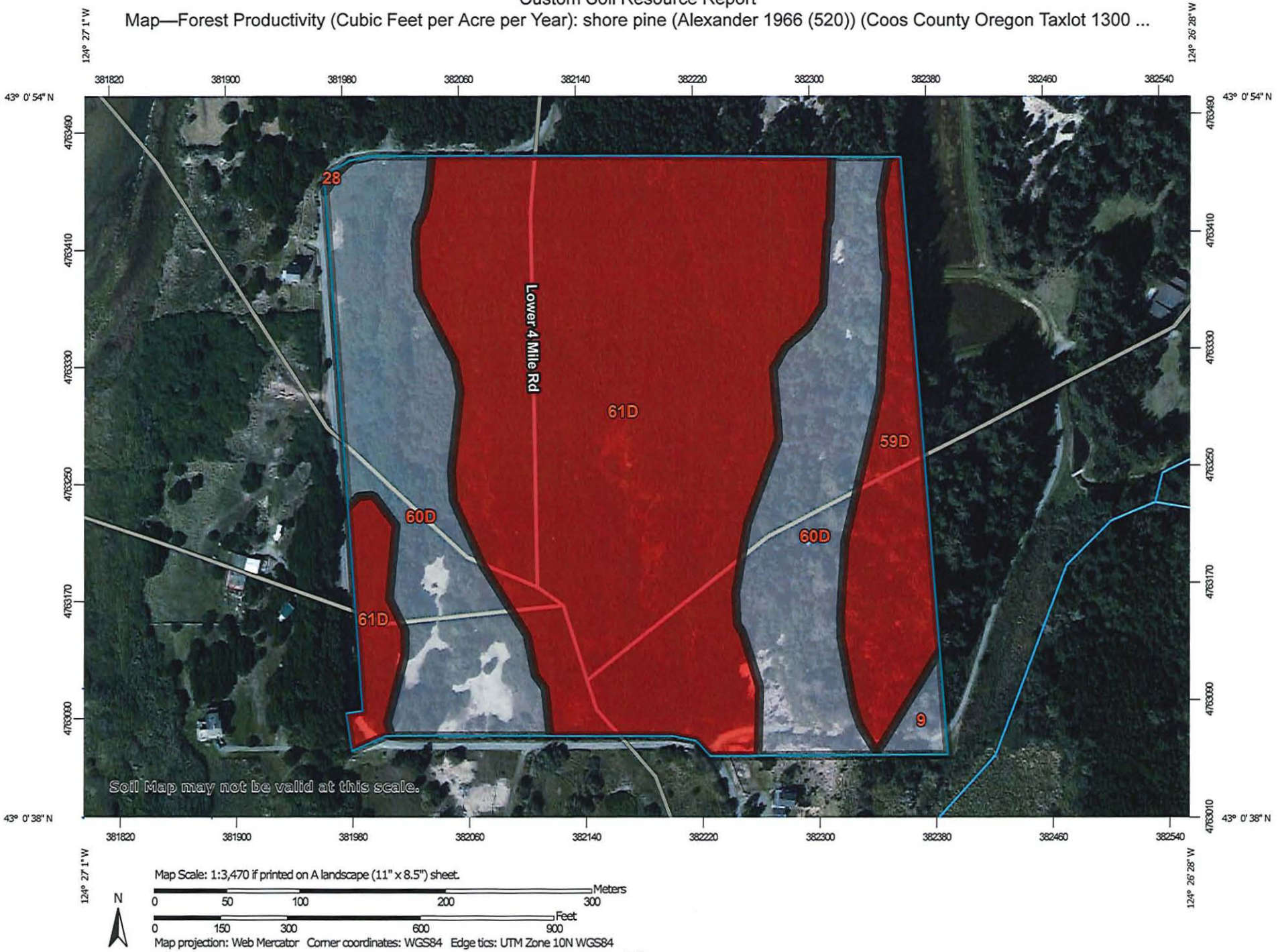
Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Forest productivity is the volume of wood fiber that is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this attribute, only the representative value is used.

Map—Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 ...



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 86.00

Not rated or not available

Soil Rating Lines

= 86.00

Not rated or not available

Soil Rating Points

= 86.00

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam		0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	86.00	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	86.00	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Tree: shore pine

Site Index Base: Alexander 1966 (520)

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned

in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

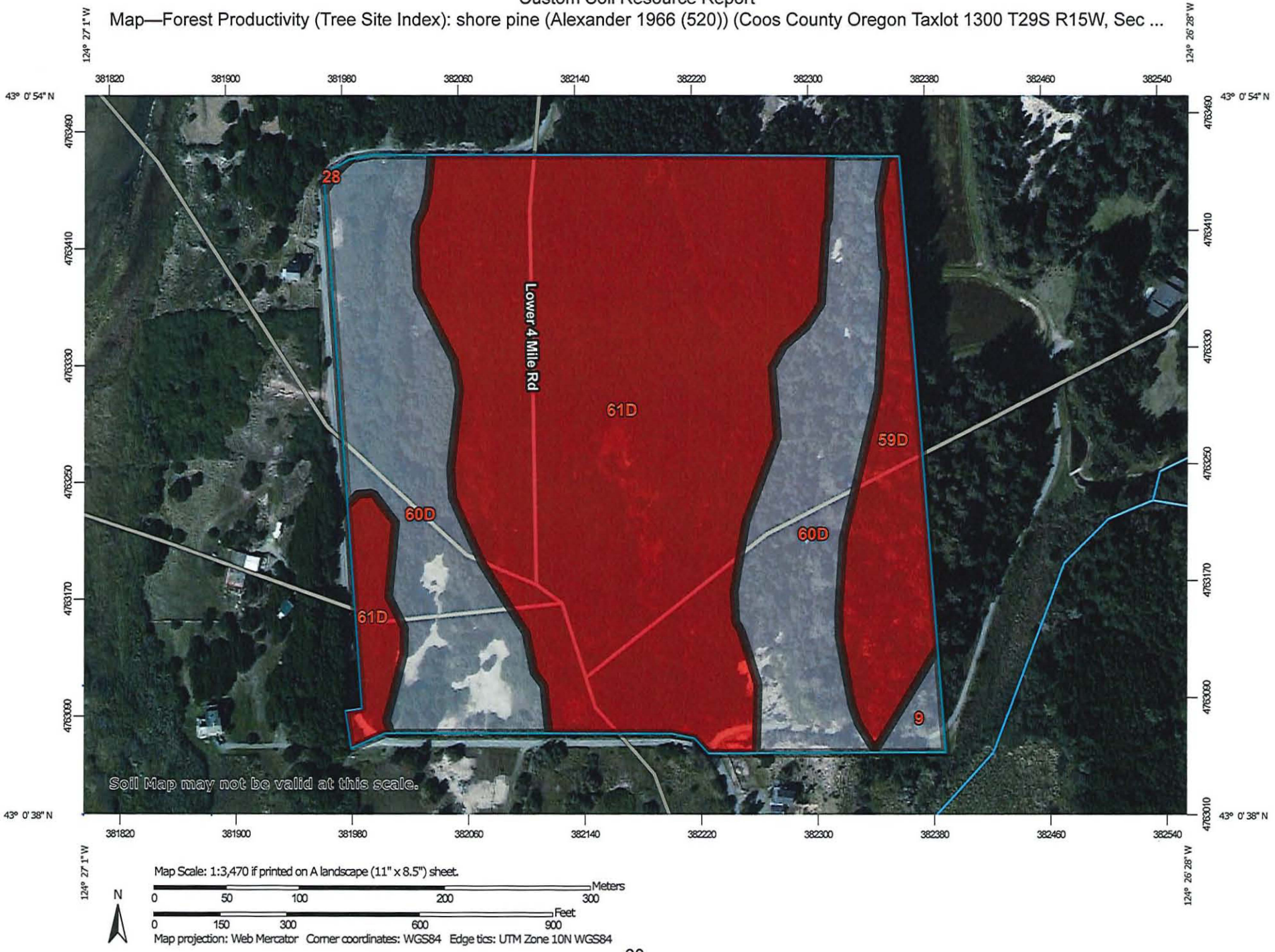
This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The "site index" is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this attribute, only the representative value is used.

Map—Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec ...



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 92

Not rated or not available

Soil Rating Lines

= 92

Not rated or not available

Soil Rating Points

= 92

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating (feet)	Acres in AOI	Percent of AOI
9	Chetco silty clay loam		0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	92	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	92	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Units of Measure: feet

Tree: shore pine

Site Index Base: Alexander 1966 (520)

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-

break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

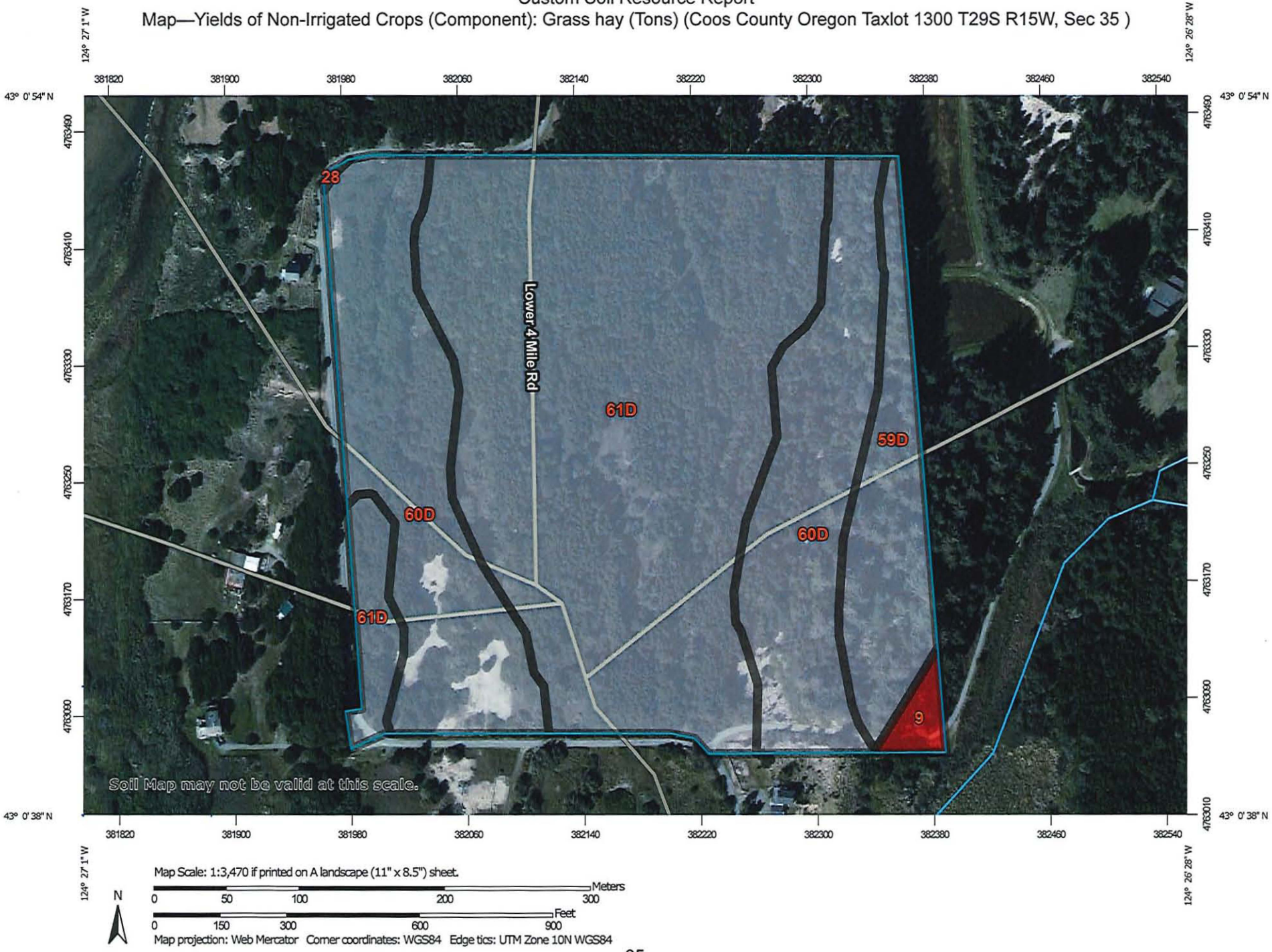
The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of

crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 2.35

Not rated or not available

Soil Rating Lines

= 2.35

Not rated or not available

Soil Rating Points

= 2.35

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	2.35	0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Grass hay

Yield Units: Tons

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

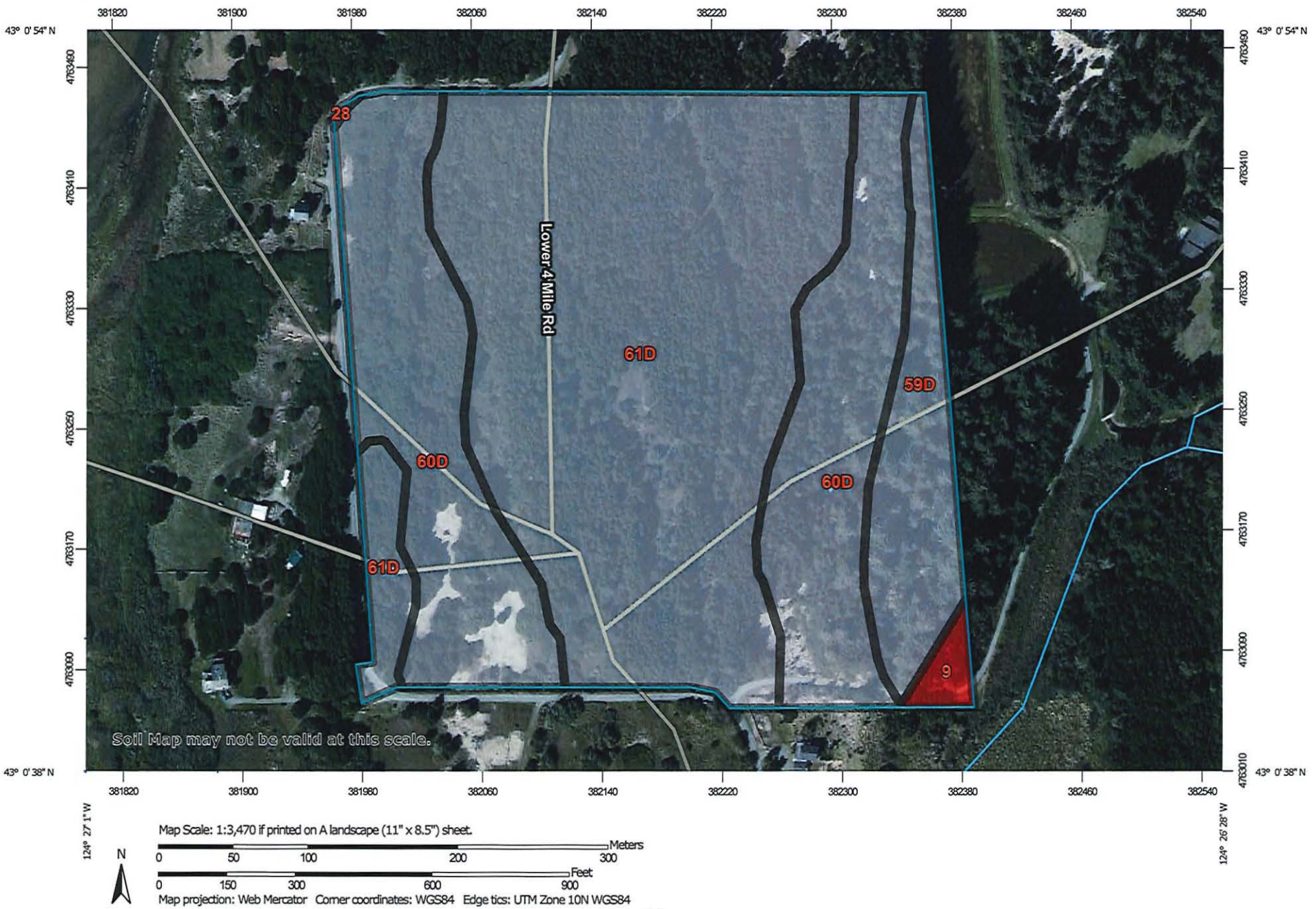
The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 0.52

Not rated or not available

Soil Rating Lines

= 0.52

Not rated or not available

Soil Rating Points

= 0.52

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.52	0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Grass-legume hay

Yield Units: Tons

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

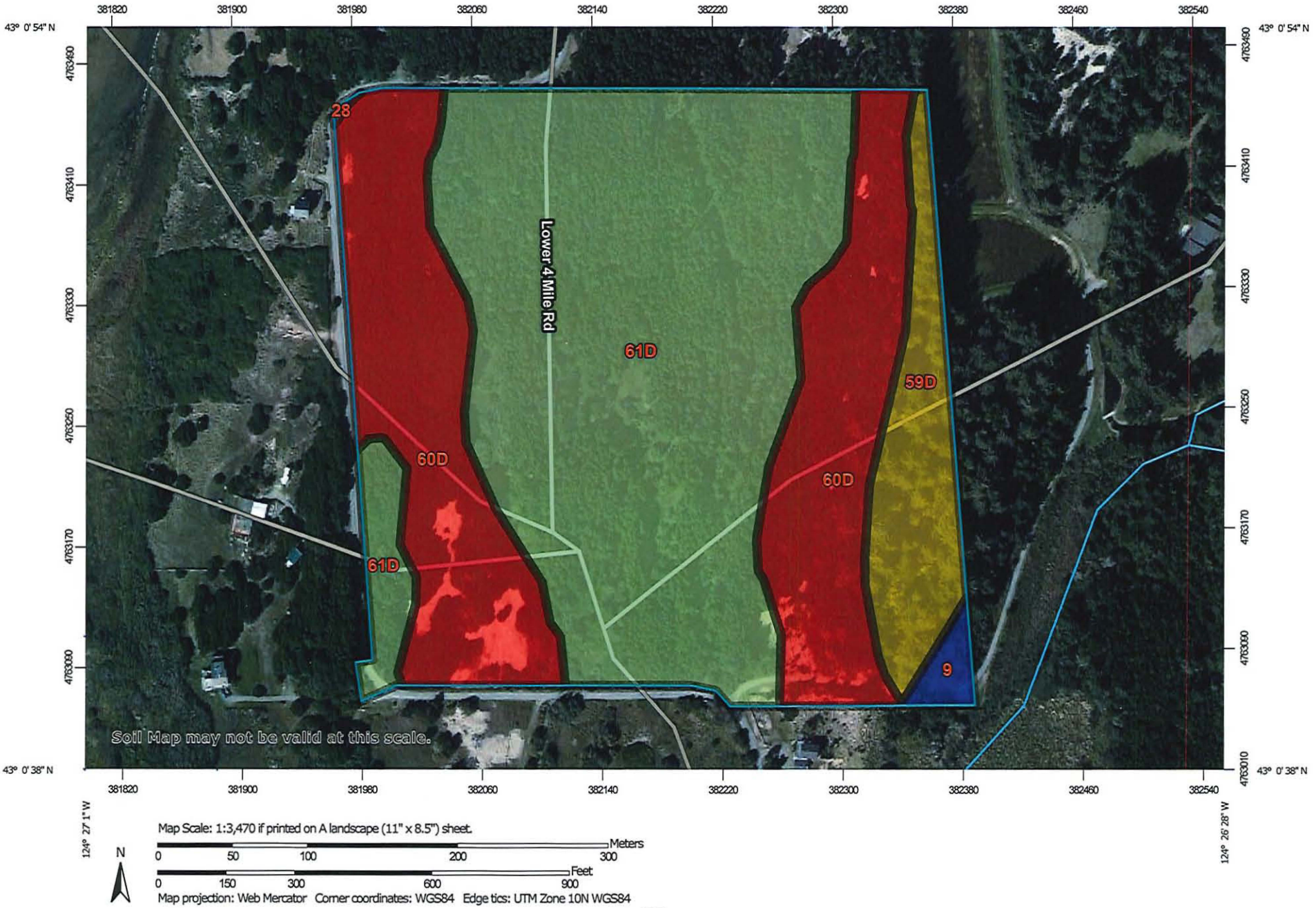
The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Lines
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Points
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	2.51	0.4	1.1%
28	Heceta fine sand	2.00	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	0.21	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	0.20	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	0.93	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Pasture

Yield Units: AUM

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

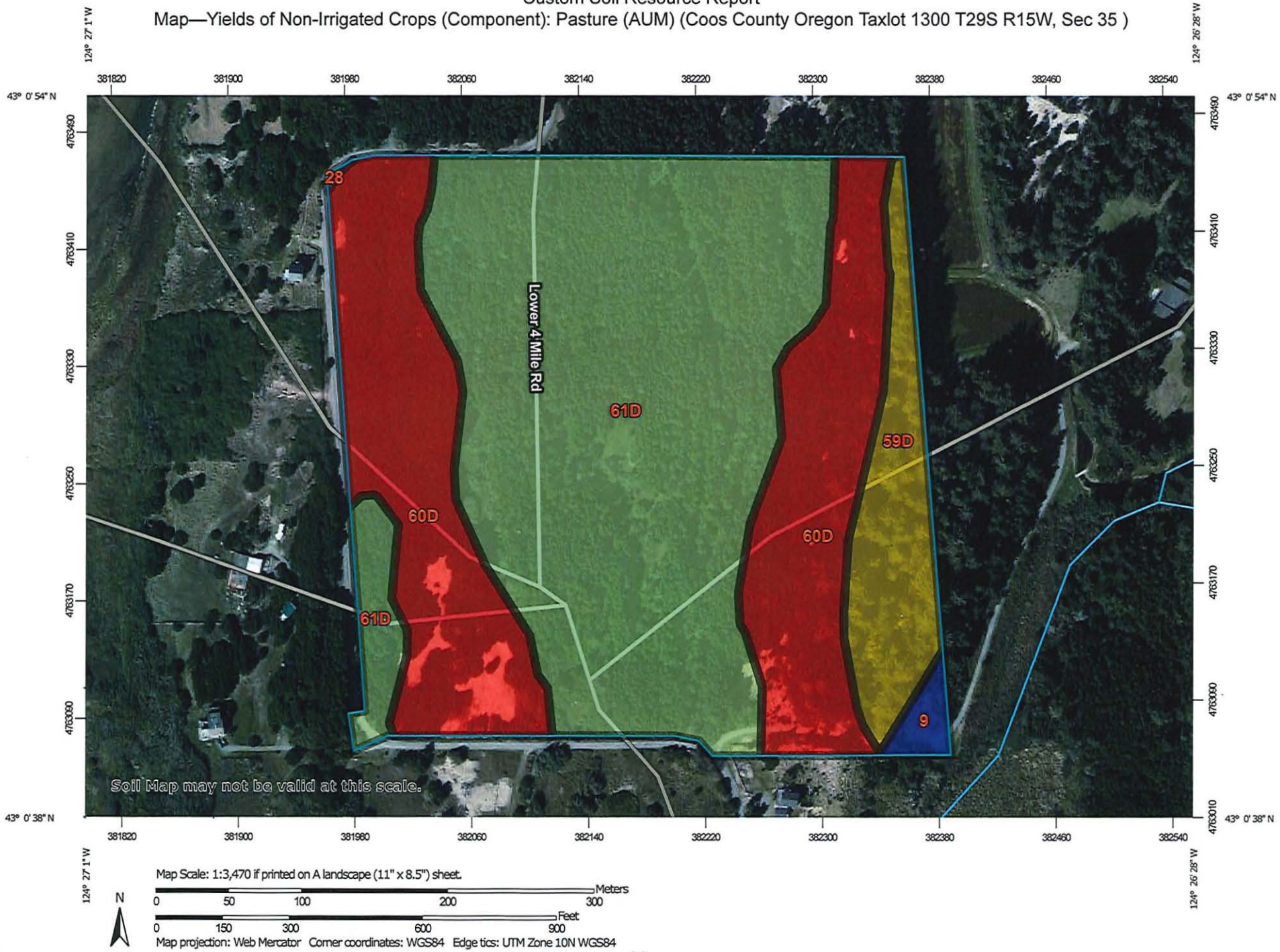
The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Lines
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Points
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	2.51	0.4	1.1%
28	Heceta fine sand	2.00	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	0.21	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	0.20	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	0.93	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Pasture

Yield Units: AUM

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Land Capability Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion.

Report—Land Capability Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land Capability Classification–Coos County, Oregon				
Map unit symbol and name	Pct. of map unit	Component name	Land Capability Subclass	
			Nonirrigated	Irrigated
9—Chetco silty clay loam				
	75	Chetco	4w	4w
	9	Coquille	4w	4w
	8	Langlois	4w	4w
28—Heceta fine sand				
	80	Heceta	4w	4w
59D—Waldport fine sand, 0 to 30 percent slopes				
	75	Waldport	7e	—
	9	Heceta	4w	4w

Land Capability Classification–Coos County, Oregon				
Map unit symbol and name	Pct. of map unit	Component name	Land Capability Subclass	
			Nonirrigated	Irrigated
60D—Waldport-Dune land complex, 12 to 30 percent slopes				
	60	Waldport	7e	—
	30	Dune land	8	—
	10	Heceta	4w	4w
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes				
	50	Waldport	7e	—
	30	Heceta	4w	4w
	7	Yaquina	4w	—

Vegetative Productivity

This folder contains a collection of tabular reports that present vegetative productivity data. The reports (tables) include all selected map units and components for each map unit. Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Forestland Productivity with Site Index Base (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

This table is designed to assist forestland owners or managers plan the use of soils for wood crops. It provides the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume growth rate number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. *Common trees* are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *Base Age* is the age of trees in years on which the site index is based. "TA" indicates total age. "BH" indicates breast height age. "N/A" indicates that base age is not applicable.

The *Site Index Curve Number* is listed in the National Register of Site Index Curves. It identifies the site index curve used to determine the site index.

The *Volume Growth Rate* is the maximum wood volume growth rate likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	**Common trees**	**Site Index**	**Base Age**	**Site Index Curve Number**	**Volume Growth Rate (CMAI)**
		ft	*yrs*		*cu ft/ac/yr*
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

Forestland Productivity with Site Index Base (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

This table is designed to assist forestland owners or managers plan the use of soils for wood crops. It provides the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume growth rate number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. *Common trees* are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *Base Age* is the age of trees in years on which the site index is based. "TA" indicates total age. "BH" indicates breast height age. "N/A" indicates that base age is not applicable.

The *Site Index Curve Number* is listed in the National Register of Site Index Curves. It identifies the site index curve used to determine the site index.

The *Volume Growth Rate* is the maximum wood volume growth rate likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	**Common trees**	**Site Index**	**Base Age**	**Site Index Curve Number**	**Volume Growth Rate (CMAI)**
		ft	*yrs*		*cu ft/ac/yr*
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

Forestland Productivity (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

This table can help forestland owners or managers plan the use of soils for wood crops. It shows the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Report—Forestland Productivity (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Forestland Productivity–Coos County, Oregon				
Map unit symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site Index	Volume of wood fiber	
			Cu ft/ac/yr	
9—Chetco silty clay loam				
Chetco	—	—	—	—
Coquille	—	—	—	—
Langlois	—	—	—	—
28—Heceta fine sand				
Heceta	—	—	—	—

Forestland Productivity–Coos County, Oregon				
Map unit symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site Index	Volume of wood fiber	
			Cu ft/ac/yr	
59D—Waldport fine sand, 0 to 30 percent slopes				
Waldport	Shore pine	92	86.00	Shore pine, Sitka spruce
	Sitka spruce	—	—	
	Western hemlock	—	—	
Heceta	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes				
Waldport	—	—	—	—
Dune land	—	—	—	—
Heceta	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes				
Waldport	Shore pine	92	86.00	Shore pine, Sitka spruce
	Sitka spruce	—	—	
	Western hemlock	—	—	
Heceta	—	—	—	—
Yaquina	Shore pine	—	—	Sitka spruce, Western hemlock
	Sitka spruce	85	100.00	

Irrigated and Nonirrigated Yields by Map Unit Component (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The average yields per acre that can be expected of the principal crops under a high level of management are shown in this table. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

If yields of irrigated crops are given, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

Reference:
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

Irrigated and Nonirrigated Yields by Map Unit Component–Coos County, Oregon										
Map symbol and soil name	Land capability		Cranberries		Grass hay		Grass-legume hay		Pasture	
	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated
			Tons		*Tons*		*Tons*		*AUM*	
9—Chetco silty clay loam										
Chetco	4w	4w	—	—	3.50	2.00	—	—	6.0	1.5
Coquille	4w	4w	—	—	3.50	2.00	—	—	10.0	6.0
Langlois	4w	4w	—	—	10.00	6.00	—	6.00	12.0	8.0
28—Heceta fine sand										
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
59D—Waldport fine sand, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Dune land	—	8	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
Yaquina	—	4w	—	—	—	—	—	—	—	3.0

Irrigated Yields by Map Unit Component (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The average yields per acre that can be expected of the principal crops under a high level of management are shown in this table. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

If yields of irrigated crops are given, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

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Heceta	4w	5.00	—	—	4.0
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Nonirrigated Yields by Map Unit Component (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

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59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	7e	—	—	—	—
Heceta	4w	—	—	—	2.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	7e	—	—	—	—
Dune land	8	—	—	—	—
Heceta	4w	—	—	—	2.0

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the following National Soil Survey Handbook link: "National Soil Survey Handbook."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

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Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology)

from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained.* These classes are defined in the "Soil Survey Manual."

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left

behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2
Low: 0.2 to 0.4
Moderately low: 0.4 to 0.75
Moderate: 0.75 to 1.25
Moderately high: 1.25 to 1.75
High: 1.75 to 2.5
Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can

occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or "washed out" from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and

promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where "Rock outcrop" is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which "severely eroded," "very severely eroded," or "gullied" is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1
Moderate: 13-30:1
Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated
Prismatic: Vertically elongated and having flat tops
Columnar: Vertically elongated and having rounded tops
Angular blocky: Having faces that intersect at sharp angles (planes)
Subangular blocky: Having subrounded and planar faces (no sharp angles)
Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand
Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field

generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

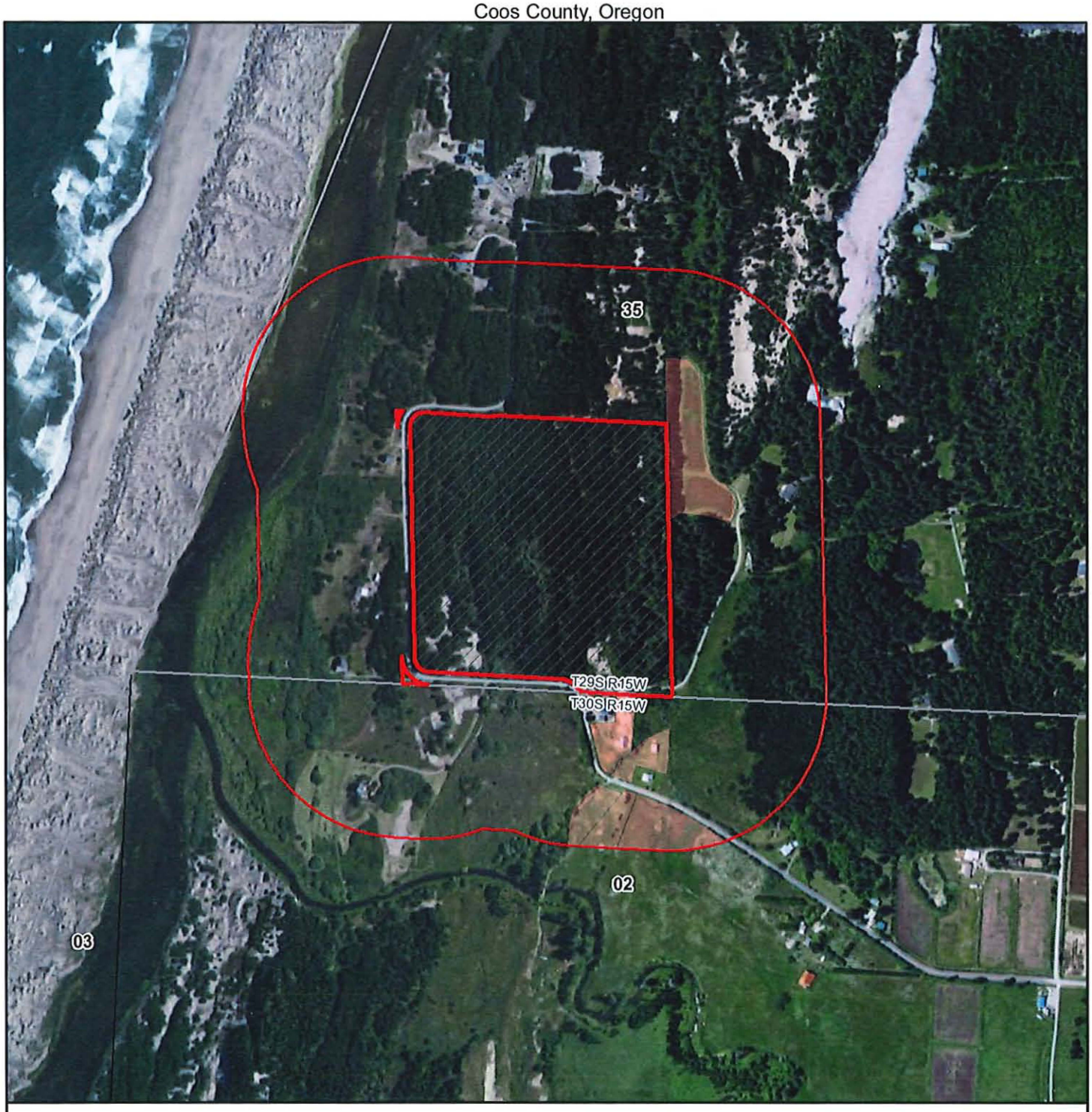
The uprooting and tipping over of trees by the wind.

Farm Unlimited
P.O. Box 761
North Bend, OR 97459

Subject Property
Visual Analysis of Land Use

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Subject Property
750' Buffer Polygon - 133 acres
Observed Farm/Forest Land Use
within 750' of subject property - 9.5 acres
(Approximately 7% of Buffer Area)

N
1 " = 703 ft.
Created: 2/7/2022
by Barbara McIntosh

Parcel data derived from Coos County Assessors
Parcel dataset dated April 2021
Ortholmagery: 2020 NAIP

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Attachment N

NRCS Excerpt

Permeability of this Bullards soil is moderate. Available water capacity is about 4.0 to 5.5 inches. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is severe.

This unit is used mainly for timber production and wildlife habitat. It is also used for recreation.

This unit is suited to the production of Douglas fir. Among the other species that grow on this unit are Sitka spruce, western hemlock, western redcedar, shore pine, and red alder. The understory vegetation is mainly evergreen huckleberry, creambush oceanspray, salal, Pacific rhododendron, cascara, and western swordfern.

On the basis of a 100-year site. curve, the mean site index for Douglas fir is 132. At the culmination of the mean annual increment (CMAI), the production of 60-year-old Douglas fir trees 1.5 inches in diameter or more at breast height is 133 cubic feet per acre per year. On the basis of a 50-year site curve, the mean site index for Douglas fir is 105. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this unit are steepness of slope, the hazard of erosion, the hazard of windthrow, and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. Highlead or other logging systems that fully or partially suspend logs damage the soil less and generally are less costly than tractor systems.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Cut and fill areas are subject to erosion unless treated. Seeding, mulching, benching, and compacting the soil can reduce erosion. Logging roads require suitable surfacing for year-round use. Rock for road construction is not readily available in this unit. Steep yarding paths, skid trails, and firebreaks are subject to rilling and gullying unless they are provided with adequate water bars or are protected by plant cover, or both.

Windthrow is a hazard when the soil is wet and winds are strong. When openings are made in the canopy, invading brushy plants can delay natural reforestation. Undesirable plants reduce natural or artificial reforestation unless intensive site preparation and maintenance are provided. Reforestation can be accomplished by planting Douglas fir, Sitka spruce, and western hemlock seedlings.

If this unit is used for recreational development, the main limitations are slope and the hazard of erosion. Slope limits the use of areas of this unit mainly to a few paths and trails, which should extend across the slope.

The risk of erosion is increased if the soil is left exposed during site development. Revegetating disturbed areas around construction sites as soon as feasible helps to control erosion.

This map unit is in capability subclass VIe.

9-Chetco silty clay loam. This deep, very poorly drained soil is on flood plains and deltas. It formed in alluvium. Slope is 0 to 3 percent. The native vegetation is mainly conifers, shrubs, forbs, and hardwoods. Elevation is 0 to 40 feet. The average annual precipitation is 60 to 80 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown silty clay loam 10 inches thick. The subsoil is mottled, dark gray silty clay 14 inches thick. The substratum to a depth of 60 inches or more is mottled, dark gray clay.

Included in this unit are small areas of Coquille and Nestucca soils. Also included are small areas of Langlois soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Chetco soil is very slow. Available water capacity is about 5.0 to 8.5 inches. Effective rooting depth is 60 inches or more for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is very slow, and the hazard of water erosion is slight. This soil is subject to frequent periods of flooding during prolonged periods of rainfall. Channeling and deposition are common along streambanks. The water table fluctuates between the surface and a depth of 18 inches in October to May.

This unit is used mainly for hay and pasture and wildlife habitat.

The, vegetation in areas not cultivated is mainly Sitka spruce, western redcedar, western hemlock, and red alder. The understory vegetation is mainly western swordfern, evergreen huckleberry, slough sedge, soft rush, and skunkcabbage.

If this unit is used for hay and pasture, the main limitations are the susceptibility of the surface layer to compaction, wetness, droughtiness in summer, the hazard of flooding, and, for the curing of hay, high humidity. Grazing when the soil is moist results in compaction of the surface layer and poor tilth. Compaction limits the movement of air and water in the soil and restricts the growth of roots; it can seriously reduce the productivity of the soil. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

Drainage and irrigation are needed for maximum

Attachment O

production of crops. Water on or near the surface can be removed by use of open ditches and tide gates. Supplemental irrigation is needed in summer.

Wetness and flooding restrict grazing in winter. Protection from flooding during the growing season can be provided only by the use of extensive dikes. The choice of plants is limited to those that withstand periodic inundation. High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay. To improve the quality of grass for hay, increase the stocking rate in spring. Excess forage in spring can be used as silage.

Fertilizer is needed to ensure optimum growth of grasses. Grasses respond to nitrogen. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Rotation grazing increases the production of forage and helps to control weeds. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth.

This map unit is in capability subclass IVw.

10A-Chismore silt loam, 0 to 3 percent slopes. This deep, moderately well drained soil is on terraces and fans. It formed in alluvium. The native vegetation is mainly conifers, shrubs, forbs, and hardwoods. Elevation is 100 to 380 feet. The average annual precipitation is 60 to 80 inches, the average annual air temperature is 50 to 53 degrees F, and the average frost-free period is 180 to 220 days.

Typically, the surface layer is very dark grayish brown silt loam 14 inches thick. The upper 6 inches of the subsoil is mottled, dark brown silt loam, and the lower 40 inches or more is mottled, brown, dark yellowish brown, and yellowish brown silty clay loam.

Included in this unit are small areas of Dement soils and Chismore soils that have slopes of more than 3 percent. Also included are small areas of poorly drained soils and well drained soils that have a yellowish brown silty clay loam subsoil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Chismore soil is slow. Available water capacity is about 3.5 to 7.5 inches. Effective rooting depth is 60 inches or more for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. The water table is at a depth of 12 to 36 inches from November to March. Runoff is slow, and the hazard of water erosion is slight.

Most areas of this unit are used for hay and pasture. A few areas are used for homesite development.

The vegetation in areas not cultivated is mainly Douglas fir, western hemlock, western redcedar, red alder, and Oregon myrtle. The understory vegetation is mainly evergreen huckleberry, Pacific rhododendron, salmonberry, and western swordfern.

If this unit is used for hay and pasture, the main limitations are the susceptibility of the surface layer to compaction, droughtiness in summer, and, for the curing of hay, high humidity. Grazing when the soil is moist results in compaction of the surface layer and poor tilth. Soil compaction limits the movement of air and water in the soil and restricts the growth of roots. Compaction can seriously reduce the productivity of the soil. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

Supplemental irrigation is needed for maximum production. Sprinkler irrigation is a suitable method of applying water. Use of this method permits the even, controlled application of water. Water should be applied in amounts sufficient to wet the root zone but small enough to minimize the leaching of plant nutrients. Applications of water should be adjusted to the available water capacity, the water intake rate, and the crop needs.

High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay. To maintain the quality of grass for hay, increase the stocking rate in spring. Excess forage in spring can be used as silage.

Fertilizer is needed to ensure optimum growth of grasses and legumes. Grasses respond to nitrogen, and legumes respond to sulfur and phosphorus. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth.

If this unit is used for homesite development, the main limitations are the slow permeability of the soil and wetness. Septic tank absorption fields may not function properly during rainy periods. The limitation of slow permeability can be overcome by increasing the size of the septic tank absorption field. Using interceptor ditches that divert subsurface water improves the operation of septic tank absorption fields. Drains are needed around footings if dwellings with basements are constructed on this unit. In summer, supplemental irrigation is needed for lawn grasses and vegetable gardens.

This map unit is in capability subclass IIIw.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. Only the soils suited to crops and pasture are listed]

Soil name and map symbol	Pasture		Grass hay		Grass-legume hay		Cranberries	
	N	I	N	I	N	I	N	I
	AUM*	AUM*	Tons	Tons	Tons	Tons	Tons	Tons
1B, 1C---------- Bandon	3.0	10	---	---	---	---	---	8
1D---------- Bandon	3.0	---	---	---	---	---	---	---
2C---------- Bandon-Blacklock	---	---	---	---	---	---	---	8
5A, 5B---------- Blacklock	---	---	---	---	---	---	---	8
8B, 8C---------- Bullards	4.0	10	---	---	2.0	4.0	---	8
8D---------- Bullards	4.0	---	---	---	---	---	---	---
9---------- Chetco	1.5	6	2	3.5	---	---	---	---
10A, 10B---------- Chismore	6.0	12	---	---	2.5	4.5	---	---
10C---------- Chismore	6.0	---	---	---	---	---	---	---
11---------- Clatsop	1.5	---	---	---	---	---	---	---
12---------- Coquille	6.0	10	2	3.5	---	---	---	---
13C---------- Dement	7.0	---	---	---	---	---	---	---
13D---------- Dement	6.0	---	---	---	---	---	---	---
13E---------- Dement	5.0	---	---	---	---	---	---	---
17B---------- Ellertson	8.0	15	---	---	---	4.5	---	---
18E---------- Etelka	2.0	---	---	---	---	---	---	---
20D---------- Etelka-Rinearson-Orford	3.0	---	---	---	---	---	---	---
20E---------- Etelka-Rinearson-Orford	2.0	---	---	---	---	---	---	---

Forest Productivity/Suitability Report

Coos County Forestry Department

Township 29 South, Range 15 West, Section 35C
Tax Lot 1300

Client:
Coos County Forestry Department
250 N. Baxter
Coquille, OR 97423

Consultant:
Farm Unlimited
PO Box 761
North Bend, OR 97459
www.farm-unlimited.com

February 22, 2022

Attachment P

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EXHIBIT 1 – ODF Land Use Planning Notes Number 3 Methodology and Assessment
EXHIBIT 2 – Pictures
EXHIBIT 3 – Subject Property Hillshade and Contour Map
EXHIBIT 4 – NRCS Soils Type Map with Forest Productivity Ratings
EXHIBIT 5 – Excerpt from Alexander Site Index Table for Lodgepole Pine
EXHIBIT 6 – Oregon Department of Revenue Forestland Productivity Class Map

1. Subject Property:

The subject property is located in Township 29 South, Range 15 West, Section 35C, Tax Lot 1300, Coos County, Oregon, Willamette Meridian. The property is owned by Coos County, a political subdivision of the State of Oregon.

2. Scope of Report:

This report was commissioned to determine the suitability of the subject property for the production of commercial timber species as set forth in Oregon Department of Forestry, Land Use Planning Notes Number 3, April 1998 (Updated for Clarity April 2010) and OAR 660, Division 6, Goal 4 (Forest Lands).

3. Definitions:

a. Commercial (OAR 629-600-0100(12)): of or pertaining to the exchange or buying and selling of commodities or services. This includes any activity undertaken with the intent of generating income or profit; any activity in which a landowner, operator or timber owner receives payment from a purchaser of forest products; any activity in which an operator or timber owner receives payment or barter from a landowner for services that require notification under OAR 629-605-0140; or any activity in which the landowner, operator, or timber owner barters or exchanges forest products for goods or services. This does not include firewood cutting or timber milling for personal use.

b. Commercial Forest Uses: Forest uses that are considered commercial.

c. Commercial Tree Species (OAR 660-006-0005(2)): Trees recognized for commercial production under rules adopted by the State Board of Forestry pursuant to ORS 527.715.

d. Diameter Breast Height (DBH) (OAR 660-600-005(17)): Diameter of a tree inclusive of bark measured four and one-half feet above the ground on the uphill side of the tree.

e. Forest Lands: (OAR 660-006-0005(7)) Those lands acknowledged as forest lands, or, in the case of plan amendment, forestlands shall include:

    i. Lands that are suitable for commercial forest uses, including adjacent or nearby lands which are necessary to permit forest operations or practices.

    ii. Other forestlands that maintain soil, air, water, and fish and wildlife resources.

f. Forest Operation (ORS 527.620(8)): Any commercial activity relating to the growing or harvesting of any forest tree species as defined in ORS 527.620(6).

g. Forest Productivity: The capability of a tract to produce wood fiber.

h. Forest Tree Species (ORS 527.620(6)): Any tree species capable of producing logs, fiber, or other wood materials suitable for the production of lumber, sheeting, pulp, firewood or other commercial forest products except Christmas trees as defined in ORS 571.505 on land used solely for the production of Christmas trees.

i. Measures of Forest Productivity: Forest Productivity can be measured using two methods: Site Index and Cubic Feet per Acre per Year. Both values are provided by USDA Natural Resource Conservation Service (NRCS) for each soil type in the county soil survey. Additionally, site index can be measured directly by taking the height of the tree and determining the age of the tree by using an increment borer.

   i. Site Index: This value represents the height of a tree at the reference year (usually age 50 or 100) based on a species-specific growth rate. The higher the productivity of the site, the taller a tree will grow in a fixed period of time. Trees can be measured at any age and their height can be compared to the expected height for that age and then correlated with the height at the reference year.

   ii. Cubic Feet per Acre per Year (CuFt/Ac/Yr): The average annual increase in cubic foot volume of wood fiber per acre for fully stocked stands at the culmination of mean annual increment as reported by the NRCS soil survey. The higher the productivity of the site, the higher the "cubic feet per acre per year" value.

j. Non-commercial Tree Species: A species that is not saleable for manufacture into a commercially viable forest product.

4. Methodology:

Farm Unlimited used the Oregon Department of Forestry (ODF) Land Use Planning Notes Number 3 (Attachment Q) as a basis to collect data. Eric Farm and James Hill visited the site on January 19, 2022, to familiarize ourselves with the tract and take forest productivity measurements. Because Attachment Q did not fit the unique circumstances found on the subject property, we have provided additional findings and conclusions to support our opinion. Additional details required by Attachment Q can be found in *Exhibit 1*.

5. Findings:

a. Entire tract is fully stocked with shore pine, a species with no commercial uses. An increment borer and laser were used to determine the age and height of the trees. They were found to be 32-46 years old and 25-50 feet tall. *See Exhibit 2 - Picture 1 & 2*

b. Five Sitka spruce trees are found growing along the east side of the property. These trees are highly defective with very large limbs. The Sitka spruce were estimated to be 45 inches DBH and approximately 75 feet tall. Their DBH exceeded the ability of our increment borer and therefore we were unable to determine the age of the Sitka spruce trees found along the east side of the property. Due to their large size and high defect, these trees have no commercial use or value. *See Exhibit 2 - Picture 3*

c. The soil found on this tract was composed of a thin organic/duff layer consisting of pine needles approximately one inch deep which transitioned to beach sand. There was no top soil found on the site. *See Exhibit 2 - Picture 4*

d. Gorse, an invasive and noxious weed, was growing across the entire tract as the understory brush component. The gorse was approximately 10 feet tall and made any access on the tract difficult. *See Exhibit 2 - Picture 5*

e. Standing water in the form of seasonal ponds and wetlands can be found on this tract. Willows are growing in around the standing water on the property. *See Exhibit 2 - Picture 6*

f. Slough sedge is also found abundantly on this tract indicating a high water table year round. *See Exhibit 2 - Picture 7*

g. Sand dunes with American beach grass cover portions of this tract. *See Exhibit 2 - Picture 8*

h. The adjacent undeveloped parcels are primarily fields of gorse and slough sedge. *See Exhibit 1 – Pictures 9 & 10*

i. The elevation of this tract varies from 20 to 50 feet above sea level. *See Exhibit 3*

j. This tract is located less than ¼ mile from the Pacific Ocean and timber on the tract receives intense wind and salt spray year-round.

k. The NRCS soil survey lists five soil types found on the subject property. Type 28 composes 0.0 acres and 0.0% of the tract. We have dismissed this soil type as non-material for this report. *See Exhibit 4*

l. The NRCS soil survey assigns no site index or CuFt/Ac/Yr value to two soil types on this tract. *See Exhibit 4*

m. The NRCS soil survey does assign a site index value to remaining two soil types based on the Alexander 100-year Lodgepole Pine Site Index Table. *See Exhibit 4*

n. Alexander's lodgepole pine site index paper (Page 1, Paragraph 1) indicate that the published site index table is "applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and Eastern Washington and Oregon". Western Oregon is specifically excluded as an applicable region to use the Alexander site index table. *See Exhibit 5*

o. Trees on this site have reached their full height potential given the constraints of the soil and environmental factors present on the site. Given their current height range of 25-50 feet tall, at 35-50 years old, the measured site index for this tract will be no more than 50 assuming a base 50-year site index table. And since the height will not increase over time, the site index would still be 50 if we used a base 100-year site index table such as the one Alexander developed for lodgepole pine.

p. No site index table for shore pine has been published that is applicable to Western Oregon.

q. The measured tree heights and ages did not vary materially across the subject property.

r. No local sawmills, veneer mills, or wood chip manufacturer will accept shore pine. Additionally, mills will not pay for a load with shore pine included and may reject the load entirely and not accept/unload a truck that arrives at the mill with shore pine included on the load. It is not foreseeable that any mill will accept delivery of shore pine in the future.

s. Shore pine meets the definition of a Non-commercial Tree Species.

t. There are no visible commercial forest uses on adjacent tax lots based on both field observations and orthophotograph interpretation.

u. The Oregon Forest Practices Act has a rule for "Acceptable Species for Reforestation" (OAR 629-610-0050(1)) which states, "The State Forester shall determine if tree species are acceptable for artificial reforestation, natural reforestation, and as residual seedling, sapling and pole, or larger tree stocking based on all of the following criteria:

   i. (a) The species must be ecologically suited to the planting site;

   ii. (b) The species must be capable of producing logs, fiber, or other wood products suitable in size and quality for the production of lumber, sheeting, pulp or other commercial forest products; and

   iii. (c) The species must be marketable in the foreseeable future.

6. Conclusions:
   a. Shore pine and five of very defective Sitka spruce appear to be the only tree species capable of growing on the tract due to the wind and extremely poor soil conditions.

   b. Shore pine meets the definition of a Non-commercial Tree Species.

   c. Shore pine is not an "Acceptable Species for Reforestation" in Oregon.

   d. The salt spray and intense wind coming from the Pacific Ocean preclude the growing of any commercial tree species on the subject property. Any efforts to grow any other tree species will either fail or result in timber that is so defective that it will not be of commercial quality.

   e. With no topsoil and only a thin duff layer that transitions to deep beach sand, trees on this site are extremely susceptible to windthrow.

   f. Swiss Needle Cast, a tree fungus/pathogen, tends to infect Douglas-fir trees within 10 miles of the Pacific Ocean. This site would be highly susceptible to Swiss Needle Cast infection if reforestation with Douglas-fir was attempted.

   g. Recreation and use by big game are significantly restricted due to the gorse understory.

   h. The standing water and high water table on this site will not allow the production of commercial timber species.

i. The Alexander Lodgepole Pine Site Index Table is inappropriate to use for shore pine growing within ½ mile of the Pacific Ocean. Site specific conditions (wind, salt spray, poor soils) will limit the growth of these trees to such an extent that they will not follow the normal growth rate/pattern for lodgepole pine found elsewhere in the Western United States.

j. Alexander specifically excluded western Oregon as an applicable use of his lodgepole pine site index table.

k. The absence of a forest productivity value for three of the soil types found on this tract indicate that the NRCS concludes that these beach/dunes soils are not suitable for the production of timber, commercial or otherwise.

l. The soil characteristics between types 59D, 60D and 61D are only differentiated by an H1 thickness of 4 inches or 7 inches, both of which are shown as fine sand. It is my professional opinion that no soil on this tract is suitable for the production of commercial timber species and therefore this tract is not suitable for commercial forest uses.

m. The Oregon Department of Revenue did not classify this 40 acre tract in its Forestland Class Code Assessment for tax assessment purposes. Additionally, the adjacent 40 acre tracts to the west and north of the subject property also did not receive a DOR forestland class code. The tract to the east received an "FG" forestland class code, the lowest productivity class code for forested lands. *See Exhibit 6*

n. Forest lands are given a special assessment and tax status by the State of Oregon to recognize their larger contribution to the economy. The subject property will never produce a commercial tree species and timber production from it will never contribute to the state's economy.

o. Per *Wetherall v. Douglas County*, 54 Or LUBA 678 (2007) and *Heckler v. Lane County*, 52 Or LUBA 91 (2006), the measured/empirical site forest productivity can take precedence over the NRCS value if the listed values do not accurately represent the subject property. For this subject property, our measured site index is zero for any commercial tree species.

p. Per *Doob v. Josephine County*, 48 Or LUBA 227 (2004) and *Palmer v. Lane County*, 44 Or LUBA 334 (2003), the presence of trees does not necessarily qualify a tract as forestland. Although there are trees present across the site, none are commercial tree species. Furthermore, due to the sandy soil and lack of topsoil, no commercial tree species can be grown on the subject property.

q. Use of the subject property as a commercial forest would likely conflict with the adjacent residential tax lots. If the timber on the tract was harvested, it would be virtually impossible to achieve successful reforestation, and until the ground cover could be reestablished, blowing sand would likely spread onto adjacent residential tax lots. Commercial forestry would also be hindered by the proximity of adjacent residences. Current forest practice rules do not allow aerial spray applications within 300 feet of an inhabited dwelling. Dust abatement will be required for any commercial haul of forest products on the gravel portion of the Fourmile Road. This treatment is very expensive especially for a tree species with no commercial value.

7. Opinion:

It's my opinion as a professional consulting forester that the subject property is unsuitable for commercial forest uses. It is not currently stocked with a commercial tree species, and it is doubtful that a commercial tree species could ever be successfully regenerated on this property. Additionally, no site index table has been published for shore pine in western Oregon; therefore, a site index and "cubic foot per acre per year" determination could not be made for the subject property.

8. Professional Experience:

Eric Farm, PE, ACF

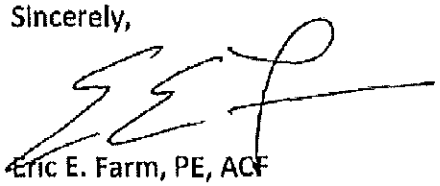
- Bachelor's Degree in Forest Engineering from University of Washington
- Six years of experience as a professional consulting forester in SW Oregon
- 18 years of forestry experience in SW Oregon
- Full Member of the Association of Consulting Foresters (ACF)
- Member of Society of American Foresters (SAF)
- Member of Council on Forest Engineering (COFE)
- Licensed Professional Engineer in the State of Oregon
- Biennial continuing education requirements for ACF and Engineering License

James Hill

- Bachelor's Degree in Forest Operations Management from Oregon State University
- 10 years of experience as a professional consulting forester in SW Oregon
- 10 years of experience as a cruising timber and determining site index across Oregon

If you have any questions about this report, please contact me at (458) 230-0537.

Sincerely,



Eric E. Farm, PE, ACF
President

ODF Land Use Planning Notes Number 3 Methodology and Assessment

Step 1: Using Established Data Sources

- NRCS soil survey – *See Excerpt from Custom Soil Report compiled by Shoji Planning LLC, Pages 86-92*
- Oregon DOR Western Oregon site class maps – *See Exhibit 6*
- USDA-Forest Service plant association guides – None found for subject property
- Other existing data sources – None found
- Alternate methods to develop site productivity based on direct tree measurements – None found
- Alternate methods based on direct tree measurements – None found
- Site-specific soil surveys – Did not commission site-specific soil survey

Step 2: Alternate Methodologies

- The subject property is fully stocked with shore pine. Shore pine is not one of the six listed species with published site index tables.
- No site index table has been published for shore pine.
- The NRCS soil survey shows a value for forest productivity based on the Alexander lodgepole pine site index table. This site index table is not applicable to western Oregon per the author's note. *See Exhibit 5*
- Eric Farm is a professional forester and registered as a full member of the Association of Consulting Foresters.

Step 3: Sufficient Number of Trees On-Site?

- Adequate numbers of dominant and codominant shore pine are found on the property.
- A sample of 30 trees were selected as the "site index clump".
- Species and heights were recorded for all 30 trees. The average height was 34 feet.
- A sub-sample of 6 trees was measured for age. The average age was 40 years old.
- Nearly all trees in the sample showed signs of significant defect due to wind and poor soil conditions.
- No trees over 50 years old were available to sample in or around the sample plot location.

Step 4: Approved Site Index Tables

- No site index table has been published for shore pine.
- The Alexander lodgepole pine site index table are not applicable for use in western Oregon as noted by the author. *See Exhibit 5*
- If you did use the Alexander lodgepole pine site index table and the USDA NRCS Technical Note 2 (revised 2008), a site index value of 34 at 100 years is below the lowest value listed for "cubic feet per acre per year" forest productivity.

Step 5: Other Methods for Other Species

- No site index table has been published for shore pine or lodgepole pine found on the coastal headlands.
- Oregon DOR did not classify this parcel with a forestland code as part of its forestland program.

Step 6: Last Option: Soil Analysis

- Sufficient trees are found on-site, but the only species that can be successfully regenerated on the site is shore pine, a non-commercial tree species with no published site index table.
- A soil analysis was not conducted as part of this report. It is my opinion as a professional consulting forester that a soil survey is unwarranted due to the observed sand and pine needle duff that represents the soil across the subject property.

Step 7: County Review of Professional Reports

- The process as defined by the ODF Land Use Planning Notes Number 3, along with the findings from our full Forest Suitability/Productivity Report, support my professional opinion that this site is not suitable for the production of commercial tree species and commercial forest uses.

Data Form for Forestland Site Productivity Determination using Site Index

Date Prepared: January 19, 2022 County: Coos

Landowner Name: Coos County

Land use case file number (if available): Unknown

Location
Township: 29 South Range: 15 West Section: 35C Lot Number: 1300

Name of Forester preparing report: Eric Farm, PE, ACF and James Hill

Forester's background (work experience, education, training, certifications, etc.): See Professional Experience section of report.

Methods and equipment used in data collection:
Age and height measurements were taken on 30 dominant and co-dominant trees that were representative of the subject property. Age was measured using an increment borer and height was measured using a laser rangefinder. Since the shore pine on this tract was fairly uniform, samples for age were taken on six trees and found to be representative. Further age verification was not necessary.

Soil Type(s) and percentages on tract in question:
Map Unit 9: Chetco silty clay loam – 1.1%
Map Unit 28: Heceta fine sand – 0.0%
Map Unit 59D: Waldport fine sand – 9.2%
Map Unit 60D: Waldport-Dune land complex – 33.5%
Map Unit 61D: Waldport-Heceta fine sands – 56.2%

Tree species on tract in question: Tract is fully stocked with shore pine except where standing water and open sand are found. Four Sitka spruce trees were found along the ridge on the eastern boundary of the property.

Number of Dominate or Co-Dominate Trees/Species Sampled: 30 shore pine

Average Height: 34 feet Average Age: 40 years old

Average Site Index: Not Rated Site Productivity: Not Rated

Notes/Comments: Shore pine is not a commercial species and does not have a site index table. The Alexander (1966) site index table for lodgepole pine is inappropriate for use in western Oregon as indicated by the author. Process for determining Forestland Site Productivity is documented and attached to this data form.

Data Collection Form:

Tree ID	Tree Species	Height (ft.)	Age (yrs.)
1	shore pine	33	
2	shore pine	28	
3	shore pine	31	
4	shore pine	29	
5	shore pine	25	
6	shore pine	25	32
7	shore pine	25	35
8	shore pine	25	41
9	shore pine	33	
10	shore pine	34	41
11	shore pine	33	
12	shore pine	33	
13	shore pine	34	44
14	shore pine	37	46
15	shore pine	42	
16	shore pine	36	
17	shore pine	37	
18	shore pine	41	
19	shore pine	40	
20	shore pine	36	
21	shore pine	38	
22	shore pine	34	
23	shore pine	30	
24	shore pine	33	
25	shore pine	31	
26	shore pine	37	
27	shore pine	35	
28	shore pine	32	
29	shore pine	38	
30	shore pine	42	
	Average	34	40

Picture 1: Shore pine

Picture 2: Shore pine

Picture 3: Sitka Spruce

Exhibit 2

Picture 4: Depth of Organic Layer

Picture 5: Gorse

Exhibit 2

Picture 1: Pond

Picture 7: Slough Sedge

Picture 8: Dunes & Beach Grass

Exhibit 2

Picture 9: Adjacent Property

Picture 10: Adjacent Property

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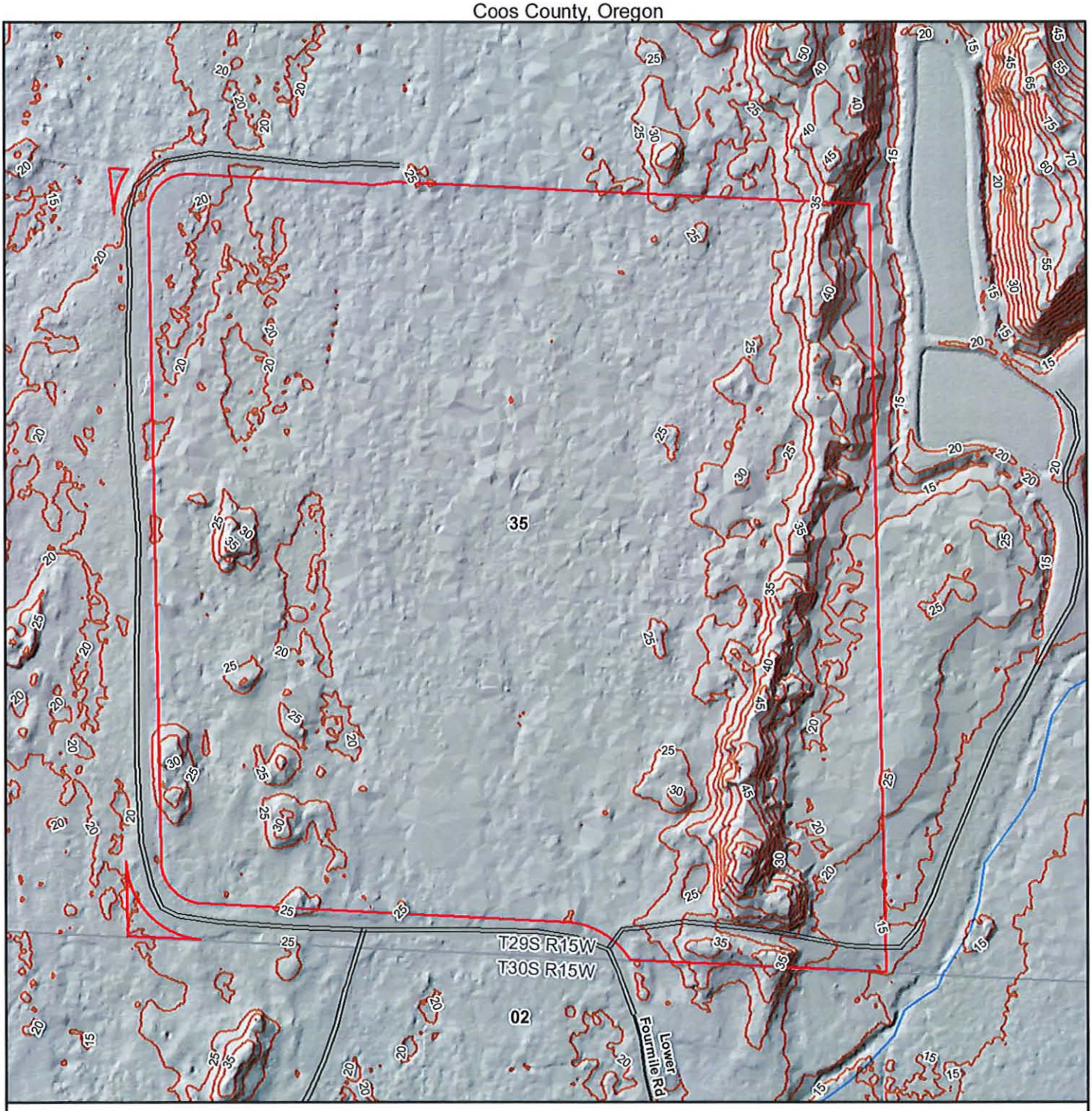
Subject Property
Hillshade and Contour Map

Exhibit 3

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Paved
Rock
Medium, Fish
5 ft Contour Lines
Subject Property

N
1 " = 250 ft.
Created: 1/17/2022
by Barbara McIntosh

Contour Intervals = 5 ft. Contours and Hillshade derived from Lidar Bare Earth DEM

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

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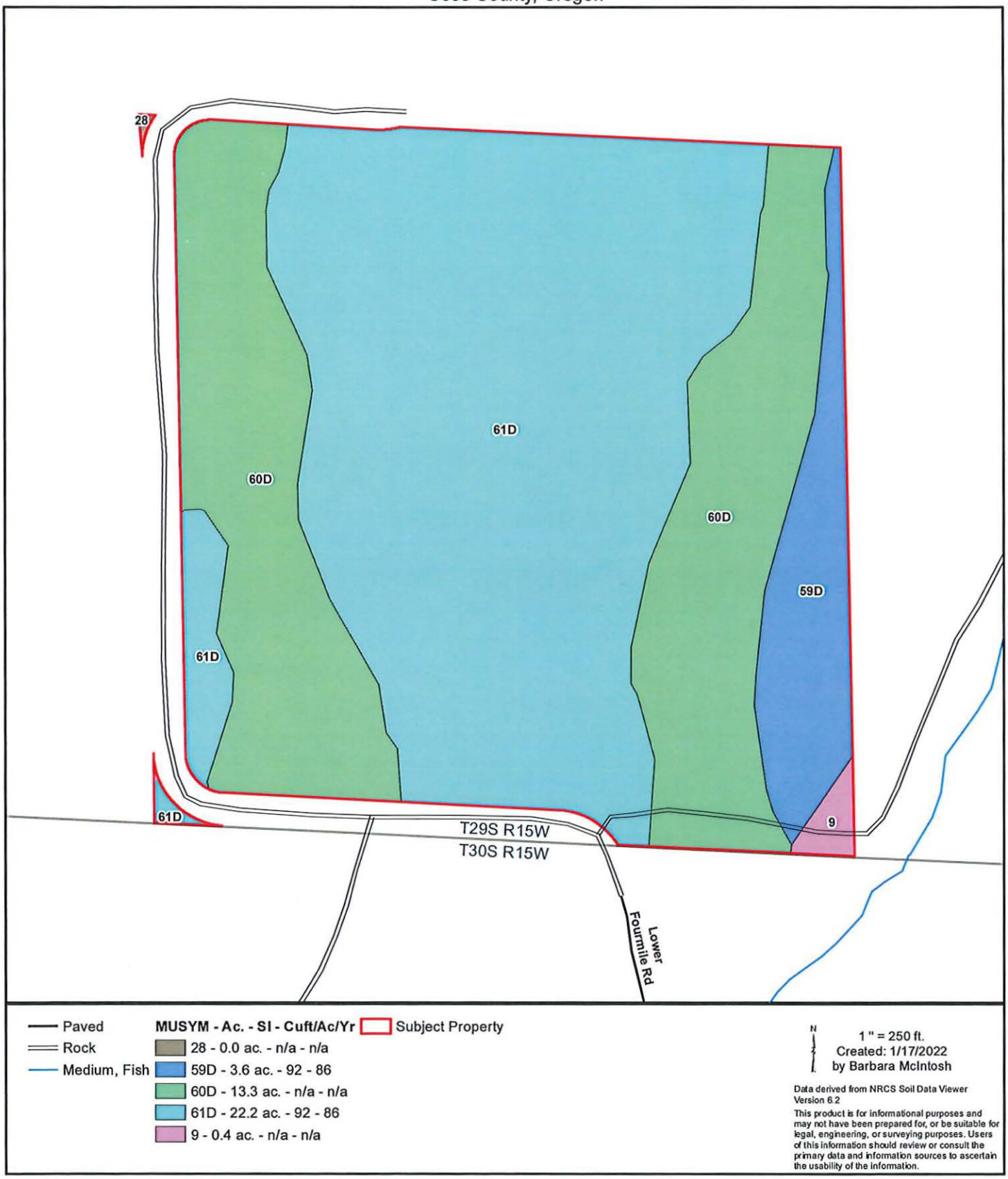
North Bend, OR 97459

Subject Property
NRCS Soils Type Map with
Forest Productivity Ratings

Exhibit 4

Tax Lot 1300; T 29S, R 15W, Sec. 35C
Coos County, Oregon



Site Indexes for Lodgepole Pine, with Corrections for Stand Density: Instructions for Field Use

by

Robert R. Alexander

Lodgepole pine (Pinus contorta Dougl.) commonly grows in overly dense stands, and crowding restricts the rate of height growth. Site index must, therefore, be adjusted for stand density. Figures 1 and 2, and tables 1 through 7 have been prepared for field use in estimating site index for lodgepole pine. They are applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and eastern Washington and Oregon.[2] Information necessary to understand field application of the site index curves and instructions for their use are presented in this paper. Methodology used to develop the site index curves will be presented in a subsequent paper.

Stand density is expressed as Crown Competition Factor (CCF).[3] CCF compares growing space available to a tree with the space represented by a vertical projection of the average crown area of an open-grown tree of the same stem diameter (Maximum Crown Area, MCA). Because space occupied by a single tree is not easily determined, the comparison is made on a stand basis. CCF may be obtained from the numbers and diameters of trees in a stand, or it may be estimated from measurements of basal area and average diameter.

Site index is expressed as the average height of dominant trees in pure, even-aged stands at age 100 years. For stands where the CCF is 125 or less, height growth is unaffected by density. For stands where the CCF is greater than 125, height growth is reduced as density increases, and the reduction in height growth at any level of CCF above 125 becomes greater as site quality improves.

Site index can be estimated from tables 1 through 5 for all combinations of height, age, and density indicated in the Rocky Mountain and Intermountain regions, providing the average height of the trees selected for site determination is equal to or exceeds the height of the site index 30 class but does not exceed the height of the site index 100 class at the age sampled. Figure 1 can be used if the CCF is 125 or less. In the Pacific Northwest region, site index can be estimated reliably only if the "site trees" are 50 or more years old.

Field Application of Site Index Curves

Step 1.--Determine average height and age of the stand. Select four or more dominant trees (site trees) and measure heights and ages in the conventional manner.[4] Average total age may be approximated from age at breast height by adding 9 years to the average age at breast height (fig. 1 and all tables are based on total age).

[2] *This paper is based on a cooperative study planned and undertaken jointly by the Rocky Mountain, Intermountain, and Pacific Northwest Forest and Range Experiment Stations. David Tackle (INT) and Walter G. Dahms (PNW) collected the field data in their respective areas.*

[3] *Krajicek, John E., Brinkman, Kenneth A., and Gingrich, Samuel F. Crown competition factor, a measure of density. Forest Sci. 7: 35-42. 1961.*

[4] *Chapman, Herman H. and Meyer, Walter H. Forest mensuration, Chap. 15, "The measurement of heights in standing trees," pp. 149-212 and Chap. 23, "The age of standing trees," pp. 318-323. New York: McGraw-Hill Book Co. 1949.*

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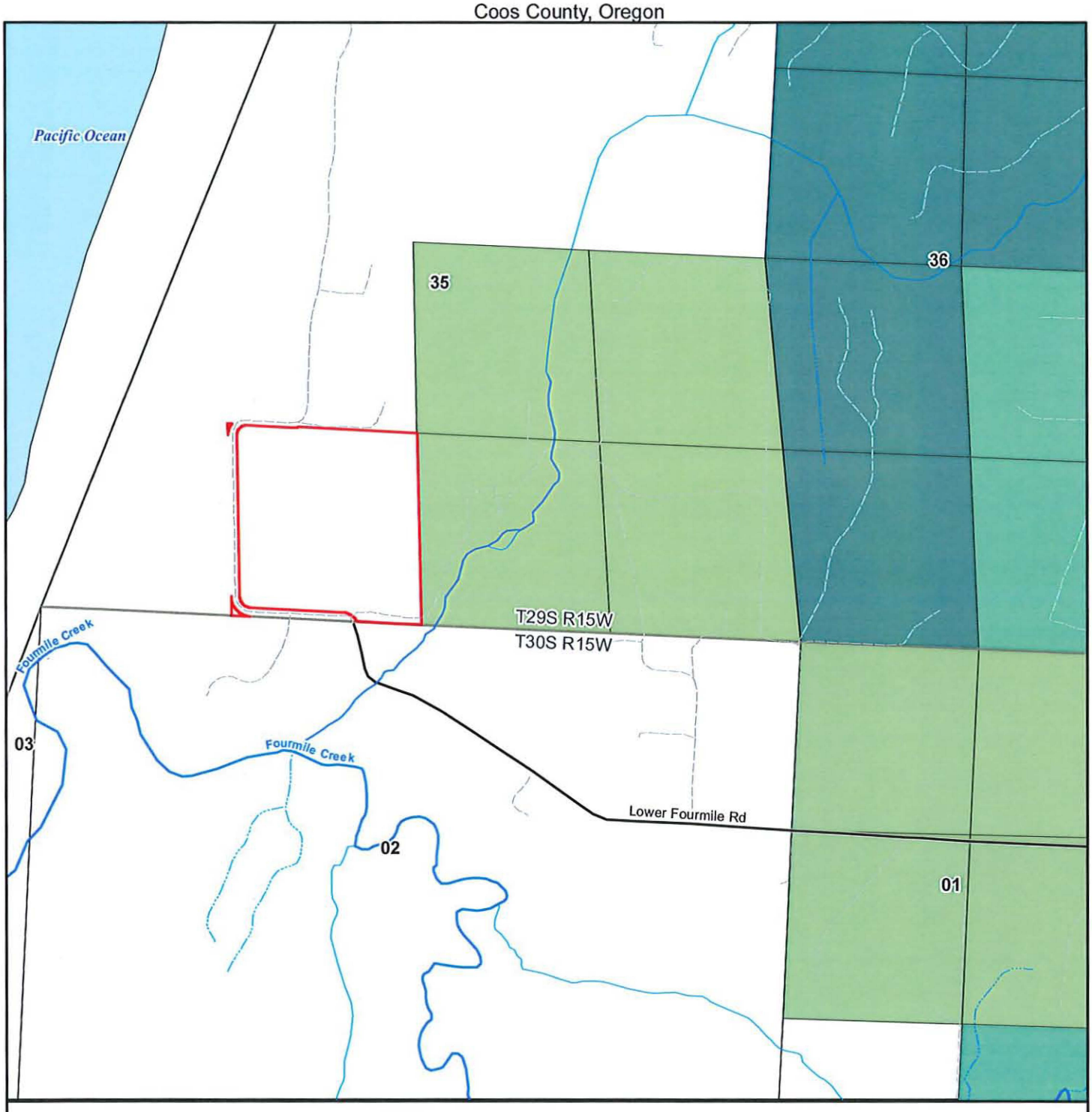
Subject Property
Oregon Department of Revenue
Forestland Productivity Class Map

Exhibit 6

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Forest Productivity Class information derived from the Oregon Department of Revenue Forestland Productivity Class for Western Oregon dataset.

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

LAND USE PLANNING NOTES

Number 3 April 1998
Updated for Clarity April 2010

"STEWARDSHIP IN FORESTRY"

PURPOSE: These technical notes have been developed by the Oregon Department of Forestry (ODF) to help landowners and local governments when they must use an alternative to the USDA Natural Resource Conservation Service (NRCS) Soil Survey or other established data sources to determine the productivity of forestland. Under Oregon Administrative Rules (OAR) 660-006-0005, where sources of data referenced in the rule are not available or are shown to be inaccurate, an alternative method for determining productivity that provides equivalent data may be used. These notes describe the methodologies that the Department of Forestry approves, provides information necessary to use the methodologies and gives direction to counties in evaluating forest productivity reports. Background information is also included to answer commonly-asked questions about forest productivity rating systems. These technical notes and the related tables can be found on the Oregon Department of Forestry's website at:
http://egov.oregon.gov/ODF/STATE_FORESTS/FRP/RP_Home.shtml#Land_Use_Planning.

Please note the Department of Forestry does not measure forest site productivity for landowners. The Department's involvement is focused on establishing a list of approved data sources and methodologies other than those cited in the administrative rule. The Department of Forestry will not issue findings on whether these data sources or alternate methodologies have been employed correctly or if the resulting forest site productivity determinations are accurate. The Department of Forestry is not responsible for verifying field measurements.

Included on page 9 of this guide is a flowchart, which provides a visual aid for counties to step through the process of determining site productivity. Each box in the flowchart is labeled with a number that corresponds to the step and section providing guidance on that topic in these Land Use Planning Notes.

OAR 660-006-0005 (3) Site Productivity Sources are adequate to determine cubic foot/acre/year productivity. 1

Step 1: Using Established Data Sources

Forest landowners who would like to demonstrate its forestland productivity or who question the productivity of their property - whether they wish to have it rezoned for development, want approval for template dwellings, or for another reason - must use established data sources to provide information on soils

The Department of Forestry has concluded that to avoid potential confusion and inconsistent productivity determinations it is important for the department to establish a hierarchy of preferences for the site productivity data listed in OAR 660-006-0005 (2) and (3). In order of preference, the department's hierarchy is as follows:

A. Natural Resource Conservation Service soil surveys[1]
B. Oregon Department of Revenue Western Oregon site class maps
C. USDA Forest Service plant association guides
D. Other existing data sources determined by the State Forester to be of equal or better quality to Items A, B, and C
E. Alternate methods to develop site productivity data based on direct tree measurements and calculations using applicable Douglas-fir, western hemlock, or ponderosa pine site tables, with priority given to the species among these three that dominates the area being evaluated
F. Alternate methods based on direct tree measurements and calculations using other native forest tree species site tables
G. Site-specific soil surveys.

When NRCS soil survey information is available, it should always be considered first when making forest land site productivity determinations. Where the county determines that NRCS or other established data sources approved by the State Forester are available and accurate for determining site productivity at the scale of the tract of interest, the county planning department must make its decision using these data.

If data from an approved established data source (A, B, or C above) do not exist or is shown through site-specific documentation to be inaccurate for determining site productivity at the scale of the tract of interest, only then should other information determined to be of comparable quality by the State Forester (D above) be consulted. These will normally include published data on forest soils or tree measurements. To date, other published forest soils information that has been determined to be of comparative quality includes, but is not limited to, the following:

- August 1997 *Lane County Soil Ratings for Forestry and Agriculture* produced by the Lane County Council of Governments.
- February 8, 1990, *Forest Lands Soils Ratings* – Revisions produced by the Oregon Department of Forestry for the Oregon Department of Land Conservation and Development (applicable to Benton, Lane, Linn, Marion, Polk, and Yamhill Counties except in Lane County where superseded by the August 1997 *Lane County Soils Ratings for Forestry and Agriculture*).
- January , 27, 1989 forest soils rating submitted to the Oregon Department of Land Conservation and Development by the Oregon Department of Forestry (applicable to Benton, Clackamas, Clatsop, Columbia, Hood River, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Tillamook, Washington, and Yamhill Counties except where superseded by the February 8, 1990 *Forest Lands*

[1] Web Soil Survey: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/ – last accessed April 29, 2010. Also see Published Soil Surveys for Oregon available online at: http://soils.usda.gov/survey/printed_surveys/state.asp?state=Oregon&abbr=OR -- last accessed April 30, 2010.

Soils Ratings and in Lane County where superseded by the August 1997 *Lane County Soils Ratings for Forestry and Agriculture*)

These documents can be found on the Oregon Department of Forestry's website at: http://egov.oregon.gov/ODF/STATE_FORESTS/FRP/RP_Home.shtml#Land_Use_Planning and may be updated over time as new information becomes available.

Additional information may be assessed and approved by the State Forester on a case by case basis for comparability of quality.

Applicant may use approved ODF methodology for determining Site Index. 2

Step 2: Alternate Methodologies

Where the published site productivity data described above in Step 1 are not available, or when the county determines that it is inaccurate for determining site productivity at the scale of the tract of interest, the alternate methods for determining site productivity described below may be used. [Note: Existence of data listed in Step 1 does not prohibit a landowner from retaining a professional forester or professional soils classifier to measure the productivity of the land if they believe the published data are inaccurate. In such cases, the county must determine which data source it will use in making its decision.]

Alternate methodologies used to measure site productivity must be consistent with the provisions of this Land Use Planning Note and must be considered in the following order:

a. Alternate methods based on direct tree measurements and calculations using applicable Douglas-fir, western hemlock, or ponderosa pine site tables. The tables may also be used for grand fir, Sitka spruce, and Jeffrey pine, as indicated in Step #4 and Attachment A.
b. If none of these six species are present, the next step is to consider using site tables for other tree species.
c. If no adequate trees are present to measure for site productivity, the last available method is to conduct site-specific soil surveys without direct tree measurements.

Where tree measurements are undertaken, a professional forester who is either registered as a full member in good standing with the Association of Consulting Foresters of America or Certified by the Society of American Foresters should be retained by the landowner to take tree measurements and prepare a report.

Consistent and credible site productivity determinations are an important facet of the land use planning process. Attempts to consider a variety of methods simultaneously in hope of arriving at a "preferred" site productivity determination are to be avoided.

The Department of Forestry does not measure sites for landowners. The alternate methodology the Department of Forestry approves to determine the productivity of an area is described in a Weyerhaeuser research paper, by King[2]. Additional information may be found in the *Field instructions for forest surveys in Washington, Oregon, and Northern California. USDA Forest Service, PNW Range and Experiment Station*. These papers describe how to select site-trees and calculate site index.

Sufficient # of trees on-site to determine Site Index? 3

Step #3: Sufficient Number of Trees On-Site?

Site index is based on measurements of breast-height tree age and total height. A sufficient number of measured trees generally consists of 25 dominant and co-dominant trees all of the same species, if possible. This number is adequate to determine forestland productivity as calculated by site index if soil type, species, and aspect of the ground are consistent throughout the sample area. Additional trees will be needed to represent different soil types, species, and aspect if these exist on the tract in question.

Trees of different species may be selected as long as they use the same site index table (See Step #4). Site index should not vary by more than 20 or 30 points between site trees (as indicated on each site table), unless the difference can be explained by actual site variation.

If the tract has been harvested in the recent past, most or all of the dominant trees in the stand may have been removed. Residual suppressed trees are not acceptable trees for site index measurement. If insufficient dominant trees exist on the tract to determine site index, site trees should be selected for evaluation from adjacent or nearby un-harvested properties with the same aspect, elevation and soil type. In some cases, historical records of past harvests, timber yields, and aerial photos may contribute valuable background information for productivity assessments.

A professional forester (as described in Step #2) should determine whether or not adequate numbers of dominant and co-dominant trees exist on site or in the vicinity to perform the analysis. If the forester issues a written statement that inadequate numbers of qualifying trees exist, the applicant may proceed to Step #6 – a soils analysis.

Method for Selecting Site Trees

1. On the property locate an approximately circular area that encompasses 25 trees (the "site index clump") and that is representative of the site being sampled. Where there is a choice, favor well-stocked areas over sparse areas. Of these

[2]King, James E. 1966. Site index curves for Douglas-fir in the Pacific Northwest. Weyerhaeuser Forestry Paper No. 8. Weyerhaeuser Forestry Research Center, Centralia, WA.

25 trees, select five that are dominant; co-dominants may be included if five dominants are not available.

2. If a 25-tree clump is not available, a smaller clump may be used. The site tree sub-sample should still be limited to the 20 percent of the trees in the clump that are dominate or co-dominate **unless** this yields fewer than three site trees. Example: For a 15-tree clump, three site trees would be needed - the minimum sample size allowed.

3. If no suitable site trees are available from the property, select dominant trees from the most similar nearby area with the same general aspect, elevation, and soil type. Note the location of the site trees in your report.

4. Site trees should be evenly distributed across the plot area.

5. Any site tree with a clear history of suppression should be rejected, and the next largest tree selected if it is suitable. However, a suppressed tree may be selected over a shorter, suppression-free tree of the same age.

6. Site trees selected should show no signs of top-out, such as crooks or forks, **unless** these trees are taller than normally-formed trees of the same Diameter at Breast Height.

7. Trees should be measured at Breast Height for age.

8. Trees under 50 years old are undesirable if older trees are available. For ponderosa pine, trees 60 to 120 years old are most desirable.

Definitions:

Age – The age of the tree at Breast Height determined by boring a tree revealing a core piece with notable rings that are counted. Each ring represents a year of age.

Breast Height – A height 4.5 feet from the ground on the uphill side of the tree.

Co-dominant -- Trees with crowns forming the general level of crown cover of the stand.

DBH – The diameter at breast height or 4.5 feet from the ground on the uphill side of the tree.

Dominant – Trees with crowns extending above the general level of the stand. These are the larger than average trees on the property.

Increment Core – This is a core piece of the tree that is removed where rings can be counted to determine age.

Suppressed -- A tree that has been suppressed will have closely-spaced annual growth rings on all or part of its increment core.

Use approved Site Index Tables for DF, WH, & PP. 4

Step #4: Approved Site Index Tables

There are three approved site index tables for Douglas-fir, western hemlock, and ponderosa pine. (Tables A, B, and C in Attachment A). These tables may also be used for grand fir, Sitka spruce, and Jeffrey pine, respectively.

How to use site tables:
The attached site index tables are "upper limit tables." This means that when a tree height indicates a site index that falls between two site indices, the higher one should be used. Example: A site tree is Douglas-fir, breast height age is 75 years old and total height is 115 feet tall. King's 50-year Douglas-fir site index table indicates that a tree with a total height of 115 feet and breast height age of 75 falls between site index 90 and 95; site index is therefore 95.

A, *King's 50-year Douglas-fir table*[3]. Use for Douglas-fir and grand fir.

B. *Barnes' 100-year western hemlock table*[4]. Use for western hemlock and Sitka spruce.

C. *Meyer's 100-year ponderosa pine table*[5]. Use for ponderosa pine and Jeffrey pine. Use this table for stands that are predominantly ponderosa pine, or when pine site trees are all that are available, except in the Willamette Valley[6]. A credible site index or yield table for ponderosa pine applicable in the Willamette Valley has not been found to exist at this point in time. Until a credible Willamette Valley ponderosa pine site table becomes available and is acknowledged in a revised Department of Forestry Land Use Planning Note, the Department of Forestry's position is that it is inappropriate to use ponderosa pine to determine site productivity under OAR 660-006-0005(2) and (3). Thus, the applicant's remaining option for pine stands in the Willamette Valley would be to conduct a soils analysis following OAR 603-080-0040 (3).

The average height and the average age of the site trees can be used with the tables in Attachment A to determine site index. Tracts [as defined in OAR 660-006-0005 (3)] large enough to contain changes in productivity (e.g., multiple soil types or changes in

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[3] King, James E. 1966. Site index curves for Douglas-fir in the Pacific Northwest. For. Pap. 8. Centralia, WA: Weyerhaeuser Company, Forestry Research Center. 49 p.

[4] Barnes, George H. 1962. Yield of even-aged stands of western hemlock. USDA, Forest Service. Pacific Northwest Forest and Range Experiment Station Technical Bulletin 1273.

[5] Meyer, Walter H. 1961. Yield of even-aged stands of ponderosa pine. USDA Technical Bulletin 630. (revised 1961).

[6] Willamette Valley is defined as: Clackamas, Linn, Marion, Multnomah, Polk, Washington and Yamhill Counties and that portion of Benton and Lane Counties lying east of the summit of the Coast Range.

aspect) will require mapping the different areas of productivity, making separate calculations for the productivity of each area, and weighted averaging of the productivity across the tract.

Nonstockable Areas:

Nonstockable areas can be caused by the presence of standing or running water, a high water table, saturated soils, rock or shallow soil over rock, severe soil compaction, or mass soil movement. Nonstockable areas should be mapped and deducted from the total productivity of the tract on a percentage of area basis. Appropriate and adequate site-specific documentation is needed to justify these deductions, which in some cases may require the expertise of a professional forester or a professional soils classifier.

Determining Cubic Foot Productivity:

The tables in Attachment B are derived from a US Department of Agriculture[7] publication. They use species-specific site index information as determined from on-site measurements and the site index tables to reference a set of cubic foot productivity tables. To use a species table, find the calculated site index of the property in the left-hand column and obtain the cubic foot per acre per year from the column on the right with the corresponding reference to the site table used.

Documentation:
The consultant should document site index table(s) used, tree selection, and productivity assessment. Site index values are to be correlated with cubic foot per acre per year productivity ratings. A sample data form for forestland site productivity determination using site index is provided at the end of this Technical Note.

ODF may approve other methods or Site Index Tables for other species. 5

Step #5: Other Methods for Other Species

The Department of Forestry may approve other tree measurement methods or site index tables to determine productivity for other tree species. The methods listed in this paper can be used in combination with other published site index and yield tables if the site is not suited to one of the species listed in this paper. However, the use of other tables or the use of other species to determine site index must be approved in writing by the Department of Forestry on a case-by-case basis.

To request approval of other methods not listed in Step #4, contact the Forest Policy Analyst in the Forest Resources Planning Program for the Department of Forestry at 503-945-7411. The Department of Forestry will notify the county in writing of its

[7]USDA. 1986. Culmination of mean annual increment for commercial forest trees of Oregon. Technical Note No. 2. USDA, Soil Conservation Service, Portland, OR. (Note: the SCS - Soil Conservation Service is now the NRCS - Natural Resource Conservation Service)

recommendation that the method be used or not used. If the method is approved for use, a professional forester (as described in Step #2) should document the method used, tree selection and productivity assessment. If the method is not approved for use, or an acceptable alternative proposed, a soils analysis as described in Step #6 below is the remaining option.

Soil Survey is last option; follow OAR 603-080-0040 (3). 6

Step #6: Last Option: Soil Analysis

Where there are an insufficient number of trees on-site or nearby to conduct tree measurements, or where an alternate method for an unlisted tree species has not been approved, a site-specific soil analysis is the last option for determining site productivity. In this case, a professional soils classifier certified by the Soil Science Society of America should be used and the soils reporting provisions of OAR 603-080-0040 must be followed.[8] The Department of Forestry does not have the expertise to evaluate site-specific soil survey information.

County makes decision based on documentation provided and follows all other regulations. 7

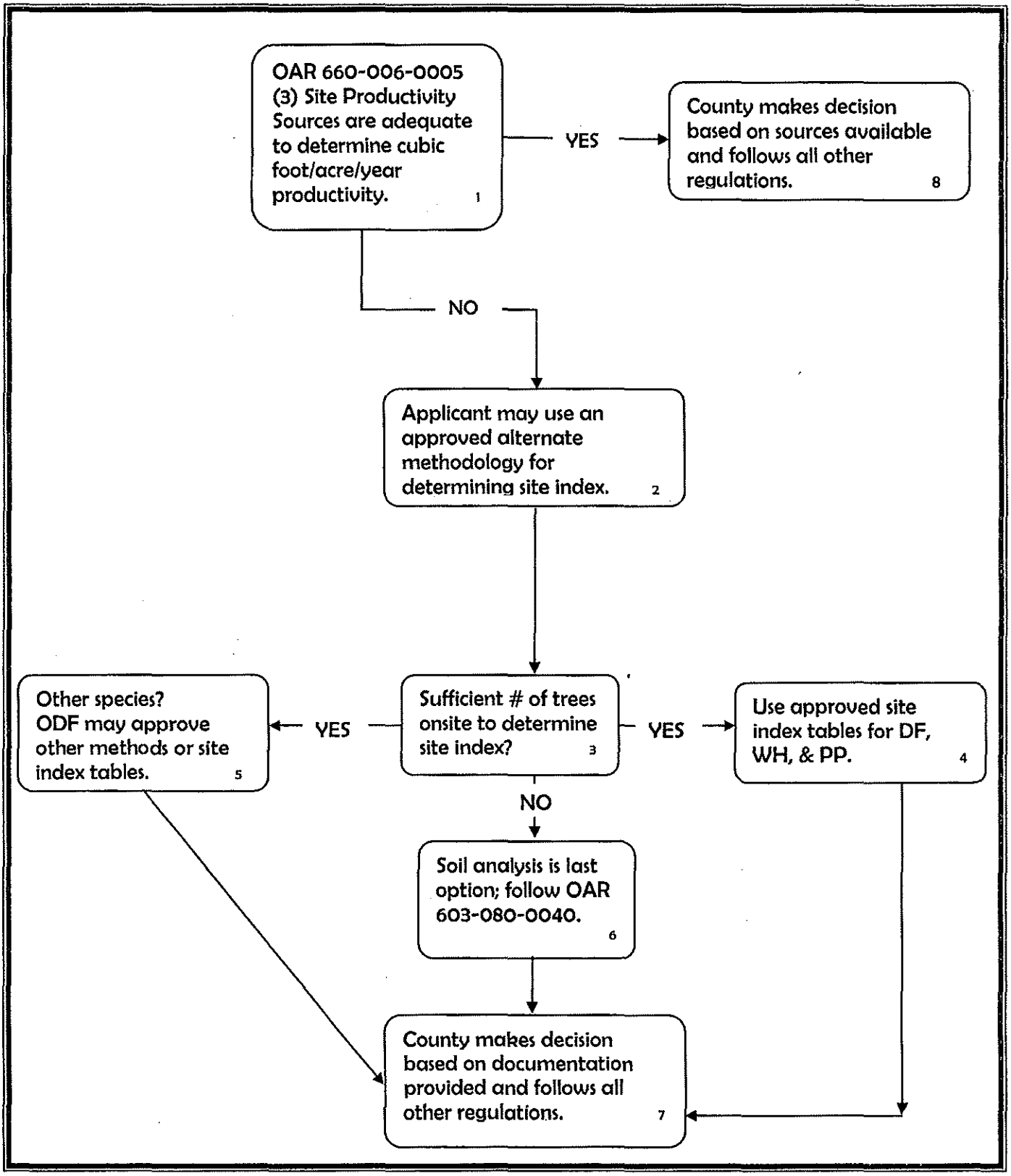
Step #7: County Review of Professional Reports

Professional assessments of forestland productivity must be submitted to the county planning department in report form for its review. Soils reports shall meet the standards for submittal that are set forth in OAR 603 Division 80. The burden of proof is on the applicant and the consultant to demonstrate that information in the submitted report is more accurate than that available in established data sources. The county staff may request the assistance of the State Forester in evaluating whether approved methodologies were used in a consulting forester's report.

The following flowchart will enable planners to determine whether the appropriate forestland productivity data has been gathered.

[8] If a determination is also being regarding whether the tract in question qualifies as agricultural land, the provisions of 2010 House Bill 3647 apply.

A Flow Chart for Determining Forestland Site Productivity



APPENDIX

Background and Additional Information:

Table 1. CUBIC FOOT PRODUCTIVITY CLASSES

CLASS	POTENTIAL YIELD-MEAN ANNUAL INCREMENT
1	225 or more cu.ft./ac./yr.
2	165 to 224 cu.ft./ac./yr.
3	120 to 164 cu.ft./ac./yr.
4	85 to 119 cu.ft./ac./yr.
5	50 to 84 cu.ft./ac./yr.
6	20 to 49 cu.ft./ac./yr.

The Department of Forestry advises using the USDA Cubic Foot Productivity Class[9] system, as opposed to other systems of measure, when making land use planning decisions because it measures the relative productivity of the soil, is not dependent upon the condition of the forest or the species of trees currently growing on the site, and is more consistent than other measures. The cubic foot productivity class system reveals the average growth rate of timber over the life of the stand measured at the peak of that average growth rate. Table 1 above shows the potential timber yields of productivity classes 1 - 6 in cubic feet per acre per year (cu.ft./ac./yr.).

Other measures that might be used to compare productivity, such as site class or site index, are not consistent between species. Site class is commonly used on the west side to describe the productivity of Douglas-fir forests, but not other species. Site index measures productivity as a function of age and is calculated as tree height divided by tree age at a base age of 100 or 50. Since on the same area, in the same length of time, different species grow to different heights, site index is not consistent between species. For example, two species with the same site index will yield different cubic foot ratings, as seen in Table 2 below.

Table 2. RATING SYSTEM COMPARISONS[10]
All Species

Site Index Table	Site Indices	Cubic foot comparisons
Douglas-fir (50 yr King Site Index)	100	136
Douglas-fir (100 yr McArdle Site Index)	100	84
Western Hemlock (100 yr Barnes Site Index)	100	142
Ponderosa Pine (100 yr Meyer Site Index)	100	102
White Fir (100 yr Schumacher Site Index)	100	218
Engelmann Spruce (100 yr Alexander Site Index)	100	109

[9] Field instructions for forest surveys in Washington, Oregon, and Northern California. USDA Forest Service, PNW Range and Experiment Station.
[10] Based on: USDA Soil Conservation Service. 1986. Culmination of Mean Annual Increment for Commercial Forest Trees of Oregon. Technical Note No.2 Forestry Revised June 1986. Portland Oregon.

Another advantage of using cubic foot productivity class is that the ratings are available for most forestland without professional assistance. The published soil surveys contain ratings that can be used by county planners or private landowners to evaluate productivity and using the information does not require visiting the site or taking measurements.

Cubic foot site productivity determinations assume fully stocked stands. In this context, "stockable area" means the proportion of an area that can be physically stocked with trees. Rock outcrops, impervious soils, or high water tables are examples of factors that may result in less than 100 percent of the site being stockable.[11] Upon request by a county government, the Department of Forestry will evaluate factors used in calculating reductions in site productivity from fully stocked stand levels.

[11] For more information, consult the USDA Forest Service, Pacific Northwest Research Station *Field instructions for forest surveys in Washington, Oregon, and Northern California* where consideration of stockable area factors are addressed.

Sample Data Form for Forestland Site Productivity Determination using Site Index

Date Prepared:_____ County:_____

Landowner Name: _____

Land use case file number (if available):_____

Location
Township:_____ Range:_____ Section(s):_____ Lot Number:_____

Name of Forester preparing report:_____

Forester's background (work experience, education, training, certifications, etc.):

_____
_____
_____
_____

Methods and equipment used in data collection:

_____
_____
_____
_____

Soil Type(s) and percentages on tract in question:_____

Tree species on tract in question:_____

Number of Dominate or Co-Dominate Trees/Species Sampled: (ex. 5 Douglas-fir, 10 Western Hemlock)

_____
_____

Average Height:_____ Average Age:_____

Average Site Index:_____ Site Productivity cubic feet/ac./yr:_____
(Use appropriate approved Site Index table in Attachment A) (Use Attachment B)

Notes/Comments:_____
_____
_____
_____

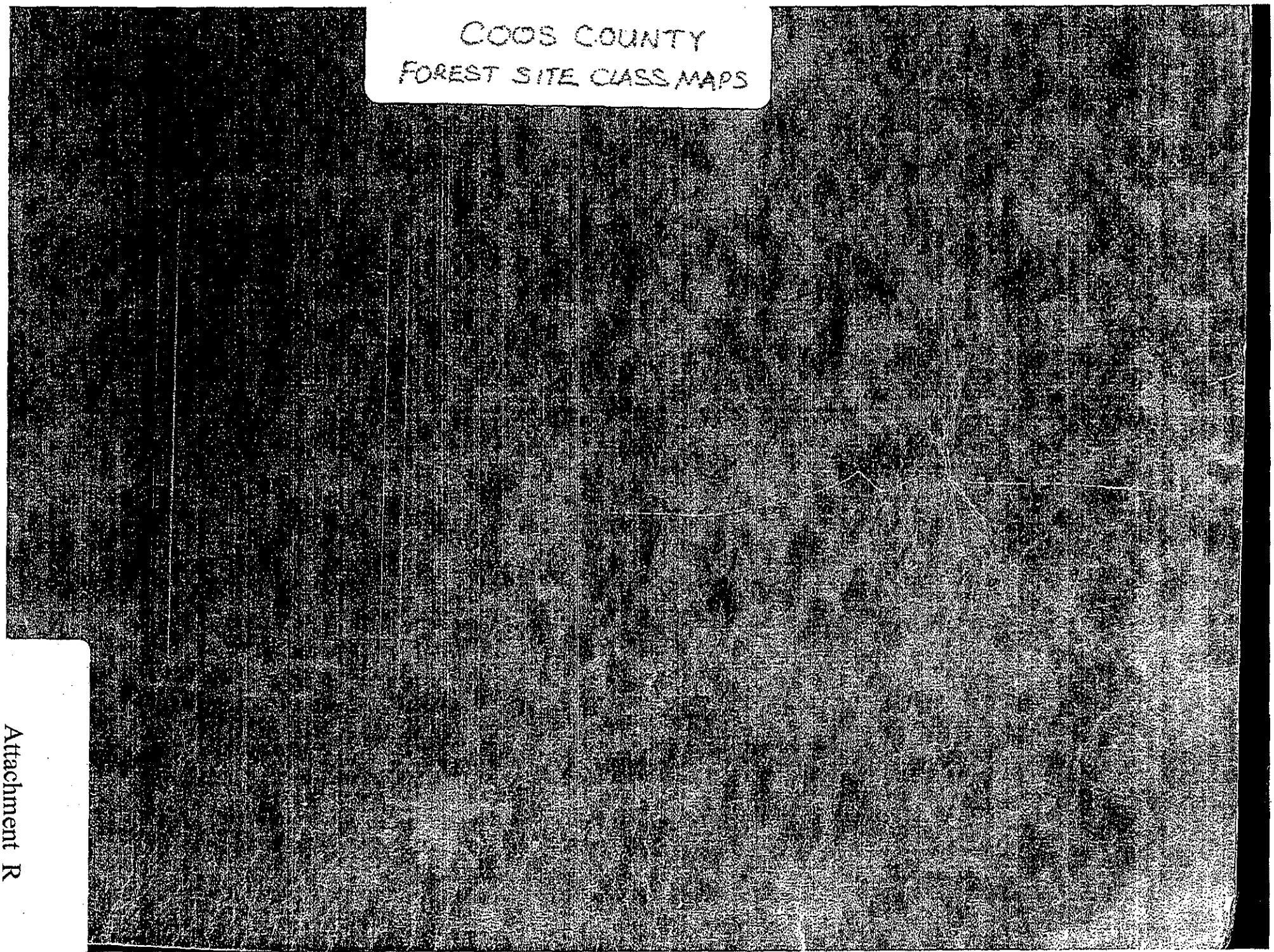
- Attach map of property with marked locations of where the trees sampled are located. Map needs to be at appropriate scale for ease of viewing property and understanding where the trees are located.
- Attach site index tables used.
- Attach other documentation and evidence needed to justify methods and conclusions.

Data Collection Form: * Make copies if more than 30 trees sampled.

Tree ID	Tree Species	Height (ft.)	Age (yrs.)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

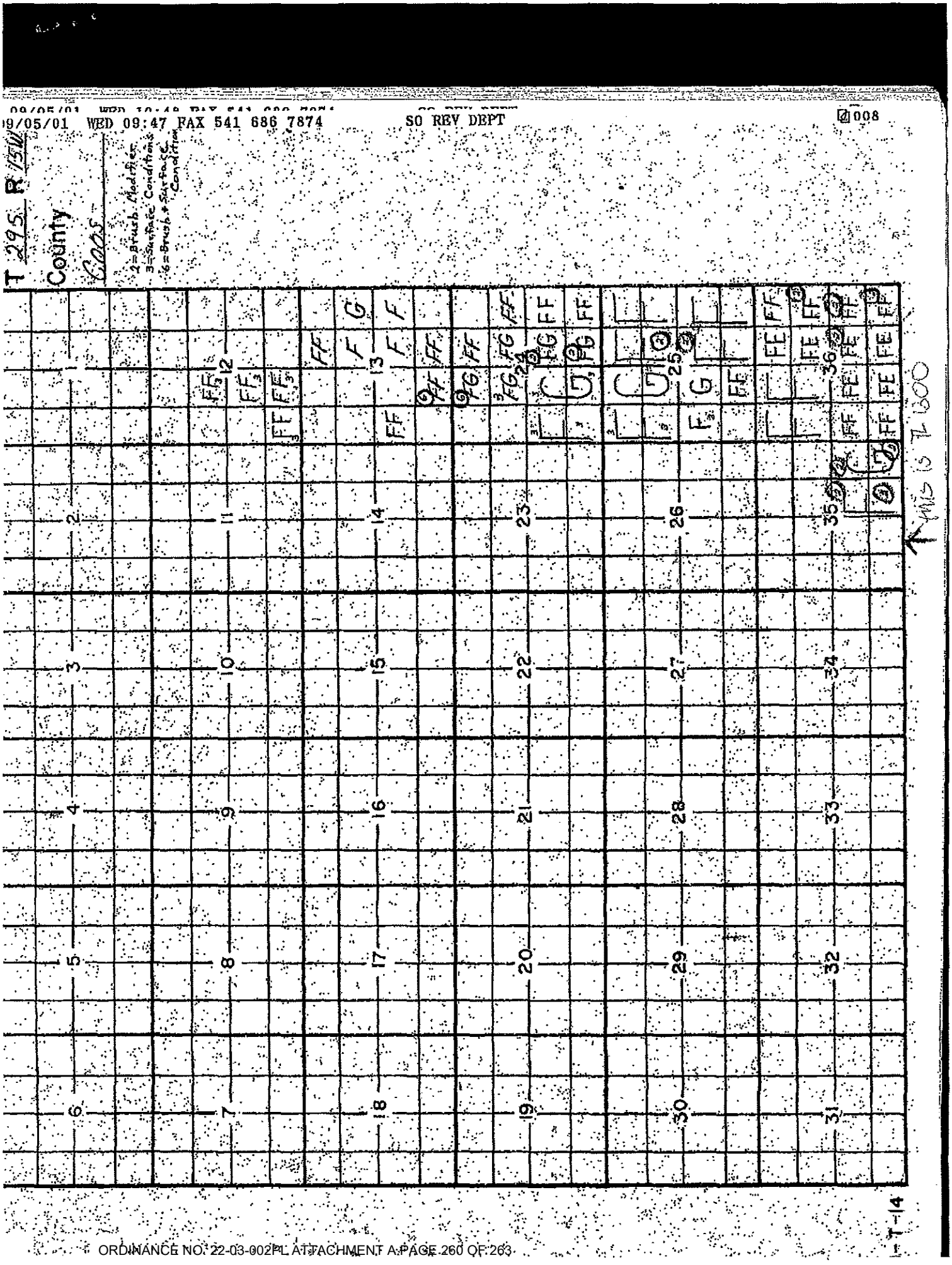
Sum: _____

Average: _____



Attachment R

each map is broken down by grids - info assigned by DOR per county


T 29S R 15W
County
Coos
2=Brush Modifier
3=Surface Conditions
6=Brush & Surface Conditions
THIS IS T 14.00
T-14

Coos County Assessor's Office

Coos County Assessor's Office
250 N. Baxter St.
Coquille, OR 97423

Mary Jane Starks
Farm/Forest Appraiser
541-396-7910
Email: mjstarks@co.coos.or.us

WE'RE ON THE WEB!
http://www.co.coos.or.us

How important are land or site classes?

They determine the value that your land is assessed at for property taxes. They determine how special assessments are applied to your property.

The SWCD Soil Book is available at no charge from Coos Soil & Water Conservation District office in Coquille.

Contact them at:

Coos Soil & Water Conservation District

382 N Central

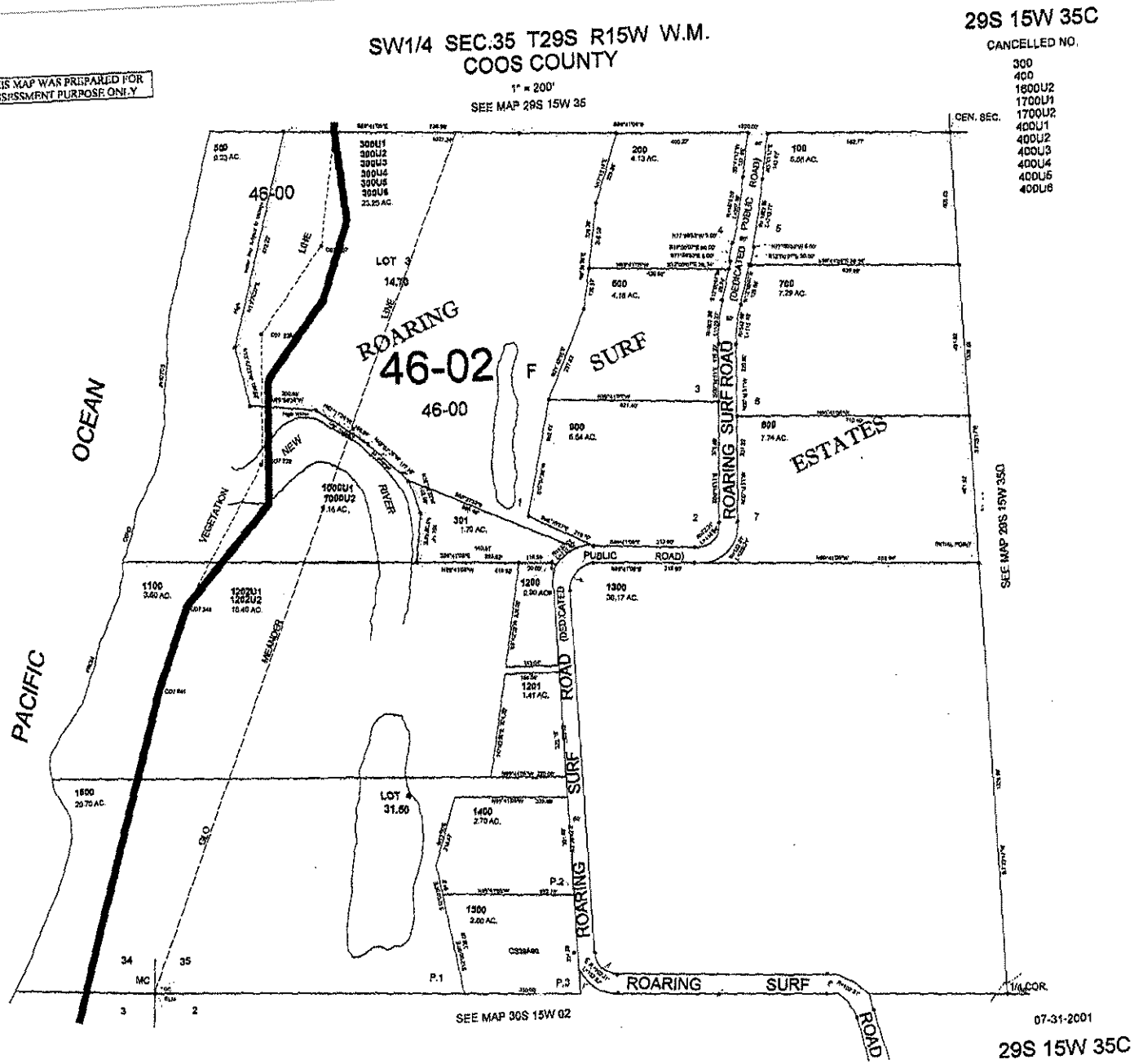
Coquille, OR 97423

(541) 396-6879

Forestland Classifications

FORESTLAND CLASSIFICATIONS	
Land Class	**Site Class**
FA	I+, I, I-
FB	II, II+
FC	II-, III+
FD	III
FE	III-, IV+
FF	IV, IV-
FG	V
FX	Below Site V

Based on Bulletin #201 tables dated 1930 and James King 50 year index tables dated 1966, topographical features, vegetation, and soil types.


SW1/4 SEC.35 T29S R15W W.M.
COOS COUNTY
1" = 200'
SEE MAP 29S 15W 35
29S 15W 35C
CANCELLED NO.
300
400
1600U2
1700U1
1700U2
400U1
400U2
400U3
400U4
400U5
400U6
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY
OCEAN
PACIFIC
ROARING
46-02
46-00
LOT 3
14.70
LINE
NEW
VEGETATION
RIVER
MEANDER
O.H.W.
ROARING SURF ROAD (DEDICATED PUBLIC ROAD)
ROARING SURF ESTATES
PUBLIC ROAD
ROAD (DEDICATED)
SURF
ROARING
LOT 31.60
SEE MAP 29S 15W 35D
SEE MAP 30S 15W 02
ROARING SURF ROAD
1/4 COR.
07-31-2001
29S 15W 35C

Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas:

	Township	Range	Section	Area
Bald Eagle Nests	23S	13W	23	Tenmile
	23S	11W	05	Big Creek
	23S	12W	21	Willow Point
	24S	12W	04	Palouse
	24S	13W	36	Mettman
	25S	11W	29	Bessy Creek
	25S	11W	33	Dellwood
	25S	11W	22	Rachel Creek
	25S	11W	32	Morgan Ridge
	26S	14W	14	South Slough
	27S	13W	09	
	28S	10W	09	Brewster Gorge
	31S	12W	16	Baker Creek
	29S	14W	31	Twomile Creek
	28S	14W	11	Randolph
Great Blue Heron Colonies	24S	13W	27 SW ¼	
	25S	14W	24 SE ¼	
	23S	13W	26	Saunders Lake
	24S	13W	23	North Bay
	25S	11W	15	Weyerhaeuser
	25S	12W	31 NW ¼	Catching Slough
	25S	14W	24	North Spit
	26S	14W	11	South Slough
	25S	13W	24	
	26S	14W	14 NE ¼,SE ¼	
	27S	14W	35 SE ½, NW ¼	Sevenmile
	26S	14W	14 NW ¼	
	30S	15W	15	Muddy Lake
	23S	12W	28	Templeton Arm
Band-Tailed Pigeon Mineral springs	24S	13W	24 & 25	Haynes
	25S	13W	24	Cooston
	26S	13W	01	
	28S	14W	10	Prosper
	29S	11W	26	
	29S	11W	35	Blueslide
	29S	11W	36	Rock Quarry

ATTACHMENT B

- ***ARTICLE 5.1 REZONES***

- ***SECTION 5.1.100 LEGISLATIVE AMENDMENT OF TEXT ONLY:***

An amendment to the text of this ordinance or the comprehensive plan is a legislative act within the authority of the Board of Commissioners. [OR 04 12 013PL 2/09/05]

- ***SECTION 5.1.110 WHO MAY SEEK CHANGE:***

Coos County shall consider the appropriateness of legislative plan text and map amendment proposals upon: 1. A motion by the Board of Commissioners; or 2. A motion of the Planning Commission; or 3. The submission of formal request made by either: a. The Citizen Advisory Committee; or b. An application filed by a citizen or organization, accompanied by a prescribed filing fee. If a Measure 56 notice is required the applicant shall be responsible for the payment of all cost associated with that service.

- ***SECTION 5.1.115 ALTERATION OF A RECOMMENDED AMENDMENT BY THE PLANNING DIRECTOR:***

The Planning Director may recommend an alteration of a proposed amendment if, in the director's judgment, such an alteration would result in better conformity with any applicable criteria. The Planning Director shall submit such recommendations for an alteration to the Hearings Body prior to the scheduled public hearing for a determination whether the proposed amendment should be so altered.

- ***SECTION 5.1.120 PROCEDURE FOR LEGISLATIVE AMENDMENT:***

The Board of Commissioners shall conduct one or more public hearings with 10 days advance published notice of each of the hearings. The public notice shall state the time and place of the hearing and contain a statement describing the general subject matter of the ordinance under consideration. (ORS 215.060 & ORS 215.223). Notice to DLCD shall be provided 35 days prior to the initial hearing per ORS 197.610. Notice of adoption is subject to ORS 197.615. [OR 04 12 013PL 2/09/05]

- ***SECTION 5.1.125 MINOR TEXT CORRECTIONS:***

The Director may correct this ordinance or the Comprehensive Plan without prior notice or hearing, so long as the correction does not alter the sense, meaning, effect, or substance of any adopted ordinance. [OR 04 12 013PL 2/09/05]

- ***SECTION 5.1.130 NEED FOR STUDIES:***

The Board of Commissioners, Hearings Body, or Citizen Advisory Committee may direct the Planning Director to make such studies as are necessary to determine the need for amending the text of the Plan and/or this Ordinance. When the amendment is initiated by application, such studies, justification and documentation are a burden of the initiator.

- ***SECTION 5.1.135 STATUS OF HEARINGS BODY RECOMMENDATIONS TO THE BOARD OF COMMISSIONERS:***

A Hearings Body recommendation for approval or approval with conditions shall not in itself amend this Ordinance or constitute a final decision.

FINDING: This request is not a text amendment as described in Section 5.1.100. This is request meets the both Sections 5.1.110(1) and (3)(b) as by motion of the Board of

Commissioners to contract out directly with Crystal Shoji to draft the application and submit it for review on behalf of the County Forestry Department. This property was under the management of the County Forestry Department to manage. This does not require a Measure 56 notice as it only effects one property. This property is considered under Ordinance 22-03-002PL.

The Planning Director does not request any additional alternations at this time. The Planning Commission did not recommend a different approval to the Board of Commissioners. However, please note that the parcel size cannot go below 10 acres without an exception to Statewide Planning Goal 14. This will be considered a non-resource rural residential. The Planning Commission did not wish to include additional qualifiers to ensure compatibility with surrounding properties. However additionally, Deschutes County has been given the direction from DLCD that accessory dwelling units will not be allowed on non-resource lands.

The Planning Commission recommended approval of the application during the May 5, 2022 meetings. The Board of Commissioners' will issue the final decision.

- ***SECTION 5.1.200 REZONES:***

Rezoning constitutes a change in the permissible use of a specific piece of property after it has been previously zoned. Rezoning is therefore distinguished from original zoning and amendments to the text of the Ordinance in that it entails the application of a pre-existing zone classification to a specific piece of property, whereas both original zoning and amendments to the text of the Ordinance are general in scope and apply more broadly.

- ***SECTION 5.1.210 RECOMMENDATION OF REZONE EXPANSION BY THE PLANNING DIRECTOR:***

The Planning Director may recommend an expansion of the geographic limits set forth in the application if, in the Planning Director's judgment, such an expansion would result in better conformity with the criteria set forth in this Ordinance for the rezoning of property. The Planning Director shall submit a recommendation for expansion to the Hearings Body prior to the scheduled public hearing for a determination whether the application should be so extended.

- ***SECTION 5.1.215 ZONING FOR APPROPRIATE NON-FARM USE:***

Consistent with ORS 215.215(2) and 215.243, Coos County may zone for the appropriate non-farm use one or more lots or parcels in the interior of an exclusive farm use zone if the lots or parcels were physically developed for the non-farm use prior to the establishment of the exclusive farm use zone.

- ***SECTION 5.1.220 PROCESS FOR REZONES:***

1. *Valid application must be filed with the Planning Department at least 35 days prior to a public hearing on the matter.*
2. *The Planning Director shall cause an investigation and report to be made to determine compatibility with this Ordinance and any other findings required.*
3. *The Hearings Body shall hold a public hearing pursuant to hearing procedures at Section 5.7.300.*

4. *The Hearings Body shall make a decision on the application pursuant to Section 5.1.225.*
5. *The Board of Commissioners shall review and take appropriate action on any rezone recommendation by the Hearings Body pursuant to Section 5.1.235.*
6. *A decision by the Hearings Body that a proposed rezone is not justified may be appealed pursuant to Article 5.8.*

- ***SECTION 5.1.225 DECISIONS OF THE HEARINGS BODY FOR A REZONE:***

The Hearings Body shall, after a public hearing on any rezone application, either:

1. *Recommend the Board of Commissioners approve the rezoning, only if on the basis of the initiation or application, investigation and evidence submitted, all the following criteria are found to exist:*
   a. *The rezoning will conform with the Comprehensive Plan or Section 5.1.215; and*
   b. *The rezoning will not seriously interfere with permitted uses on other nearby parcels; and*
   c. *The rezoning will comply with other policies and ordinances as may be adopted by the Board of Commissioners.*

2. *Recommend the Board of Commissioners approve, but qualify or condition a rezoning such that:*
   a. *The property may not be utilized for all the uses ordinarily permitted in a particular zone;*
   b. *The development of the site must conform to certain specified standards; or*
   c. *Any combination of the above.*

   A qualified rezone shall be dependent on findings of fact including but not limited to the following:
      i. *Such limitations as are deemed necessary to protect the best interests of the surrounding property or neighborhood;*
      ii. *Such limitations as are deemed necessary to assure compatibility with the surrounding property or neighborhood;*
      iii. *Such limitations as are deemed necessary to secure an appropriate development in harmony with the objectives of the Comprehensive Plan; or*
      iv. *Such limitations as are deemed necessary to prevent or mitigate potential adverse environmental effects of the zone change.*

3. *Deny the rezone if the findings of 1 or 2 above cannot be made. Denial of a rezone by the Hearings Body is a final decision not requiring review by the Board of Commissioners unless appealed.*

- ***SECTION 5.1.230 STATUS OF HEARINGS BODY RECOMMENDATION OF APPROVAL:***

The recommendation of the Hearings Body made pursuant to 5.1.225(1) or (2) shall not in itself amend the zoning maps.

- ***SECTION 5.1.240 REQUIREMENTS FOR "Q" QUALIFIED CLASSIFICATION:***

Where limitations are deemed necessary, Board of Commissioners may place the property in a "Q" Qualified rezoning classification. Said "Q" Qualified Classification shall be indicated by

the symbol "Q" preceding the proposed zoning designation (for example: Q C-1).

- ***SECTION 5.1.275 STANDARDS FOR COMPREHENSIVE PLAN AND REZONE FOR NONRESOURCE LAND:***

1. The subject property does not meet the definition of Agricultural Land under Statewide Planning Goal 3 and /or Forest Land under Statewide Planning Goal 4.

   NOTE: If the subject property is predominantly Class 1-IV soils or if it predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.

2. The subject property does not contain any natural resources defined in Statewide Planning Goal 5 which are identified in the Coos County Comprehensive Plan;
3. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract.
4. The subject property is not considered to be nonresource land simply because it is too small to be farmed or forest managed profitably by itself. If the subject property can be sold, leased, rented or otherwise managed as part of a commercial farm, ranch or other forestland it is not considered to be nonresource land.
5. The subject property is not considered to be nonresource land if it has been given a special tax assessment for farm use or as designated forestland at any time in the past five years.
6. If the subject property is found to meet all of the standards above to be considered nonresource land the county shall also determine that rezoning the property to a nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.
7. The subject property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use.

   Any proposal of at least 2 acres but less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040.

8. Rezoning of land that is found to be nonresource land shall be to a "rural" zone that is appropriate for the type of land and its intended use.

   Rural commercial or industrial development must comply with standards for small-scale, low impact commercial and industrial use.

   Development of property rezoned from Forest or Forest Mixed use to a nonresource zone shall comply with the resource development and siting standards. (ORD NO. 04-01-001PL February 10, 2004)

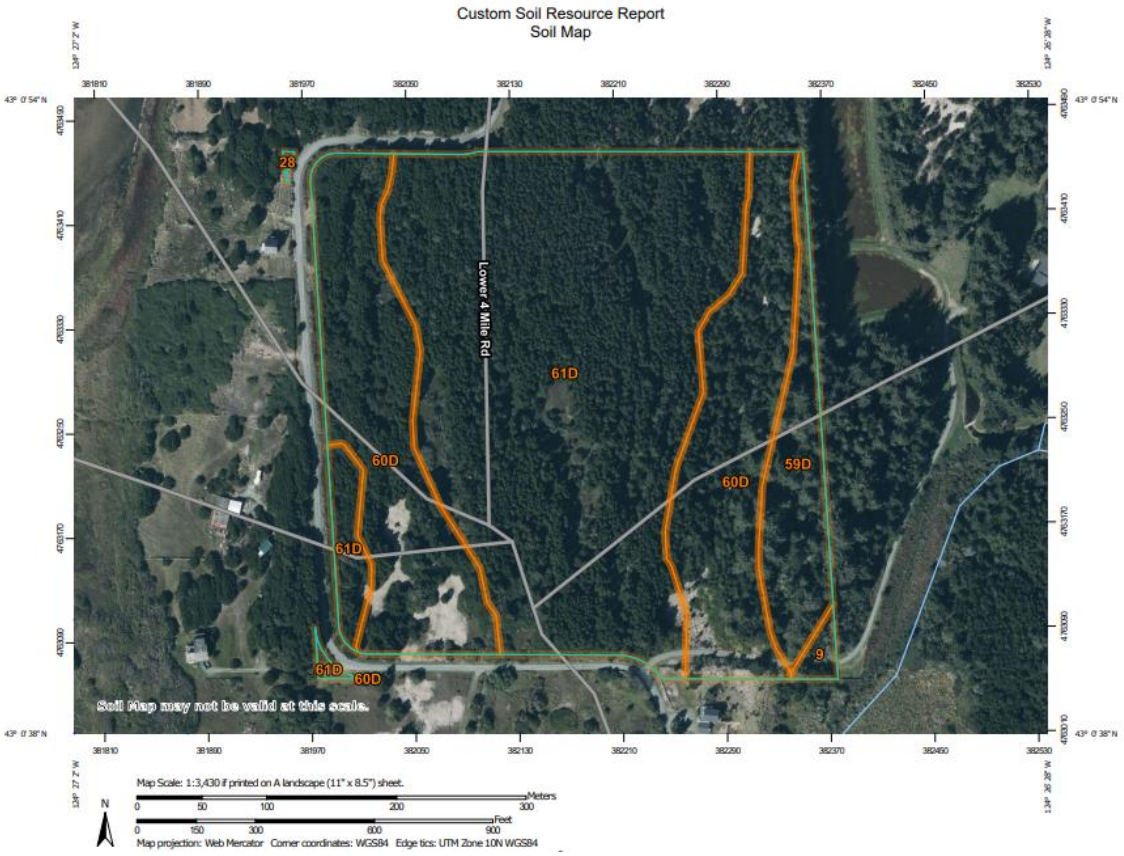
FINDING: The applicant is requesting to change the Plan Map to change the official zone

form from Forest to Rural Residential. This requires the removal from the mixed use inventory and because the minimum size is 10 acres as it will be mapped as a Qualified-Rural Residential-5 zone.

The subject property is not inventoried as having any Goal 5 resources. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract as explained in the application and within this staff report. The county has tried to sell and lease this property with no interest from anyone as described in the application. This property is exempt from property tax classification at this time but that has not been a factor in this process. A nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.

The subject property is not predominately classified as Class I-IV soils. The applicant stated, and Staff verified, that approximately 98% of the subject property composes of soil not classified as Class I-IV soils; these soils are Waldport-Heceta fine sands – 61D, Waldorf-Dune land complex – 60D, Waldorf fine sand – 59D.

The other criteria is to address is whether the subject property is predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.3	0.7%
28	Heceta fine sand	0.0	0.1%
59D	Waldport fine sand, 0 to 30 percent slopes	2.8	7.6%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	12.7	34.1%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	21.4	57.5%
Totals for Area of Interest		**37.2**	**100.0%**

Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	Common trees	Site Index	Base Age	Site Index Curve Number	Volume Growth Rate (CMAI)
		ft	*yrs*		*cu ft/ac/yr*
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

Staff calculated the following table identifying the cu ft / ac / yr of the subject property. The subject property calculated at 4221.2 cu ft/ac/yr, which is less than the 5000 cu ft/ac/yr requirement for being consider resource land.

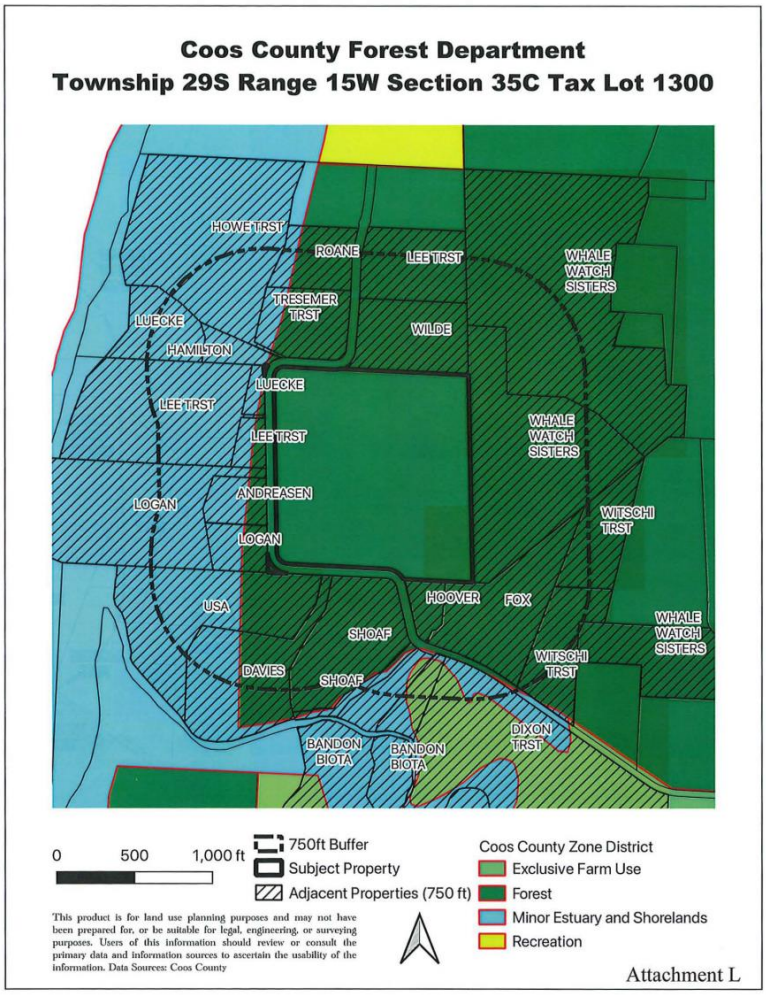
Soil	Acres	Tree Species	cu ft/ac/yr	Total
59D	2.8	Shore pine	86	240.8
61D	21.4	Shore pine	86	1840.4
61D	21.4	Sitka spruce	100	2140
			Total	**4221.2**

This property is surrounded by other resource zoned property. However, the property to the west is a non-conforming subdivision and mostly develop with residential uses. The property is surrounded by tax lots that range in size from 0.90 to 67.84. With an average size of 13.34 and within those tax lots.

MES = Minor Estuary Shorelands, F = Forest, EFU = Exclusive Farm Use and RR-5 = Rural Residential.

Below is the tax lot information to show size, zoning and average size. The area under consideration was the notification area.

Map No	Parcel No	Acres	Plan Zone
29S15W35C	300	3.88	MES
	301	1.70	F
	600	4.18	F, MES
	700	7.29	F
	800	7.74	F
	900	5.54	F, MES
	1000	1.08	MES
	1200	0.90	F, MES
	1201	1.41	F, MES
	1202	8.20	F, MES
	1400	2.70	F, MES
	1500	2.60	F, MES
	1600	20.70	F, MES
29S15W35D	600	37.52	F
	700	22.87	F
	801	5.93	F
30S15W02	101	55.16	MES, EFU
	102	6.20	F
	104	9.74	F
	105	10.27	F
	107	1.54	F
	109	40.00	MES, EFU
	110	9.95	F
	111	67.84	Q-RR-5, MES, F, EFU
	112	1.08	MES
	501	14.20	MES, F
	502	10.00	MES, F
	Average	13.34	



Staff finds it appropriate based on the zoning that at least a minimum of 10 acres be applied. Any proposal of at less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040 based on the language of the CCZLDO. The Board of Commissioners could state that the minimum lot size cannot be less than the average tax lot size of 13.34 acres if they find it necessary to be compatible with surrounding zoning. The properties range in uses, zoning and development capabilities, soils, hydrology of the soils, zoning, flood hazard, erosion and size. However, based on the these factors it does not appear that this proposal will change the overall stability of the land pattern.

The subject property is not developed. Based on the zoning map, the subject property is surrounded by similar forest zoning district.

Typically, the RR-5 zoning district requires a 5-acre minimum lot size. However, applicant requested that a qualifier be placed on the zoning district that lot size is a minimum of 10 acres to be consists with the nonresource rezone criteria. This will meet the standard for non-resource land based on the LUBA case Oregon Shores

Conservation Coalition v. Curry County, 53 Or LUBA 503 (2007). The subject property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use.

The application was received on March 4, 2022 and the 35 day notice to DLCD was provided within the appropriate period. The notice shall be provided 35 days prior to the first hearing. The first hearing on this matter is May 5, 2022 and the notice was required to be submitted by March 31, 2022. Notice was provided on March 23, 2022. This hearing is after this date. Therefore, this application meets the minimum of being filed 35 days prior to the first hearing.

This application is plan map amendment to change the zoning from Forest to Rural Residential and the official zoning from Forest to Qualified- Rural Residential with the Qualifier requiring 10 acre minimum lot size. Based on the Planning Commission recommendation, Staff requests the Board of Commissioners approve the rezone based on the findings found in the staff report and application.

Coos County Comprehensive Plan

- ***Coos County Comprehensive Plan Volume II, Part I Section 3.2 and Part II Section 5.1***

3.2 FOREST LANDS

1. Legislative Framework

1.1 Introduction

Forest lands are the resource base for Oregon's leading industry, lumber and wood products. In addition, they provide many other benefits of economic, ecologic, and aesthetic value: water quantity and quality, minerals, grazing for livestock, fish and wildlife, recreation and scenic resources. According to the State Department of Forestry's "Forestry Program for Oregon," there are currently more than 24 million acres of commercial forest land in the State. Of these lands, more than 15 million acres are in public ownership, under the U.S. Forest Service and Bureau of Land Management. Five (5) million acres are owned by the forest industry and more than four (4) million areas are in other private-ownerships. Conservation and proper management of the State's commercial forest lands is essential.

1.2 Statewide Land Use Goal #4: Forest Lands

The State has adopted the following Goal:

GOAL: To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Forest lands are those lands acknowledged as forest lands as of the date of adoption of this goal amendment. Where a plan is not acknowledged or a plan amendment involving forest lands is proposed, forest land shall include lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources.

Uses which may be allowed subject to standards set forth in this goal and administrative rule are: (1) uses related to and in support of forest operations; (2) uses to conserve soil, water and air quality, and to provide for fish and wildlife resources, agriculture and recreational opportunities appropriate in a forest environment; (3) locationally dependent uses; (4) forest management dwellings that are necessary for, and accessory to, forest operations; and (5) other dwellings under prescribed conditions."

COMMENTARY

1) Mapping of site classes. The State Land Conservation and Development Commission has clarified the requirement of the Goal on mapping of site classes. It requires mapping according to "cubic foot site class," a measure of the potential forest productivity of the land.

Where cubic foot site class mapping is not directly available, it can be derived by conversion of other readily available mapping showing other types of site classification, e.g. the State Department of Revenue system. The State Department of Forestry has provided a convenient conversion table which is shown in Table 2.

2) Definition of forest lands. This definition encompasses not only existing and potential commercial forest lands but also non-commercial forest land supporting forest uses other than timber production, non-forest lands which require protection due to their fragility and forested lands in urban and agricultural areas. "Commercial forest land" is not defined in the Goal.

3) Definition of forest uses. This definition includes a number of potential uses, and constitutes a mandate for a "multiple-use" approach to the use of forest lands. It includes all the uses in the multiple-use concept under which public forest lands are managed by the U.S. Forest Service and Bureau of Land Management. While public land must be managed for this full range of uses, private forest land may be managed to emphasize one or other (or more) of these uses. However, other uses like dispersed recreation and water supply may occur on private lands incidentally to the primary use. Most forest uses are compatible with one another, and may occur simultaneously. However, emphasis on one use may exclude others. For instance, developed recreational uses may not always be compatible with time harvest. The Comprehensive Plan identifies special areas where significant resources exist (for example, significant wildlife habitats, or special scenic resources) where conflicts may occur with other forest uses like timber harvest. It should be noted that a residence is not defined as a forest use, whether or not it is provided in conjunction with forest management.

1.4 Relationship of the Forest Lands Goal to the Forest Practices Act

The Forest Practices Act (FPA) (ORS 527.620-527.990) is implemented by the State Department of Forestry and sets minimum standards for the following forest practices:

(a) reforestation of forest land economically suitable therefore;

(b) road construction and maintenance operations in forest land;

(c) harvesting of forest tree species;

(d) application of chemicals on forest land; and

(e) disposal of slashing on forest land.

Sets minimum standards for surface mining. These practices are regulated for the following objectives:

(a) maintaining forest tree species;

(b) maintaining soil air and water resources; and

(c) providing a habitat for wildlife and aquatic life.

These rules apply to any operations on all forest lands throughout the State, except federal lands, and provide a significant level of protection for forest uses. These standards have been recognized by EPA as "Best Management Practices" to protect water quality for forest operations (See ORS 527.620).

The relationship between the Forest Practices Act (FPA) and the goal was addressed by the 1979 Oregon Legislature in HB 3008, which; upon passage, became incorporated into the FPA as part of ORS Chapter 527.

ORS 527.722 (1) Except as provided in subsection (2) of this section, no unit of local government shall adopt any rules, regulations or ordinances regulating the conduct on forest lands of forest operations governed by the Oregon Forest Practices Act or rules promulgated thereunder.

(2) Notwithstanding subsection (1) of this section, a city may adopt rules, regulations or ordinances regulating the conduct on forest lands of forest operations within city boundaries if those rules, regulations, or ordinances establish standards equal to or more stringent than those established by the Oregon Forest Practices Act or rules promulgated thereunder.

ORS 527.724 Any forest operations on forest lands within this state shall be conducted in full compliance with the rules and standards of the Environmental Quality Commission relating to air and water pollution control. In addition to all other remedies provided by law, any violation of those rules or standards shall be subject to all remedies and sanctions available under statute or rule to the Department of Environmental Quality or the Environmental Quality Commission.

ORS 527.726 (1) Nothing in ORS 527.722 and ORS 527.724 is intended to preclude counties from performing their planning duties pursuant to ORS 197.005 to 197.430 with respect to forested lands by:

a) Designating in comprehensive plans forested lands to be conserved in accordance with the statewide planning goals;

b) zoning forested lands for uses other than or complementary to commercial growing and harvesting of forest tree species in implementing a comprehensive plan; or

c) adopting rules, regulations or ordinances regulating forest operations on those forested lands zoned for primary uses other than the commercial growing and harvesting of forest tree species in accordance with the use or purpose for which those lands have been zoned.

(2) As used in this section, "forested lands" means those lands upon which forest tree species are growing.

Thus, the statutes effectively prohibit counties from establishing forest practices rules beyond those in the FPA. The Forest Lands Goal itself does not directly address the application of management standards affecting forestry, the implication being that this is handled by the FPA. As noted in ORS 527.736 above, however, counties adopt more stringent forest practice rules only on forested lands zoned for primary uses other than and not including commercial timber

management and harvest. Thus, if forest land is zoned for another forest use, for instance a municipal watershed with timber management excluded or made a conditional use only, and if it is found that the normal practice of timber harvest would conflict with the water resource, then additional rules, regulations or ordinances regulating forest operations may be imposed to protect that resource. However, if the zone permits forest uses in general, additional regulations may not be imposed. An Attorney General's opinion [#7894, 4/28/80] makes it clear that this section of ORS 527 does not grant counties additional powers. It simply ensures that it retains the powers to zone and regulate uses granted in ORS Ch. 197. The opinion was given in answer to a question by State Senator Kulongowski, who asked whether a county might impose zoning regulations different from the FPA in a watershed.

If there is some concern over the FPA regulations, jurisdictions are required to either:

(a) Work with the local forest practices officer of the State Department of Forestry to have the resource protected through forest operation management plans for specific areas and/or operations, or

(b) Seek an FPA rule amendment through the Regional Forest Practices Committee.

1.5 Special Provision in Coastal Shorelands Goal (#17) Relating to Forest Practices

The Coastal Goals make specific provisions relating to the Forest Practices Act and its implementation. Most refer to estuarine shorelands. (See Estuary Elements). However, there is one requirement which also relates more generally to non-estuarine shorelands. The State Department of Forestry must:

"recognize the unique and special values provided by coastal shorelands when developing standards and policies to regulate uses of forest lands within coastal shorelands. With other state and federal agencies, the Department of Forestry shall develop forest management practices and policies which protect and maintain the special shoreland values and forest uses." (Goal 17, Implementation Requirement (1).)

This means that special forest practices regulation must be developed in coastal shorelands to protect diverse values such as recreation, scenic resources, wildlife habitats or natural areas.

2. Forest Land Inventory

2.1 Forest Productivity Measures.

The 'site index' concept is used to measure the forest productivity of a particular location. 'Site index' is based on the height that a free-growing forest tree will reach within a certain time period (normally 100 years). A fully-stocked stand of trees of this species will add a certain volume of wood growth per acre per year. An alternative measurement of productivity is based on this volume and is called "cubic foot site class." There is a variety of productivity classifications based on these two measures. The classification systems used for Douglas Fir in Western Oregon are summarized in Table 2 below.

Table 2

Classification Systems for Douglas Fir
(below 2500 feet in western Oregon)

Growth Measures	Scale																				
Site Index: Height in Ft. at 100 years	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210				
Potential Yield: cubic feet/acre/year	20	20-49	50-80				85-119		120-164				165-224								
Classification Systems																					
Cubic Foot Site Class	7	6	5				4		3				2								
Site Class (Bulletin 201)			V				IV		III				II				I				
Dept. of Revenue Forest Land Class	FX		FG				FF		FE				FD		FC		FB		FA		

Source: Oregon State Department of Forestry

Douglas fir is used as the basis for productivity because it is the dominant species in most areas west of the Cascades. Along the coast, however, other species like Shore pine or Sitka spruce may be dominant. While the shore pine areas are usually older stabilized sand dune areas and are of low productivity, in Sitka spruce areas the site class may be higher for this species than for Douglas fir.

The Forest Lands Goals requires that forest productivity be inventoried and mapped by 'cubic foot site class.' However, as noted earlier, the Department of Revenue Forest Land Classification System is recognized as an acceptable equivalent, and may be converted to cubic foot site class by Table 2 above.

2.2 Forest Productivity Mapping

Generalized forest site classes for the forest lands of Coos County have been identified on the Forest Resources map at a scale of 1/2" = 1 mile and include:

1. *Cubic Foot Site Classes 2 and 3 (combined) with a potential yield of 120-220 cubic foot per acre per year for Douglas fir.*
2. *Cubic Foot Site Class 4 (85-119 cu. ft./acre/year)*
3. *Cubic Foot Site Class 5 (50-84 cu. ft./acre/year)*
4. *Boundary of area in which Sitka spruce and Hemlock tend to dominate as the major timber type.*

The site productivity mapping is based on the Forest Land classification of the Oregon State Department of Revenue.

These classifications reflect observed growth, rates on sites that were forested in 1967 and are generalized to 40 acre map units. The boundaried area addresses the concern of the Coos County Forestry Department that in many areas where a relatively low site class is indicated for Douglas fir, a significantly higher site class exists for Sitka Spruce or Western Hemlock.

As Table 2 shows, there is not an exact correspondence between the divisions of the Department of Revenue site classes and those of cubic foot site class. For instance, the lower half of Class FE and the upper half of FF correspond with Site Class 4. Thus, some map interpolation is done in order to approximate the extent of Site Class 4 and 5, as suggested by the State Department of Forestry, the procedure followed was to separate Class FE and FF lands into upper or lower divisions based on whether one or more of the neighboring 40 acre units were in a higher or lower class, or the same class. For instance, if a unit of FF is bounded by one or more units of FE, then it is placed in Site Class 4. Otherwise, it is in Site Class 5. The Cape Arago to Beaver Hill area, which includes part of the Coos County Forest, is generally site class 3 or 4 land for Douglas fir. However, it is considerably more productive for Sitka spruce and Hemlock.

As the Forest Resources map indicates, much of the County is highly suitable for timber production of major commercial species. It should be noted that the flood plains, where in agricultural use, were not given site classes by the D.O.R. due to the fact that they were not under forest cover in 1967, though these soils are highly productive.

The original tree cover was mainly hardwoods, alder, maple, ash and myrtle, with some conifers. Technically, these lands could be classified as forest lands, because of the potential vegetation, but their primary value will continue to be as agricultural lands. A somewhat lower productivity is indicated on the coastal plain, where poorer soils and climate limit growth and in the Siskiyou National Forest in the southern part of the county, where elevation and rocky soils are limiting factors. However, even these sites have a potential productivity well above 20 cu. ft./acre/year, which is the standard definition of commercial forest land.

Only the sand dune areas of the coastal fringes have so little growth potential that they fall outside the definition of "commercial forest lands."

Unlike the definition of 'Agricultural Land', which has a different standard in Eastern Oregon, the definition of "commercial forest lands" is the same state-wide. However, in reality a rather different standard operates on the Oregon Coast, where the levels of forest productivity are generally very high. Land of lower site classes in Coos County (site class 4 or below) is regarded as relatively poor timber growing land. Commercial timber production is only feasible on lower site class lands where large contiguous tracts are managed (for example in the Coos County Forest or the upper elevations of the Siskiyou National Forest.) There are a few large corporate holdings on the coastal plain in these lower site class areas which may still be economically feasible to manage. However, many citizens in this area have complained that most timber companies are not interested in purchasing land and in the area for commercial timber production. Thus, while these low site class lands are technically "commercial" forest lands, in practice they are not often managed intensively, particularly where they are in smaller private ownerships.

2.3 Forest Land Types

There are several types of forest land in Coos County, ranging from that intensively managed for timber production, to land used for both timber and grazing/agriculture, to smaller forest ownerships in areas experiencing pressure from development. The categories may generally be described in terms of their use and ownership characteristics as well as other influencing factors, such as topography and access.

Much of the commercial forest land in the County is devoted primarily to the growing and harvesting of timber and other forest products, though other forest benefits are also derived from the land (water, wildlife habitat and recreation, for instance.) Generally, the topography is quite rugged, and access provided through private logging roads. Lands in this category are the steep mountain slopes in the northern, eastern, and extreme southern portions of the County. This category includes much of' the publicly-owned land in the County (Elliott State Forest, Bureau of Land Management, Coos County Forest, Siskiyou National Forest), and much of the forest-industry owned land. Basically, this type of land is unsuited for other non-forest uses. The remoteness of these areas, however, makes them well suited to "intensive" forms of forest management such as fertilization by helicopter and slash burning.

Forest and grazing land includes land that either by use or land ownership pattern, combines forested land with grazing land. Typically, this land is owned by farmers who combine cattle and sheep raising with timber production. There are distinct differences in land ownership/use patterns between different parts of the County. In the southern part of the County, particularly in the drainage of the South Fork of the Coquille River and south of Bandon, there are hill ranches, generally of very large acreage where open grazing land is intermingled with forested land. A few operations may cover an entire major drainage basin. In other parts of the County, particularly the northern and eastern parts, farm/forest ownerships follow narrow valleys. Typically, the bottom lands are in agricultural use, while the lower slopes and benches will also often be in open grazing. However, the upper slopes are generally forested. (Such farm ownerships generally lie along valleys, with the property extending well beyond the bottom land on either side and often reaching to the top of the first ridge.) Beyond that the uplands on all sides are typically in forest industry or public ownership. Good examples of this ownership pattern may be seen in the valleys of the East Bay or Tenmile Lakes. This ownership pattern historically stemmed from the fact that the more inaccessible lands originally in small private ownership were allowed to revert to the County due to non-payment of taxes mostly during the Depression years, and were bought by the major timber companies.

Particularly on the hill ranches of the southern half of the County the land is characterized by a fluctuation in use between timber production and grazing. This includes both the practice of grazing livestock in wooded areas and conversion of timber land to grazing land after the timber is harvested. This type of use of forest land has been important to the County throughout its history.

In certain parts of the County, there are substantial acreages of forest land in smaller private ownerships (mostly under 160 acres) which are not managed in conjunction with farms. This type of land is found primarily in coastal areas north and south of Bandon and also in the Hauser area, on predominately low site class lands (as defined in 2.2 above). There are also similar smaller ownerships in higher site forest lands further inland, particularly close to urban

areas, like the Isthmus Heights, Sumner area. Most of this land is still under forest cover, but is generally not being managed intensively by modern forestry techniques. This is in part due to a low productivity (at least in the Bandon and Hauser areas), and in part due to the intrusion of developed uses, particularly rural homesites on small acreages into many of these areas. Inevitably, the pressure is great to remove any merchantable timber from these lands and convert it to rural homesites of various acreages. The bulk of citizen requests for rural residential designation (as expressed through the citizen involvement program) have been in areas like north and south of Bandon, Isthmus Heights/Sumner and Hauser. The rural housing section and Exception Statement have stated that such areas might best accommodate the public need for future rural residential growth in the County, given the commitment of nearby land to residential use, and other favorable factors, as assessed in the Suitability Rating System. The problem which remains is, how best to plan rural residential growth so that small-scale forest management remains a viable option on the remaining lands.

Finally, there are also certain corporate forest holdings in close proximity to established residential areas. Primary examples are found adjacent to the communities of Glasgow, Cooston, Barview and Millington. While acreages are substantial, there are still problems with the use of industrial forest management practices. The owners may eventually have to look at other options for these lands.

2.4 Forest Land Base

Preservation or enlargement of the amount of land available for timber production is essential to the maintenance of sufficient timber harvest levels. A decline in the amount of land available for growing trees will mean a decline in the potential harvest, unless the degree of intensive forest management practiced on the available lands is increased correspondingly. Estimates for 1973 show that there were 873,000 acres of "commercial forest land" in Coos County, while there were 847,000 acres in 1975.

"Commercial Forest Land," according to the source's definition, is land that is (a) producing or capable of producing usable wood crops (b) economically feasible to harvest new or in the future; (c) not withdrawn from timber harvest. The 1975 figure reflects a net loss of 53,000 acres of commercial forest land over a 12 year period (see Table 3 below). Some of this land went into the "unproductive forest land" category (land not capable of producing wood due to adverse site conditions) and the "productive-reserved" category (productive land removed from commercial use by statute or administrative order).

Of particular concern to land use planning is the 33,000 acre increase in the amount of non-forest land in the county. While most of this acreage may be attributed to conversion of tree-covered land to agricultural and grazing land, it must be assumed that some of it at least, has been permanently removed from the realm of resource production through development as rural homesites. The exact acreage is not known at this time. Land converted to agricultural or grazing use may, in a sense, be assumed to be only temporarily removed, as it can be reclaimed for the production of timber if economic feasibility and the landowner's desires so dictate.

Land converted to urban uses, however, cannot be reclaimed at all and may be assumed to be permanently lost. Considering the County's substantial economic dependence on the

timber/forest products industry, the impact of these land losses to development may be significant. The extent of the impact depends on whether the land lost is of high or lower site class. A fair proportion of rural homesite development over the years has occurred in relatively low site class forest lands, for example north and south of Bandon and near Hauser. Forest land ownership is divided between three major types as follows 35.2% is in public ownership (U.S. Forest Service, Bureau of Land Management, Elliott State Forest and Coos County Forest); 40.5% is in forest industry ownership (major owners are Weyerhaeuser, Menasha Corporation, Georgia Pacific and International Paper); 24.3% is owned by farmers and other private individuals.

The total volume of standing sawtimber was estimated at 17,346 million board feet in 1975. [ibid] Public lands contained 66.7% of this volume, forest industry lands 23.2% and private non-industrial lands, 10.1%. Thus, while private lands total almost two-thirds of the land base, they contain only one-third of sawtimber stocks. Examination of air photographs shows that there is little old growth timber remaining in the western half of the County. A very low percentage of the farm-forest lands in the County contain stands of fully mature timber, older than 100 years. Remaining reserves can be clearly identified by the darker color and rougher texture as it appears on infra-red photography. The more inaccessible areas of the Siskiyou National Forest contain the highest volumes of over-mature material. The Elliott State Forest, however, contains plentiful reserves of older second growth timber of approximately 90-100 years age-class, dating from extensive fires in the last century. In addition, the major timber companies have established extensive stands of younger reproductive growth on their free farms. Unfortunately, large acreages of land in the more accessible parts of the County support "bastard growth", a mixture of hardwoods (mostly alder, maple and myrtle) and conifers (Douglas fir, Grand fir, Hemlock, and cedars). Reproduction by the more economically valuable conifers has been cut back by the aggressive regrowth of "pioneer" species (especially alder.) While this is a stage of natural plant succession, (alder prepares a fertile soil for later colonization by conifers), it would take many times as long to establish a fully stocked coniferous stand by this process as by replanting a harvested site. Generally it takes at least 25 years before fir beneath it to start to grow more rapidly. Some foresters state that the process actually takes much longer, and that often the suppressed trees fail to respond at all.

Future timber supplies will be depleted because of a past failure to re-establish fully-stocked coniferous stands.

A State Department of Forestry Study of the Oregon Coast Range estimates that in 1976, 568,400 acres (or 15% of the area studied) was "underproductive", that is, land that "once supported mature conifer forests that are no longer commercially productive." This points to the magnitude of the problem. The study found that over half of this land is in the "other private" (non-industrial) category, and comprises 30.2% of the total holdings in that category.

Table 3

Forest Land in Coos County, 1963 and 1975

	1963		1973		1963-1973 Acre Change	1975		1973-1975 Acre Change
	Acres	%	Acres	%		Acres	%	
Total Land Area	1,031,000	100.0	1,027,000	100.0	-4,000	1,027,000	100	-
Total Forest Land	905,000	87.8	891,000	86.8	-14,000	868,000	84.5	-23,000
Commercial	900,000	87.3	873,000	85.0	-27,000	847,000	82.5	-26,000
Productive-Reserve	2,000	0.2	3,000	0.3	+1,000	8,000	0.8	+5,000
Unproductive	3,000	0.3	15,000	1.5	+12,000	13,000	1.3	-2,000
Non-Forest Land	126,000	12.2	136,000	13.2	+10,000	159,000	15.5	+23,000

Sources: Forest Statistics for Southwest Oregon; USFS Resources Bulletin PNW-8; & Timber Resource Statistics for Oregon; USFS Resource Bulletin PNW-56.

4. Forest Management and Practices

4.1 Intensive Forest Management Techniques

Some degree of forest management, along with conservation of forest land, is necessary to ensure a continued harvest at levels equal to or greater than the present harvest. "Forest management" is a term used to denote a number of methods or tools aimed at increasing the useable timber harvest from a given piece of land.

"Forest management" refers to any or all of the following practices: (1) forest fire control; (2) insect or disease control; (3) vegetation control; (4) reforestation; (5) precommercial and commercial thinning; (6) fertilization; (7) genetic improvement of timber species; and (8) other measures, such as assistance to forest land-owners, forest research, etc."

Intensive forest management of commercial timberland assumes a management regime of:

A. Harvesting when stands are mature by financial formula commonly used in the area. In most cases in this area this is no greater than stand age 60, though other factors are also used to determine maturity.

B. Investing in site preparation (if needed) and trees and planting as rapidly as possible following harvest, to secure an adequate stocking of the best commercial species as commonly used in the area for that forest growth site.

C. Investing in pre-commercial thinning if necessary to maintain or enhance growth of selected crop trees for future commercial thinning and eventual clearcut.

D. Investing in herbicide spray or hand clearing for site preparation or to secure release from competing overtopping vegetation if needed, keeping the conifers free to grow.

E. Being prepared to do commercial thinning where, early harvest can be secured to maintain or enhance growth of remaining crop trees. More than one commercial thinning at 3 to 8 year intervals may have financial advantages;

F. Beginning the cycle again with clearcut harvest followed by site preparation and planting.

Increases in the level of forest management practices are necessary for all classes of forest land owners: public agencies, forestry industry and non-industrial private owners. There may be pressure from neighbors and local residents not to do many of the things necessary in forest management to obtain the desired standard where commercial lands abut farms or rural residences.

Intensive management using the above practices produces effects which may be objectionable to nearby residents. The use of fire in reducing slash hazard or site preparation will temporarily impact air quality. Management may involve aerial or ground application or herbicides for site preparation or release from competing vegetation. Harvesting operations will cause perceived reduction of aesthetic values for a few years at least. This might be objectionable to local residents for a certain period of time. Heavy truck hauling may cause temporary dust problems or potential extra hazard to school children and passenger car traffic where it passes through residential areas.

Forest management may involve operations close to 'class one streams' which includes streams used for domestic water supply, the protection of which may reduce the actual operable acreage of the tract in question. For reasons outlined above, there may -be pressure from adjacent property owners not to do many of the things necessary to forest management to desired standards, where commercial forest lands abut farms or rural residences.

Some forest industry companies and public timber agencies are experimenting with genetic improvement, specifically development of a larger and faster growing Douglas fir tree.

4.2 Problems for Encouraging Reforestation

The "farmer and other private" owner class controls 1/3 of the commercial forest land in the County. With some notable exceptions, this group practices a minimum of forest management. Their activities are controlled primarily by the regulations of the Oregon Forest Practices Act and individual economic concerns, especially taxes. Both the Forest Practices Act and Oregon timber tax structure are designed to encourage reforestation. The Forest Practices Act does this through requirements for reforestation within five years unless the owners states his intent to convert the land to non-forest use. The long term impact of these reforestation requirements on the continued or increased timber yield from the "farmer and other private" owner class is as yet unknown. Limited financial and staff resources are currently hindering full enforcement of the Forest Practices Act, especially with regard to small private landowners.

The problems of encouraging reforestation must still be addressed. The long term no-return commitment of land to timber growth is leading many to seek more immediate returns on that land, such as by conversion to agriculture and grazing use, after the timber has been harvested. Incentives have been made available to encourage the small private owners to keep that land in tree production.

There are three types of assistance currently available to small, private woodland owners for reforestation and stand improvement: (i) Federal cost-sharing programs administered by the State Department of Forestry Service Foresters with funding through the local Agricultural Stabilization and Conservation Service (ASCS); (ii) Tree farm programs of certain major forest companies; (iii) Assistance provided by forestry consultants. State Department of Forestry Service Foresters also provide other aid to small woodland owners. They may help them to form cooperatives so as to be able to purchase services at a lower rate (helicopter operation, tree planting, purchase of nursery stock and pre-commercial thinning). The Department will also provide equipment and labor where these are not available from the private sector. Service foresters also help landowners design management plans for their forests.

While it is beyond the scope of the State Department of Revenue (administrator of timber land taxation), the State Department of Forestry (administrator of the Forest Practices Act), and local planning agencies to require forest land owners to grow trees, it should, be noted that conversion of land to other uses will, in the long run, mean a decline in timber harvest. Such land will be used for the production of trees only when it is to the economic advantage of the land owner.

4.3 Problems for the Application of Intensive Forest Management Techniques on Small Tracts and Adjoining Lands

The problems discussed below apply especially to small forest-land tracts in the range of 10-40 acres. However, they also apply to larger farm-forest ownerships or even much larger corporate or agency lands where they abut farms or (especially) rural residential areas.

Most forest land tracts of under 10 acres are bought with the primary objective of securing a rural homesite. These areas are therefore classified in the Plan as "Rural Residential." Many owners in the 10-40 acre range also have the objective of rural living. However, few can justify the expense of a tract of this size without also intending to manage the land at some level for resource production, either purely for forest products or a mixture of forestry and grazing. Due to the varied objectives of owners of these small forest tracts, there has been in the past a tendency to practice a less intensive level of forest management than on the corporate agency and larger farm holdings.

Rural living involves establishment and protection of a domestic water supply, access of utilities, right-of-way access, privacy and aesthetics. Most residences involve at least one acre of homesite development. Water supply access can occupy an additional area, and in many instances may affect portions of surrounding ownerships. These influences may have an inhibiting or dampening effect on the practice of intensive forest management on their owner and adjacent forest lands.

Some of these inhibiting effects on intensive forest management can be:

(a) Restrictions on logging where it might destroy or damage domestic water supplies. Water rights for domestic use can be established in drainages originating on other ownerships, or the drainage providing water may originate on another ownership, even though the catch basin is on the owner's land.

(b) The influence of the water supply and homesite situation extends to eliminating or reducing the possible use of herbicides as a management tool within the drainage area or a defined distance from the residence. Oregon State Field Guide to Oregon Forest Practices Rules, (1/10/80) - Rule 629-24-203 'Protection of Waterways, Areas of Open Water, and Dwellings When Spraying,' states; "Protect waterways and areas of open water such as swamps or impoundments from contamination when spraying by aircraft by leaving a buffer strip of at least one swath width untreated on each side of every Class I stream or area of open water.

(c) Access for proper forest management, harvest or project work may be a problem. Where portions of the ownership are steep, the only practical way to harvest the timber may be highlead logging. Highlead logging requires access to proper location for setting landings which are dictated by the terrain. Access to these landings may require negotiation of rights-of-way across steep terrain through one or more adjacent owners. These adjacent owners may or may not be agreeable to temporary or permanent rights-of-way. Their timber may be at a different stage of growth, or newly planted reproduction which would not fit in with a combined harvest to make a more economic harvest setting boundary.

These objections may hinder an owner from securing convenient access to efficiently manage his own lands. Access roads or roads within 10-40 acre tracts may have been built in the- past to much lower standards as to depth of gravel, width, and curve radius, than are public roads or logging roads. Use of these roads, which may not be dedicated public roads, may involve undue damage to thin rock surfaces and ditches.

Use of tract roads for commercial hauling will involve negotiating rights-of-way for commercial log hauling if not already a public road.

(d) For owners of small forest tracts (10-40 ac.), the objective of preserving aesthetic values may tend to deter the application of intensive forest management practices. (This is much more the case with tracts of less than 10 acres). To some owners, the growth of hardwoods may be as pleasing to the eye as well stocked conifer stands, or even more so in the case of certain species like madrone or myrtle.

An owner motivated toward aesthetics may be very reluctant to log by highlead clearcut due to the visual impacts, which persist until new growth has covered the residue from timber harvesting. However, logging by highlead may be the only practical method to remove merchantable volume from steep slopes.

(e) Many of the forest lands which are sold as small: tracts have had a history of repeated selective logging or clearcutting with no subsequent management, which has greatly reduced the value of the remaining stands. These practices tend to reduce the species composition of the stand toward less valuable species of conifer, and promote the predominance of hardwoods, through the removal of overstory conifers which allows smaller understory hardwood trees to increase growth. Even after they are logged, hardwoods can regrow and dominate a site to the exclusion of conifers if continuous efforts are not made to control their regrowth.

Small tracts are often purchased in a poor, unmanaged condition as to potential for forest productivity. With generally low prospects for income from commercial harvest from the existing cover, an owner may be faced with a need to invest money for a considerable period, at interest, before realizing any substantial net income from commercial conifer harvest. This period may be as much as 40 years in the case of site preparation and planting to establish reasonable conifer stocking.

(f) Many types of forest management practice will involve economies of scale. Small tracts mean very infrequent operation which produces rather small income and little incentive for an owner to invest in his own management or harvesting equipment. Letting site preparation operations on a contract basis will attract only high bids because of the cost of moving heavy equipment for a comparatively small project. Site preparation either by tractor scarification, herbicide application, or burning, will have a gradually decreasing cost per acre as the size of the project increases, before lowering costs per acre begin to level off.

In spite of the problems detailed above, it is certainly feasible for intensive forest management to be practiced on tracts of forestland even as small as five acres. However, a set of conditions must exist which is not always found on these smaller tracts.

These conditions are:

1. Strong owner motivation toward forest management practices to produce income often involving part-time manual labor and careful financial and resource planning.

2. Terrain which lends itself to easier and cheaper operations. The best terrain would be gentle enough to allow tractor logging and/or tractor site preparation without damage to the environment (no slopes greater than 35%).

3. A good level of stocking with conifer species, or merchantable hardwood species, so that income could be secured from the first operations. The income from operations should be large enough that site preparation and replanting could be financed and still leave some net income as an incentive to conduct operations.

When one compares the ideal expressed above with the more usual circumstances discussed previously, it becomes evident that few small tracts under 10 acres will be operated under intensive forest management. However, tracts of 10-40 acres will benefit from the increased scale of operation to the point where highlead logging would become more feasible and other economies of scale would begin to be realized.

It is also beneficial to form local owners' cooperatives (either under State Forestry or private industry sponsorship), whereby a group of owners combine together to benefit from economies of scale. This has been successful in the past in the southern states. Federal cost share programs can also improve management of small tracts significantly.

Finally, there are substantial areas on the coastal plain, especially in the Bandon area, which possess reasonably good levels of stocking with coniferous species and have terrain level enough

to permit tractor logging. Such areas are of relatively low site class, and are not attractive to the major companies, but may be ideal for small individual woodlots.

In short, investment costs and owner objectives do not usually combine for a favorable future for good forest management of small woodlot tracts. However, given the right set of conditions as discussed above, and appropriate motivation and management by the owner, tracts of 10-40 acres can be as productive as any forest land of the same site class. A combination of planning and zoning measures, tax incentives and corporate agency programs (Dept. of Forestry, Cooperative Extension and forest industry) could give a boost to good forest practices on small woodlots and supplement the incomes of numerous households in the County.

5. Implementation Strategies

5.1 Proposed Forest Zone

The Planning Commission proposes to implement the Forest Lands Goal by establishing one forest zone. That zone is as follows:

F – "Forest"

Within the forest zone, the extent of preservation of forest lands primarily for forest uses will be established through implementation of the zoning ordinance. Specifically, standards within the ordinance are set to delineate those areas, or parcels, which have historically been managed as "mixed use" areas, including both farm and forest uses. Based on the June 24, 1983 DLCD Staff Report on Coos County, it is understood that uses in these "mixed use" areas are appropriately expanded to include additional non-forest uses that may not otherwise be allowed in a prime commercial forest zone. As stated in that report: "The Commission's decision in Allen v. Umatilla County (LUBA 83-076) supports the mixed use/predominant forest use concept and establishes separate requirements for authorizing certain non-forest uses in each forest area". (June 24, 1983 DLCD Staff Report, p. 106)

The zoning ordinance standards are used, ultimately, to determine the degree of productivity of the land for forest production vs. the productivity of the land for farm use. It is the intent of the Planning Commission to strictly preserve prime commercial timber areas in the county, while allowing for some justified non- forest uses in the areas established as "mixed-use" areas. These "mixed-use" areas are identified on the "Mixed Agriculture-Forest Use Areas" inventory map based on specific review criteria.

Standards for determining the degree of allowance for non-forest uses are based on such things as productivity of the land for forestry, historical land use (i.e. farm uses), terrain and surrounding uses. The review process will occur at the request of the applicant on a case by case basis

There are basically two different types of forest areas in Coos County. These are (i) prime forest areas, and (ii) mixed farm-forest areas. Certain non-farm uses not allowed in the former may be allowed as conditional uses in the latter. The two types of forest land are described in greater detail, as follows:

(i) "Prime Forest Area". These areas or parcels are typically large contiguous blocks of undeveloped land which are managed exclusively for timber production with some ancillary forest uses. Intensive forest management is practiced within this classification. A parcel or area subject to this classification will be preserved primarily for forest uses.

(ii) "Mixed Farm-Forest Area". These areas include land which is currently or potentially in farm- forest use. Typically such lands are those with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and grazing uses. The areas generally occupy land on the periphery of large corporate and agency holdings and tend to form a buffer between more remote uplands and populated valleys. In addition, these "mixed use" areas contain ownerships of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.

In certain areas of the County, these "mixed use" areas consist of extensive uplands where the lands are held predominantly by ranchers who manage their properties interchangeably between grazing and forestry depending on the economic base of each commodity at any given time. An essential management approach practiced by these ranchers is to maintain enough upland grazing acreage to sustain livestock during the winter months due to the flooding of lowland areas. Some intensive forest management is practiced on these lands, but not to the same extent as in "prime forest areas", and grazing is in many places a co-dominant use. There are typically a mixture of farm and forest uses in these areas. Certain non-forest uses will be allowed in areas that meet the criteria of this classification as established in the zoning ordinance.

The mixed use areas are identified at a scale of 1" = 2 miles on the "Mixed Agricultural-Forest Use Areas" Comprehensive Plan inventory map. A change in the boundary of the "mixed use" inventory map will require a comprehensive plan amendment. Criteria used to designate these areas are as follows:

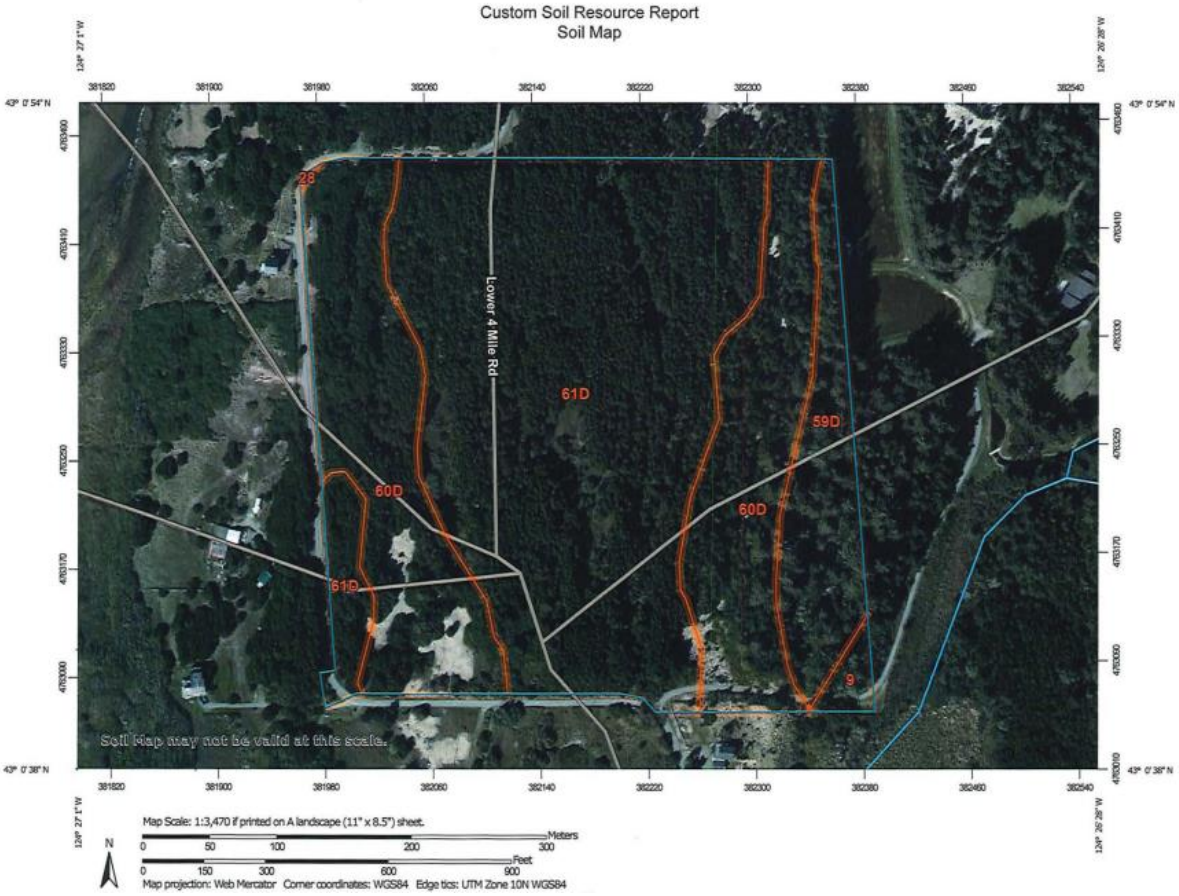
1) Mixed use areas are those areas with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and agricultural uses.

2) Mixed use areas are those areas generally managed to maintain enough upland acreage to sustain livestock during the winter months due to flooding of lowland areas.

3) Mixed use areas are those areas predominantly co-managed for both farm and forest uses.

FINDING: This application is for a Plan Map Amendment and Rezone of the Official Zone Map from Forest to Qualified – Rural Residential-5 zoning district. The qualifier is a 10 acre minimum lot size which will not require a Statewide Goal 14 exception so long as it meet the nonresource language described in Section 5.1.275.

The subject property is combination of Chetco silty clay loam (9D), Heceta fine sand (28), Waldport fine sand (59D), Waldport-Dune land complex (60D), Waldport-Heceta fine sands (61D) soils types.



9-Chetco silty clay loam. This deep, very poorly drained soil is on flood plains and deltas. It formed in alluvium. Slope is 0 to 3 percent. The native vegetation is mainly conifers, shrubs, forbs, and hardwoods. Elevation is 0 to 40 feet. The average annual precipitation is 60 to 80 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown silty clay loam 10 inches thick. The subsoil is mottled, dark gray silty clay 14 inches thick. The substratum to a depth of 60 inches or more is mottled, dark gray clay.

Included in this unit are small areas of Coquille and Nestucca soils. Also included are small areas of Langlois soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Chetco soil is very slow. Available water capacity is about 5.0 to 8.5 inches. Effective rooting depth is 60 inches or more for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is very slow, and the hazard of water erosion is slight. This soil is subject to frequent periods of flooding during prolonged periods of rainfall. Channeling and deposition are common along

streambanks. The water table fluctuates between the surface and a depth of 18 inches in October to May.

This unit is used mainly for hay and pasture and wildlife habitat.

The, vegetation in areas not cultivated is mainly Sitka spruce, western redcedar, western hemlock, and red alder. The understory vegetation is mainly western swordfern, evergreen huckleberry, slough sedge, soft rush, and skunkcabbage. If this unit is used for hay and pasture, the main limitations are the susceptibility of the surface layer to compaction, wetness, droughtiness in summer, the hazard of flooding, and, for the curing of hay, high humidity. Grazing when the soil is moist results in compaction of the surface layer and poor tilth. Compaction limits the movement of air and water in the soil and restricts the growth of roots; it can seriously reduce the productivity of the soil. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

Drainage and irrigation are needed for maximum production of crops. Water on or near the surface can be removed by use of open ditches and tide gates. Supplemental irrigation is needed in summer.

Wetness and flooding restrict grazing in winter. Protection from flooding during the growing season can be provided only by the use of extensive dikes. The choice of plants is limited to those that withstand periodic inundation. High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay. To improve the quality of grass for hay, increase the stocking rate in spring. Excess forage in spring can be used as silage.

Fertilizer is needed to ensure optimum growth of grasses. Grasses respond to nitrogen. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Rotation grazing increases the production of forage and helps to control weeds. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth.

This map unit is in capability subclass IVw.

28-Heceta fine sand. This deep, poorly drained soil is in deflation basins and depressional areas between dunes. It formed in eolian material. Slopes are 0 to 3 percent. The native vegetation is mainly sedges, rushes, water-tolerant grasses, and shrubs. Elevation is 0 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is mottled, grayish brown sand.

Included in this unit are small areas of Waldport and Netarts soils and Dune land, Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Heceta soil is rapid. Available water capacity is about 1 to 2 inches. Effective rooting depth is 60 inches for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is ponded, and the hazard of water erosion is slight. The water table fluctuates from 12 inches above the surface to 6 inches below the surface from October to May.

This unit is used for recreation and wildlife habitat. If this unit is used for recreational development, the main limitation is wetness. Use of paths and trails may be limited to 2 or 3 months in summer.

This map unit is in capability subclass IVw.

59D-Waldport fine sand, 0 to 30 percent slopes. This deep, excessively drained soil is on stabilized sand dunes. It formed in eolian deposits. The native vegetation is mainly conifers, shrubs, grasses, and forbs. Elevation is 10 to 120 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown and brown fine sand 7 inches thick. The underlying material to a depth of 60 inches or more is dark yellowish brown fine sand.

Included in this unit are small areas of Heceta soils and Dune land. Also included are small areas of Netarts soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used mainly for timber production, wildlife habitat, and recreation. It is also used for homesite development. This unit is suited to the production of shore pine. Among the other species that grow on this unit are western hemlock, Sitka spruce, and Douglas fir. The understory vegetation is mainly Pacific rhododendron, salal, red huckleberry, evergreen huckleberry, and European beachgrass.

On the basis of a 100-year site curve, the mean site index for shore pine is 90. At the culmination of the mean annual increment (CMAI), the production of 60-year-old shore pine trees 1.5 inches in diameter or more at breast height is 79 cubic feet per acre per year. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this unit are seedling mortality and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. The risk of soil blowing increases if the timber is harvested or the understory is removed. Conventional methods can be used for harvesting timber, but use of skid trails can accelerate erosion.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Seeding road cuts and fills helps to stabilize the soil and reduces the risk of soil blowing. Windthrow is a hazard when the soil is wet and winds are strong.

When openings are made in the canopy, invading brushy plants delay natural reforestation. Undesirable plants reduce adequate natural or artificial reforestation. Intensive site preparation and maintenance generally are not needed. Reforestation can be accomplished by planting shore pine and Sitka spruce seedlings. Droughtiness increases seedling mortality.

If this unit is used for recreational development, the main limitations are the hazard of soil blowing, the instability of the soil, and slope. Use of the unit is restricted to low-intensity types of recreation, such as hiking and horseback riding. Areas used for recreation can be protected from soil blowing by maintaining plant cover. Plant cover can be maintained by limiting traffic.

Roads, paths, and trails are difficult to maintain because of the loose sand. Cutbanks are not stable and are subject to slumping. Access roads should be placed on lower slopes and designed to provide low cut-slope grades.

If this unit is used for homesite development, the main limitations are the hazard of ground water pollution, slope, the hazard of soil blowing, and droughtiness in summer. The very rapid permeability of the subsoil may permit untreated effluent to enter the ground water. Special designs may be needed to prevent contamination of water supplies. The steeper areas of this unit acre not suitable for installation of absorption fields. Community sewage treatment systems may be needed.

Extensive cutting and. filling are required to provide level building sites. Excavation for houses and access roads exposes material that is highly susceptible to soil blowing. Revegetating disturbed areas around construction sites as soon as feasible helps to control soil blowing. It is difficult to establish plants in areas where the surface layer has been removed. Mulching and fertilizing cut areas help to establish plants. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability subclass VIIe

60D-Waldport-Dune land complex, 12 to 30 percent slopes. This map unit is on stabilized and active foredunes. The vegetation on the Waldport soil is mainly European beachgrass. Dune land does not support vegetation. Elevation is 10 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

This unit is 60 percent Waldport fine sand and 30 percent Dune land. The Waldport soil is in areas that have been stabilized with vegetation. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used. Included in this unit are small areas of Heceta soils.

Included areas make up about 10 percent of the total acreage.

The Waldport soil is deep and excessively drained. It formed in eolian deposits. Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is dark yellowish brown fine sand.

Permeability of the Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of erosion is slight. The hazard of soil blowing is severe.

Dune land is deep and excessively drained. It formed in eolian deposits. Typically, the areas of Dune land are fine and medium sand to a depth of 60 inches or more.

Permeability of Dune land is very rapid. Available water capacity is about 3 to 4 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used for recreation and wildlife habitat.

If this unit is used for recreational development, the main limitations are soil blowing and the instability of the soil. Use of this unit is limited to low-intensity types of recreation, such as hiking, horseback riding, and operating off-road vehicles. Areas used for recreation can be protected from soil blowing by establishing plant cover. Plant cover can be maintained by limiting traffic. Excavation for roads and buildings exposes material that is highly susceptible to soil blowing. Establishing vegetation on disturbed areas around construction sites as soon as possible helps to control soil blowing. Roads and trails are difficult to maintain because of the loose sand. Roads must be surfaced for use by conventional vehicles.

This map unit is in capability subclass Vlle.

61D-Waldport-Heceta fine sands, 0 to 30 percent slopes. This map unit is mainly on stabilized sand dunes and in depressional areas between sand dunes. Some areas are on deflation basins. The native vegetation is mainly conifers, shrubs, grasses, and forbs on the Waldport soil and sedges, rushes, water-tolerant grasses, and shrubs on the Heceta soil. Elevation is 0 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

This unit is 50 percent Waldport fine sand and 30 percent Heceta fine sand. The Waldport soil is on stabilized sand dunes, and the Heceta soil is in interdunal swales and depressional areas. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Netarts and Yaquina soils and Dune land. Included areas make up about 20 percent of the total acreage.

The Waldport soil is deep and excessively drained. It formed in eolian deposits. Slope is 7 to 30 percent. Typically, the surface layer is very dark grayish brown and brown fine sand 7 inches thick. The substratum to a depth of 60 inches or more is dark yellowish brown fine sand.

Permeability of the Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

The Heceta soil is deep and poorly drained. It formed in eolian material. Slope is 0 to 3 percent. Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is mottled, grayish brown sand.

Permeability of the Heceta soil is rapid. Available water capacity is about 1 inch to 2 inches. Effective rooting depth is 60 inches for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is ponded, and the hazard of water erosion is slight. The water table fluctuates from 12 inches above the surface to 6 inches below the surface from October to May.

The Waldport soil in this unit is used mainly for timber production, and the Heceta soil is used mainly for wildlife habitat. The unit is also used for recreation. The Waldport soil is suited to the production of shore pine. Other species that grow on this soil include western hemlock, Sitka spruce, and Douglas fir. The understory vegetation is mainly Pacific rhododendron, salal, red huckleberry, evergreen huckleberry, and European beachgrass. The Heceta soil is poorly suited to the production of timber. The vegetation on this soil is mainly slough sedge, salt rush, coast willow, waxmyrtle, evergreen huckleberry, and salal.

On the basis of a 100-year site curve, the mean site index for shore pine is 90 on the Waldport soil. At the culmination of the mean annual increment (CMAI), the production of 60-year-old shore pine trees 1.5 inches in diameter or more at breast height is 79 cubic feet per acre per year. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this soil are seedling mortality and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. The risk of soil blowing increases if the timber is harvested or the understory is removed. Conventional methods can be used for harvesting timber, but use of skid trails can accelerate erosion.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Seeding cuts and fills helps to stabilize the soil and reduce soil blowing. Windthrow is a hazard when the soil is wet and winds are strong.

When openings are made in the canopy, invading brushy plants can delay natural reforestation. Undesirable plants reduce adequate natural or artificial reforestation. Intensive site preparation and maintenance generally are not needed. Reforestation can

be accomplished by planting shore pine and Sitka spruce seedlings. Droughtiness increases seedling mortality.

If this unit is used for recreational development, the main limitations are the hazard of soil blowing, the instability of the Waldport soil, and the wetness of the Heceta soil. These limitations restrict the use of this unit mainly to low-intensity types of recreation, such as hiking and horseback riding. The unit can be used for other kinds of recreational activities that require a minimum of construction and soil disturbance. Areas used for recreation can be protected from soil blowing by maintaining plant cover. Plant cover can be maintained by limiting traffic. Excavation for houses and access roads exposes material that is highly susceptible to soil blowing. Revegetating disturbed areas around construction sites as soon as feasible helps to control soil blowing.

Roads, paths, and trails are difficult to maintain because of the loose sand. Cutbanks are not stable and are subject to slumping.

Wetness limits most recreational development on the Heceta soil. Use of paths and trails may be limited to 2 to 3 months in summer. Drainage is impractical because of the lack of suitable outlets.

This map unit is in capability subclass VIIe.

The applicant submitted the required NRCS custom soil report that identifies forest volume growth rates on the subject property. The County must follow the NRCS reports unless proven otherwise by site specific alternative data. The County has a set of guidelines to follow as identified in Oregon Administrative Rules 660-006-0005.

List in order:

A. Natural Resource Conservation Service soil surveys

B. Oregon Department of Revenue Western Oregon site class maps

C. USDA Forest Service plant association guides

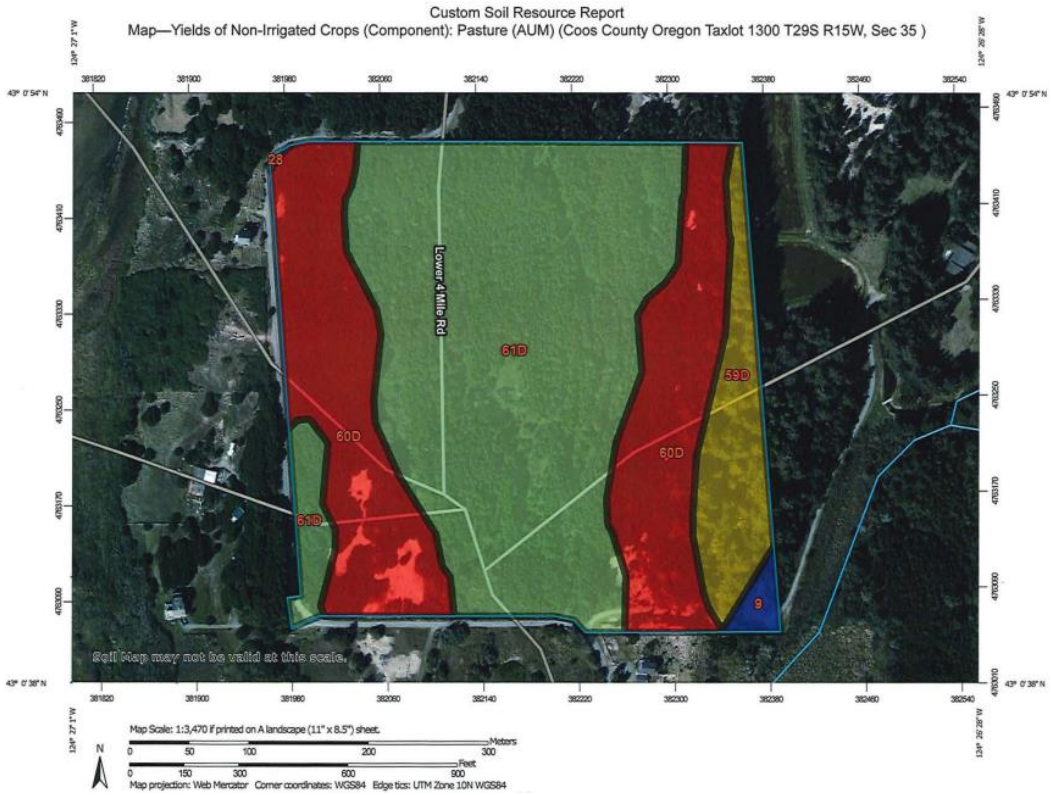
D. Other existing data sources determined by the State Forester to be of equal or better quality to Items A, B, and C

E. Alternate methods to develop site productivity data based on direct tree measurements and calculations using applicable Douglas-fir, western hemlock, or ponderosa pine site tables, with priority given to the species among these three that dominates the area being evaluated

F. Alternate methods based on direct tree measurements and calculations using other native forest tree species site tables

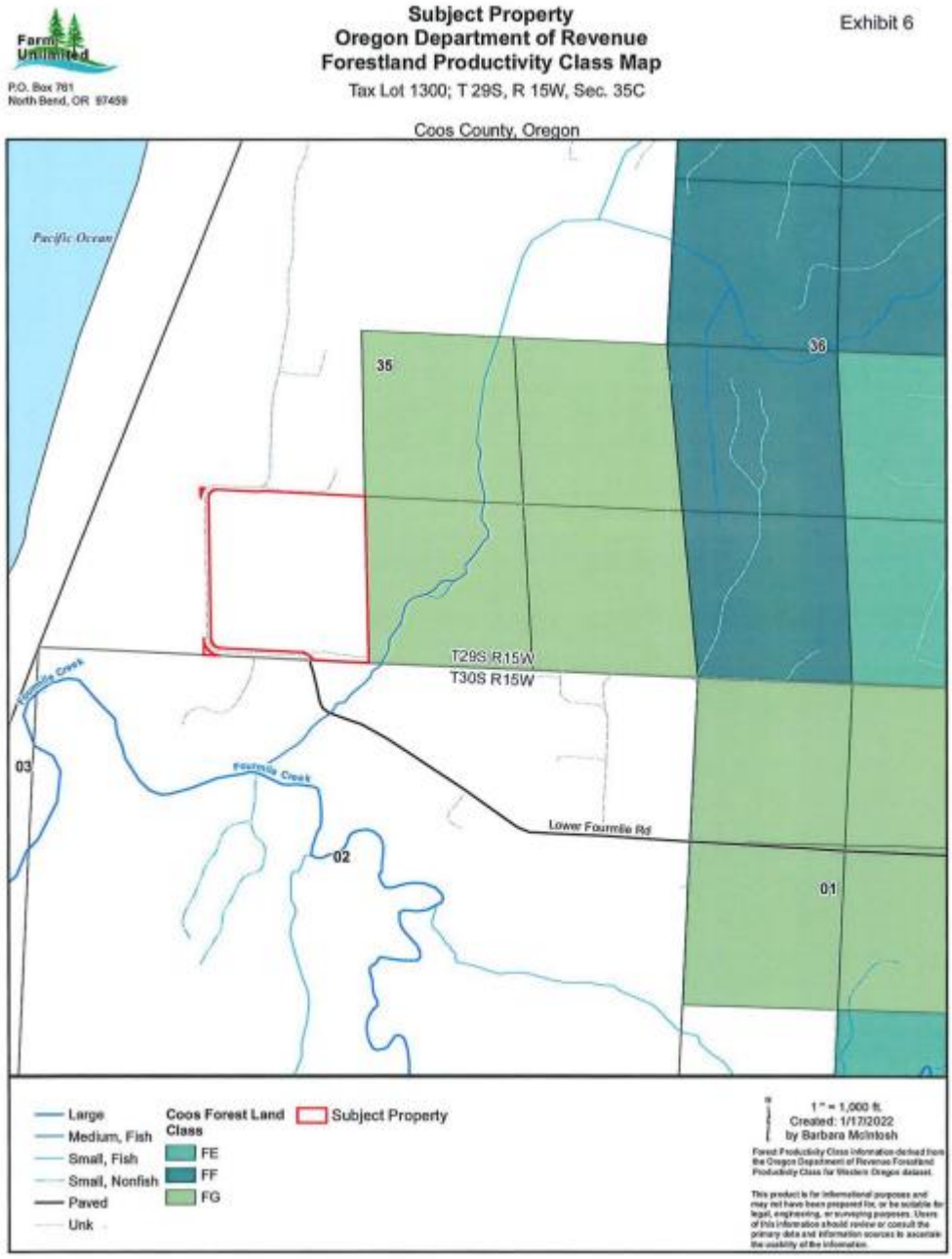
G. Site-specific soil surveys.

Below are soil maps and the forest productivity with site index base for the subject property.



Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	Common trees	Site Index	Base Age	Site Index Curve Number	Volume Growth Rate (CMAI)
		ft	yrs		cu ft/ac/yr
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

The applicant submitted the following map, identified as Exhibit #6, showing the OR DOR Western Oregon site class maps. Like other government properties, the subject property was never assigned a site class by the Oregon Department of Revenue.



Staff requested official comments from Oregon State Forester Calvin Mukumoto on April 8, 2022.

Chris MacWhorter

From: Planning Department
Sent: Friday, April 8, 2022 8:49 AM
To: 'forestryinformation@odf.oregon.gov'
Cc: Planning Department
Subject: Coos County Planning Department

Hello,

Please find a link to a land use application currently under consideration in Coos County: https://www.co.coos.or.us/planning/page/2022-amendment-rezones

Please have State Forester Calvin Mukumoto contact us if he wishes to make any official comments on this particular application.

We may be reached at 541-396-7770 for further information.

Thanks,
Chris MacWhorter, Planning Staff
Coos County Planning Department
planning@co.coos.or.us

Chris MacWhorter

From: INFORMATION Forestry * ODF <forestryinformation@odf.oregon.gov>
Sent: Friday, April 8, 2022 8:49 AM
To: Planning Department
Subject: Automatic reply: Coos County Planning Department

This Message originated outside your organization.

Thank you for contacting the Oregon Department of Forestry. Your e-mail will be referred to the appropriate agency personnel for response/action, and they will reply to your request.

ODF Public Affairs Program

Other than the auto-generate email, Staff has not received any comments from Oregon Department of Forestry (ODF). ODF rarely responses to requests for comments and it is not mandatory that they respond, but staff does make every effort to solicit comments from other agencies when an application is proposed.

The applicant hired Farm Unlimited to perform a Forest Productivity / Suitability Report. The applicant submitted a timber inventory cruise complied by Eric Farm and James Hill of Farm Unlimited.

Mr. Farm and Mr. Hill include a list of their background and educational credentials. Under Oregon (OAR 674.100) appraisal rules, professional foresters are exempt from

licensing for appraising the value of timber as part of forest management consultation. Goal 4 directs the County to protect forest land, including lesser value forest lands. Although, there is not necessary a formal definition of a professional forester. ODF Land Use Planning Note #3 advises "*Where tree measurements are undertaken, a professional forester who is either registered as a full member in good standing with the Association of Consulting Foresters of America or Certified by the Society of American Foresters should be retained by the landowner to take tree measurements and prepare a report*". Mr. Farm identifies himself as an ACF certified forester, and Staff feels there is no reason to question that. Staff advises the Board of Commissioners that these are really only guidelines, not requirements. Staff has not really found any formal State land use requirements for timber cruising or valuation, and the Board of Commissioners may decide whether Mr. Farm and Mr. Hill are expert witnesses. Based on these two individuals' backgrounds, they appear meet the requirements to work in the County's Forestry Department as field foresters. Therefore, Staff recommends that their educational background and experience are sufficient for this report.

ODF Land Use Planning Note #3 identifies a series of steps that required to be look at before alternative methodologies are used. The first source is NRCS soil surveys which the indicate that Shore pine and Sitka spruce are trees to manage on site. They further indicated the property is not include in DOR site class maps, and no alternative data sources existing direct tree measurements.

Therefore, they submitted a report to comply with alternative methodologies under Step 2.

Mr. Farm indicated the entire site was fully stocked with Shore pine with some scatter Sitka spruce. They indicated the timber is between 32 to 46 years old, and 25-50 feet tall. Based on aerial imagery and other site assessment of neighboring properties. Staff has found no compelling reason not to take their forest inventory as an accurate assessment.

However, the applicant's forester is making the assertion that Shore pine is not commercially marketable as a timber species and the site class index for Shore pine is not applicable to western Oregon.

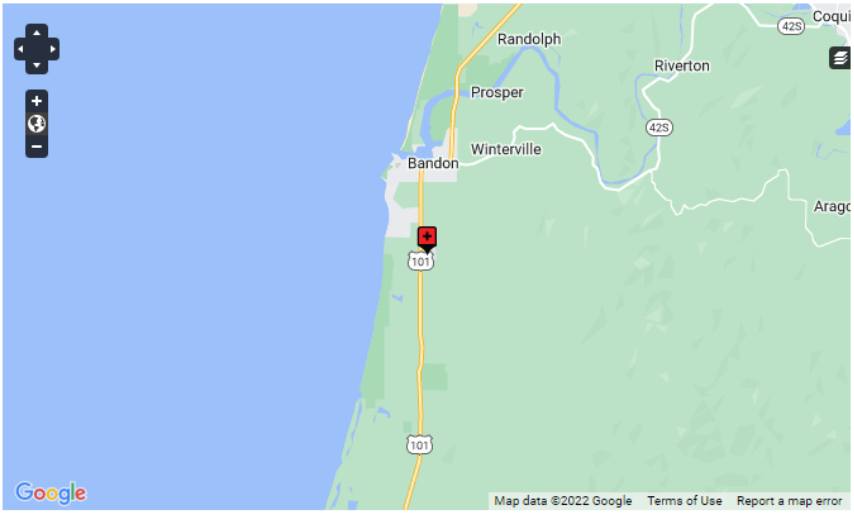
These two concepts need further planning discussion. The first concept that Shore pine is not a commercially marketable timber species in Coos County. The applicant asserts that "*no local sawmills, veneer mills, or wood chip manufacturer will accept shore pine. Additionally, mills will not pay for a load with shore pine included and may reject the load entirely and not accept/unload a truck that arrives at the mill with shore pine included on the load. It is not foreseeable that any mill will accept delivery of shore pine in the future*".

Typically, Planning Department would ask the County Forestry Department to verify this statement. However, the Forestry Department are the applicants for this application.

So, Staff verified this statement using the following methodology. Oregon State University manages a website called Oregon Forest Industry Directory. This website is part of the College of Forestry outreach program. One of the features of the site is link to companies that buy logs. Staff utilized this website to check the log buying specifications of three nearby mills.

The first mill is Oregon Overseas Timber Co. Inc. located in Bandon, Oregon.

Oregon Overseas Timber Co. Inc.



Products Produced | Products Purchased | **Species** | Residue | Services

Douglas-fir

Company Contacts

Name	Position/Title	Phone	Email address
Jim Curran	Mill Manager	541-347-4419 x309 (work)	Email Contact
Ulrich Lau	Sales	541-347-4419 x304 (work)	
Jim Curran	Log Buyer	541-347-4419 x309 (work)	

Additional Information:
Wood products made of mainly Douglas-fir for European market. Sawmill Hours: Mon-Fri 7 a.m. till 4 p.m. Retail Hours: Tue-Sat 8 a.m. till 4:30 p.m. Retail Phone Number: 541-347-4410

Are you with this company? Request an account or permission to edit this listing.

Company Information

87680 Kehl Lane
P.O. Box 1701
Bandon, OR 97411
Website: http://ootci.com
County: Coos
Phone: 541-347-4419

Log Buying Preferences

Minimum Diameter: 26
Minimum Length: 8
Maximum Length: 40
Length Preference: 40
Notes: high grade logs, old-growth culls
Accepts Big Logs

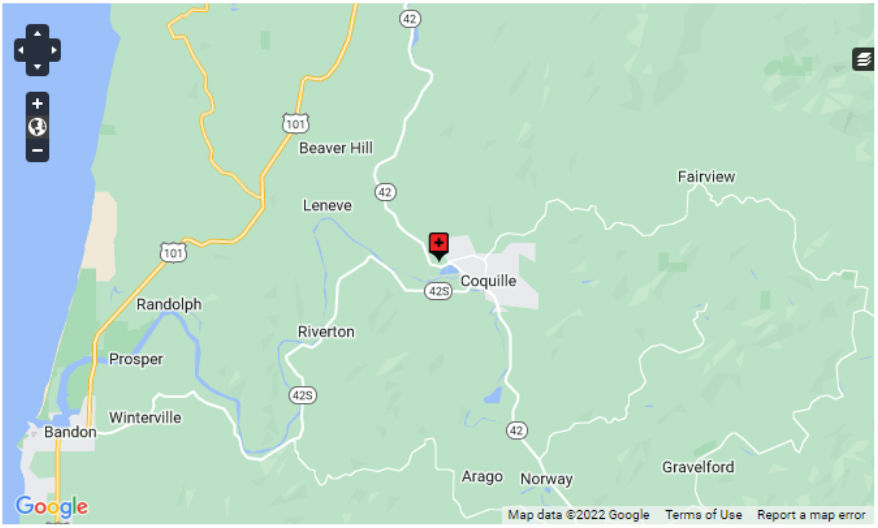
Certifications

Forest Stewardship Council (FSC)

Staff had a telephone discussion, on April 14, 2022, with the log buyer for Oregon Overseas Timber Co. Inc. This is the nearest mill to the subject property. When asked about selling of Shore pine. The log buyer informed Staff the only use for Shore pine was burning as outdoor fire wood as it was not a commercially viable forest product.

The second mill was Roseburg Forest Products in Coquille, Oregon.

Roseburg Forest Products - Coquille



Company Information

Cedar Point Road
P.O. Box 218
Coquille, OR 97423
Website: http://www.roseburg.com
County: Coos
Phone: 541-396-2131

Log Buying Preferences

Minimum Diameter: 5
Maximum Diameter: 30
Minimum Length: 17
Maximum Length: 34
Length Preference: 34

Certifications

Forest Stewardship Council (FSC)

Products Produced | Products Purchased | **Species**

Fir, grand	Fir, white	Hemlock, western	Douglas-fir
Pine, lodgepole	Pine, ponderosa	Pine, sugar	Pine, western white
Spruce, Engelmann	Spruce, Sitka		

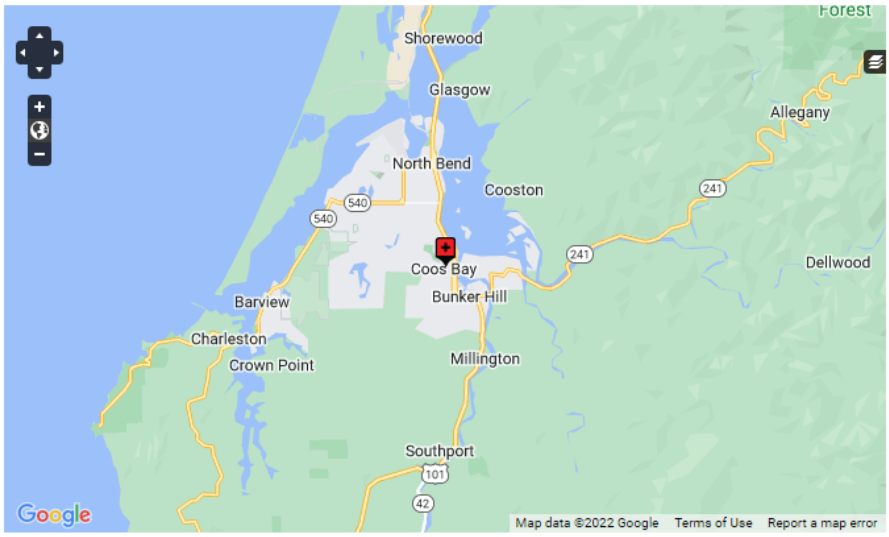
Company Contacts

Name	Position/Title	Phone
Joshua Phillips	Log Buyer	541-396-2131 (work)

While Shore pine (Pinus contorta var. contorta) sounds similar to Lodgepole pine (Pinus contorta var. latifolia) it is not. A telephone conservation, on April 15, 2022, with a log buyer from Roseburg Forest Products (RFP) about the two species and he explained these two tree species are completely different. They look different, they cut different, they have different characteristics, and RFP had no interest in buying Shore pine for commercial forest products. They were willing to buy Lodgepole pine if anyone was willing to ship to the Douglas County at a cost effective price. RFP is in the business of buying timber for commercial purposes and Staff recommends that this is considered expert advice on the market.

The third mill contacted was Southport Forest Products located in Coos Bay, Oregon.

Southport Forest Products



Company Information

P.O. Box 298
Coos Bay, 97420, OR 97420
Website: http://www.southportforest.com/
County: Coos
Phone: (541) 266-0903

Log Buying Preferences

Minimum Diameter: 4"
Maximum Diameter: 60"

Products Produced | Products Purchased | **Species** | Residue

Fir, grand	Fir, white	Hemlock, western	Douglas-fir
Pine, lodgepole	Pine, ponderosa	Pine, sugar	Pine, western white
Spruce, Engelmann	Spruce, Sitka		

Company Contacts

Name	Position/Title	Phone	Email address
Jason Smith	Manager	541-266-0903 (work) (cell)	Email Contact
Forest Flowers	Log Buyer	541-266-0903 (work) 541-297-5482 (cell)	
Jacob Steensen	Log Buyer	541-266-0903 (work)	

Staff had a telephone conservation with Jacob Steensen on April 14, 2022. Mr. Steensen indicated that Southport had no interest in buying only Shore pine, and would only allow a minor amount of Shore pine mixed into Douglas fir or white wood mix of pulp wood.

These three sources support that the there is a very limited commercial value in the timber on this property.

The applicant's consulting forester, Mr. Eric Farm, is asserting that there is no site index for Shore pine. While typically, Staff checks the cubic feet per acre per year (cf/ac/yr) of vegetation growth on a subject property. Tree site index is similar enough to cf/ac/yr measurements and the conversion factor is listed in Oregon Department of Forestry's Land Use Planning Note #3.

Mr. Farm indicates that *"the NRCS soil survey shows a value for forest productivity based on the Alexander lodgepole pine site index table. This site index table is not applicable to western Oregon per the author's note".*

The applicant submitted the report for Lodgepole pine.

Site Indexes for Lodgepole Pine, with Corrections for Stand Density: Instructions for Field Use

by

Robert R. Alexander

Lodgepole pine (Pinus contorta Dougl.) commonly grows in overly dense stands, and crowding restricts the rate of height growth. Site index must, therefore, be adjusted for stand density. Figures 1 and 2, and tables 1 through 7 have been prepared for field use in estimating site index for lodgepole pine. They are applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and eastern Washington and Oregon.[2] Information necessary to understand field application of the site index curves and instructions for their use are presented in this paper. Methodology used to develop the site index curves will be presented in a subsequent paper.

Stand density is expressed as Crown Competition Factor (CCF).[3] CCF compares growing space available to a tree with the space represented by a vertical projection of the average crown area of an open-grown tree of the same stem diameter (Maximum Crown Area, MCA). Because space occupied by a single tree is not easily determined, the comparison is made on a stand basis. CCF may be obtained from the numbers and diameters of trees in a stand, or it may be estimated from measurements of basal area and average diameter.

[2] *This paper is based on a cooperative study planned and undertaken jointly by the Rocky Mountain, Intermountain, and Pacific Northwest Forest and Range Experiment Stations. David Tackle (INT) and Walter G. Dahms (PNW) collected the field data in their respective areas.*

[3] *Krajicek, John E., Brinkman, Kenneth A., and Gingrich, Samuel F. Crown competition factor, a measure of density. Forest Sci. 7: 35-42. 1961.*

Site index is expressed as the average height of dominant trees in pure, even-aged stands at age 100 years. For stands where the CCF is 125 or less, height growth is unaffected by density. For stands where the CCF is greater than 125, height growth is reduced as density increases, and the reduction in height growth at any level of CCF above 125 becomes greater as site quality improves.

Site index can be estimated from tables 1 through 5 for all combinations of height, age, and density indicated in the Rocky Mountain and Intermountain regions, providing the average height of the trees selected for site determination is equal to or exceeds the height of the site index 30 class but does not exceed the height of the site index 100 class at the age sampled. Figure 1 can be used if the CCF is 125 or less. In the Pacific Northwest region, site index can be estimated reliably only if the "site trees" are 50 or more years old.

Field Application of Site Index Curves

Step 1.--Determine average height and age of the stand. Select four or more dominant trees (site trees) and measure heights and ages in the conventional manner.[4] Average total age may be approximated from age at breast height by adding 9 years to the average age at breast height (fig. 1 and all tables are based on total age).

[4] *Chapman, Herman H. and Meyer, Walter H. Forest mensuration, Chap. 15, "The measurement of heights in standing trees," pp. 149-212 and Chap. 23, "The age of standing trees," pp. 318-323. New York: McGraw-Hill Book Co. 1949.*

When Staff is confused on a technical question, such as the site index of Shore pine. We often rely on NRCS for guidance. Staff visited the NRCS office for assistance on April 14, 2022. NRCS staff did not know the specifics of whether the site index for Lodgepole pine from a 1966 applies to Shore pine. That is too specific of a question for local NRCS to answer. NRCS staff referred Planning staff to contact OSU Extension Staff about tree species site index questions.

Staff then contact OSU Extension Staff. Dr. David Shaw, Forest Health Specialist, offered his expert opinion *"My general thought is that Alexander was the Rocky Mt. variety, i.e. P. contorta subsp. latifolia. And of course shore pine is P. contorta subsp. contorta. And grows on much different soils and climate. So I don't think those site index and density and yield tables would work for coastal Oregon. Not sure specific site index yield estimates for shore pine exist for Oregon".* Staff wishes to inform the Board of Commissioners, that while a rotating professorship, this is the most qualified non-bias expert in the State of Oregon. Dr. David Shaw does not need to prove his qualifications under the rules we need follow. The Planning Commission recommended that the Board of Commissioners consider OSU Extension as expert witnesses.

Based on the submitted NRCS soils, there is a potential for Sitka spruce on the subject property within the 61D soil class. The applicant's forester found some legacy Sitka spruce on the subject property. The applicant did not provide much information on whether they try previous reforestation efforts onsite. When asked for additional information from Staff about previous reforestation effects. The applicant stated there had not been any previous reforestation attempts on the subject property and they felt it would not have been successful.

The applicant's consulting forester also submitted additional information. The summary is that the soils and climate factors would not be suitable for the commercial growing of Sitka spruce.

Staff did consult with NRCS – Coquille office staff on April 25, 2022 to verify that Sitka spruce had potential to growth in 61D soil types. There is potential for Sikta spruce to growth at this site. Goal 4 identifies Forest land shall include *"lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources".*

There is an interesting LUBA opinion from Linn County for the Board of Commissioners to consider. The application involved rezoning of 28.62 acre parcel from Farm/Forest to Non-Resource (NR-5). The site had the forest productivity for Douglas-fir of 106 cf/ac/yr, which produces a similar example of the 100 cf/ac/yr of Sitka spruce on this subject property. At the time of the application, only 2 acres of the Linn property was stocked in timber. The remainder of the Linn property was

covered in *"scattered deciduous and Douglas-fir trees species, open grassy area and rock outcrops".* The petitioner argues that *"where NRCS data is available local governments "must rely on that information and may not substitute other information when conducting an inventory of forest land".* The intervenor argued that *"a local government may choose to rely on that study rather than the NRCS ratings to determine the productivity of the parcel and hence whether it is suitable for commercial forest uses under Goal 4".* Like most LUBA opinion, both sides argue they were correct and the other side was completely wrong. Every application is unique, and what the decision concluded in this case was that "*essentially, that because the majority of the property is not forested and has no streams, the property is not "other forested lands" that maintain the listed resources".* The question is are the existing Shore pines enough to be consider other forest lands that provides for soil, air, water and fish & wildlife resources.

The Planning Commission had detailed discussion about the habitat values of the subject property and found that property does not meet the definition of Goal 4 based on the site conditions described in report by Eric Farm.

<u>Forest Management</u>
Some of the comprehensive plan implementation goals relates to siting of new rural residential dwellings and their effects on nearby farm and forest lands.

If the zone change is approved, then there will be analysis of the changes to nearby farming or forestry practices. The County must analyze whether those effects would be significant changes or not. Most forest operations are preempted from planning review by OAR 660-006-0060.

Comprehensive Plan Volume 1 Part 2 provides the inventory and factual background for forest lands in Coos County. The plan identifies the following methods or tools as the forest management, which is supposed to increase the usability of timber lands: *"refers to any or all of the following practices: (1) forest fire control; (2) insect or disease control; (3) vegetation control; (4) reforestation; (5) precommercial and commercial thinning; (6) fertilization; (7) genetic improvement of timber species; and (8) other measures, such as assistance to forest land-owners, forest research, etc."*

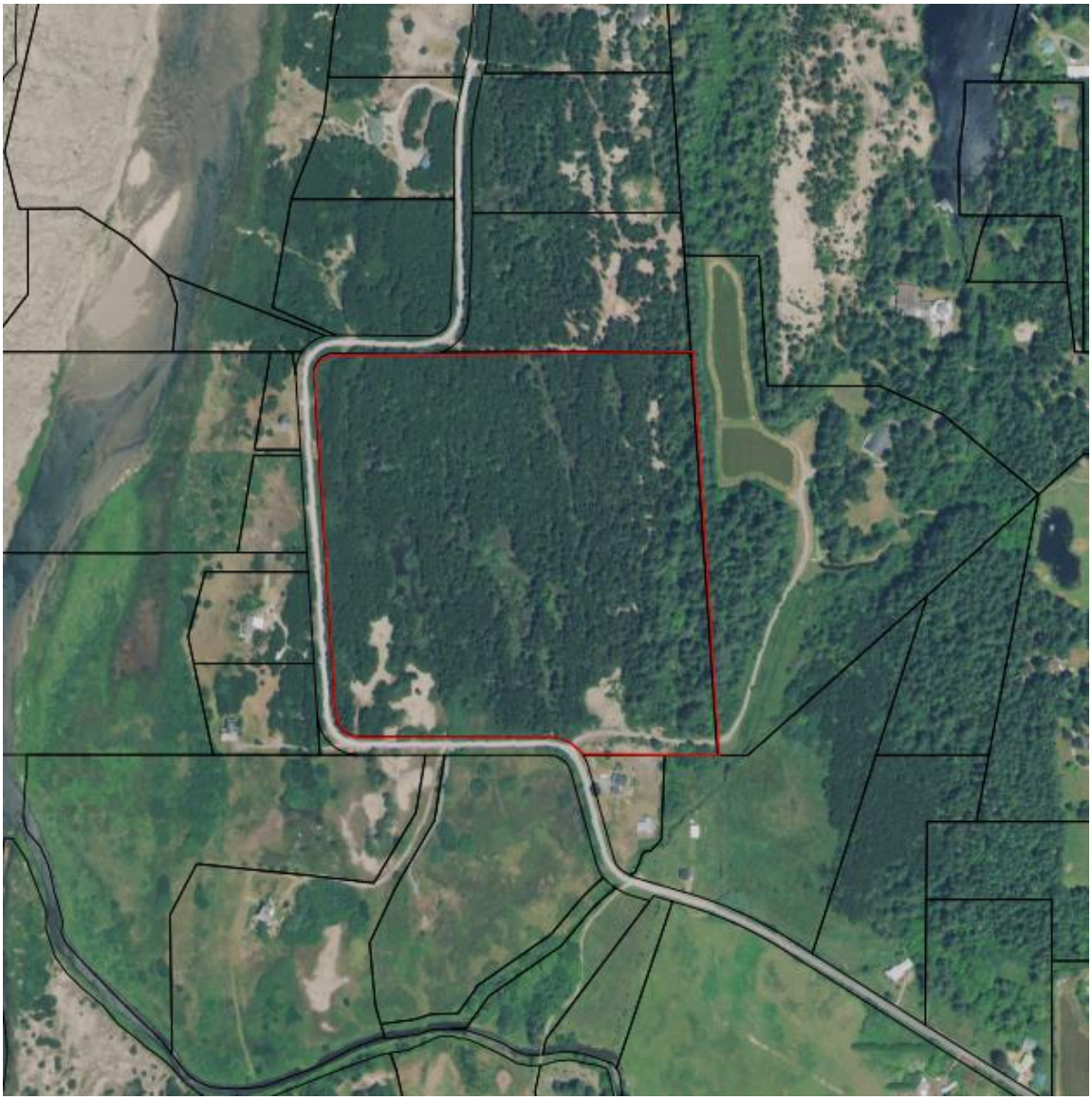
Rezoning from Forest to Qualified Rural Residential-5 zones will not have a direct effect on forest fire control. The subject property is currently, and remain, within Bandon Rural Fire Protection District for structural protection. The subject property is currently, and remain, within Coos Forest Protection District for wildland protection. While the subject property appears to be cover with Gorse, which is a flammable invasive species, the rezoning process will not necessary require removal any invasive species.

Insect and disease control measures are not necessarily affected by County zoning districts. First, Staff has no evidence provided that there are any insect or disease damage on the subject property or nearby properties for that matter. Second, there are a handful of residential tree services businesses in the Bandon area provide services to

rural residential properties. Changing the zoning district will not necessary increase any challenges for controlling pest damage.

Vegetation control refers to controlling unwanted vegetation that competes with commercial tree species. This does not necessarily mean only invasive species. Based on the submitted professional forester report, by Eric Farm, the subject property a very minimal commercial tree species.

Based on the aerial imagery of the subject property and nearby area, there are a varied of timber stand types in this area.



Senate Bill 1602 increased the helicopter spray distance buffer from 60 feet to 300 feet of an inhabitable dwelling starting January 1, 2021. The Anderson v. Coos County, 51 Or LUBA 454 (2006) case established an important factor. According to the LUBA

case, a reasonable assumption could conclude that herbicides would be applied to land less than 40 acres using ground application methods. Spraying herbicides using ground spraying applications is permitted up to the property line. Herbicide application by aerial spraying is preferred for lands over 40 acres.

While it appears, there may be forestlands suitable for harvest and within 300 ft on the adjacent tract to the east. Staff finds that it is reasonable to conclude ground-based herbicide treatments would be utilized on these timber stands given the existing cranberry bogs on this tract and adjacency to Laurel Lake.

The parcels located to the north, south and west of the subject property are mostly residentially developed. These parcels are all less than 40 acres in size. Any herbicide application is likely to be ground side, and likely residential in nature.

Reforestation refers to replanting of trees. State Forest Practices Act regulates any commercial forest practices regardless of the County zoning. Any specific requirements for restoration are outside the purview of County zoning regulations. Rezoning of the subject properties is not likely to affect reforestation on the adjacent forest lands.

Precommercial and commercial refers to types of thinning operations. This is when the forest stand is removed of a percentage of trees in the stand. This is not considered a full harvest of the stand. Forest thinning is more complicated than simply cutting every other tree, and these are considered operations under the purview of the Forest Practices Act.

Fertilization refers to the application of applying fertilizer to increase tree species growth. Changing the zoning district will not affect applications of fertilizer to subject property.

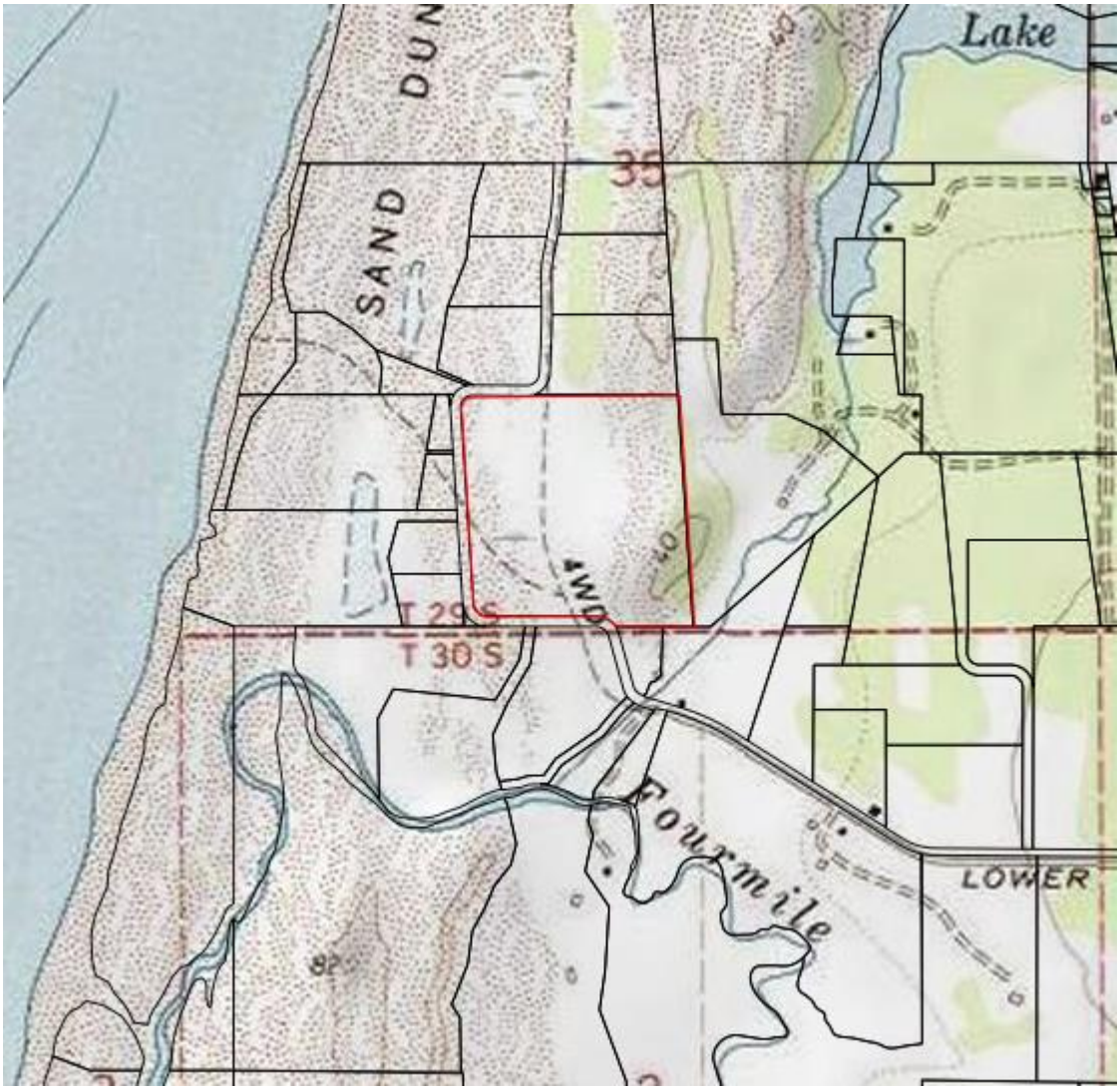
Planting genetic improved trees are not affected by zone changes. This refers to the tree species propagation. This is does not include reforestation or herbicide vegetation control is analyzed elsewhere. For context, an example of this would be the building a house using LVL studs vs dimensional lumber. Siting of the house would be regulated by land use planning. However, the type of stud utilized is not land use criteria.

The Comprehensive Plan also identifies intensive forest management of commercial timberlands consisting of timber harvests, initial site preparation, pre-commercial thinning, release site preparation, commercial thinning, then final harvest.

Oregon Department of Forestry's Land Use Planning Note #2 provides guidance for harvesting on forest lands, and the relationship between residential development and nearby forest lands. The note states that slope is an important factor in determining whether timber harvest will be by ground based equipment or using cable yarding equipment. It is appropriate to assume cable yarding will be used for slopes over 35%, while ground based equipment will be use for slopes under 35%. The note states that a minimum of 500 feet safety buffer should be between residential developed and cable

yarding harvests. While only a 300 feet buffer should be required for ground based harvesting methods.

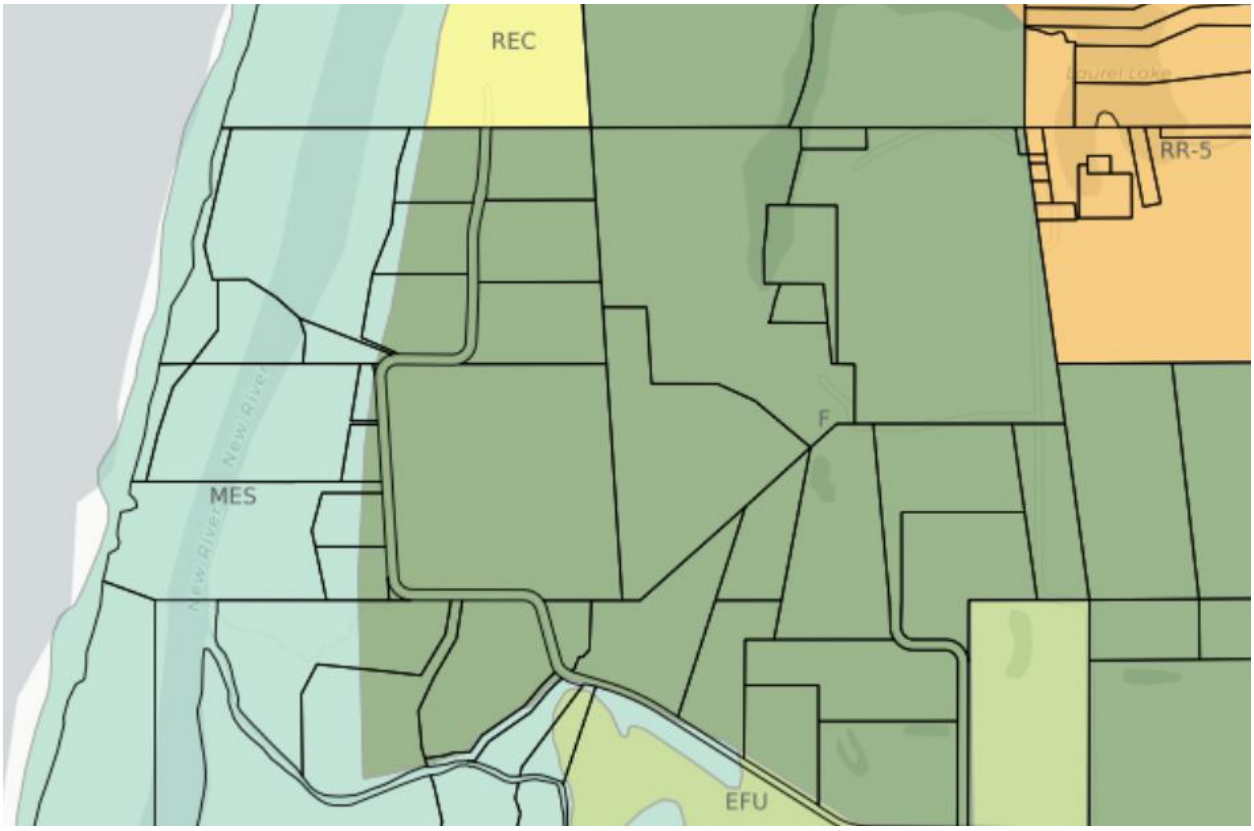
Based on the topographic map indicating less than 35% slope, this area will likely be harvested using ground-based equipment.



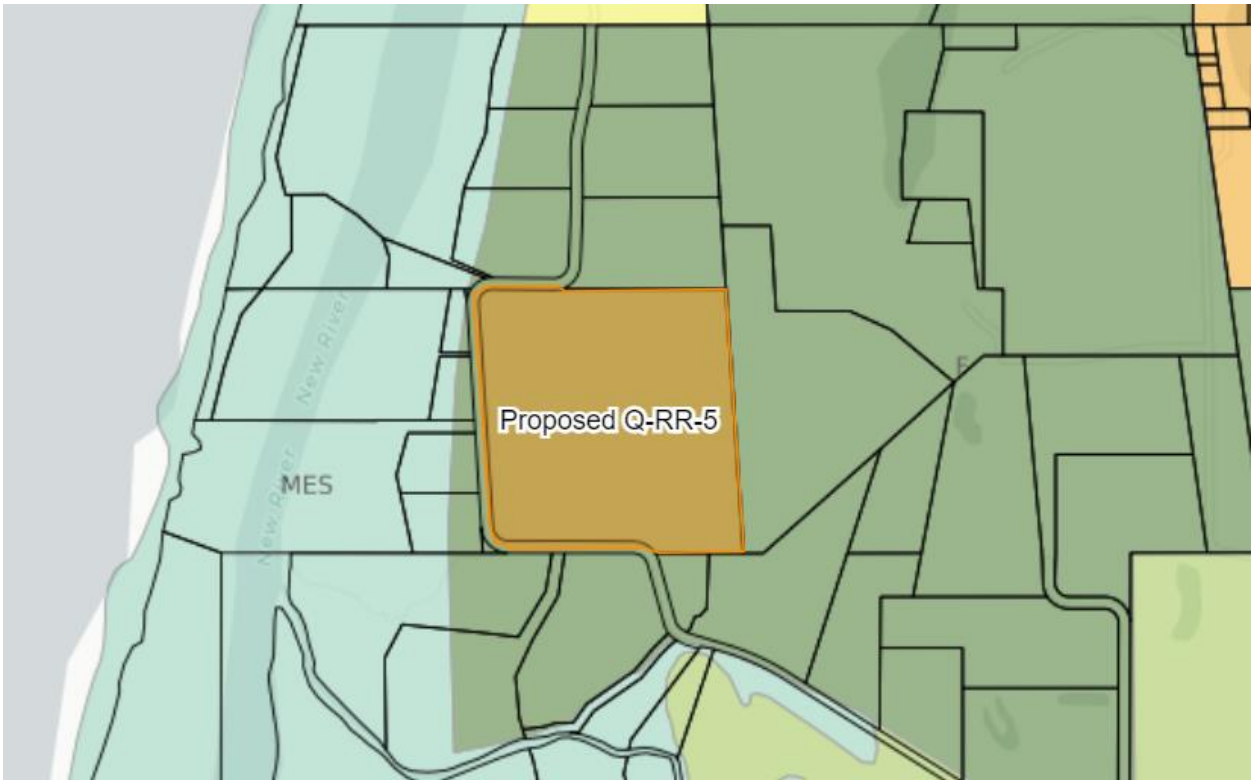
Based on the information and analysis above, Staff recommends the finding that a rezone from Forest to Qualified Rural Residential-5 zoning district will not have a significant negative effect on nearby forest practices.

- ***Coos County Comprehensive Plan Maps #14 Zone Maps and #16 Mixed Use Maps***

FINDING: The subject property is currently zone as Forest zoning district.



If approved, the subject property will be changed to Qualified – Rural Residential -5 zoning district.



Therefore, Staff recommends the subject property be removed from the mixed use overlay.

3.1 AGRICULTURAL LANDS - INVENTORY AND ASSESSMENT

1. Statutory Framework
1.1 Introduction – Intent of the Oregon Legislature

Agriculture is the second greatest industry in Oregon, after lumber and wood products. Land suited to agricultural use is a valuable resource which is under pressure from development for other uses.

In response to a state-wide problem of loss of prime agricultural land to non-resource producing uses, in 1973 the Oregon Legislature acted to stem the rapid conversion of agricultural land to other uses. The Legislature's agricultural land use policy was codified in ORS 215.243: "215.423 Agricultural land use policy. The Legislative Assembly finds and declares that:

> *(1) Open land used for agricultural use is an efficient means of conserving natural resources that constitute an important physical, social, aesthetic and economic asset to all of the people of this state, whether living in rural, urban or metropolitan areas of the state.*
>
> *(2) The preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state and for the assurance of adequate, healthful and*

nutritious food for the people of this state and nation.

(3) Expansion of urban development into rural areas is a matter of public concern because of the unnecessary increases in costs of community services, conflicts between farm and urban activities and the loss of open space and natural beauty around urban centers occurring as the result of such expansion.

(4) Exclusive farm use zoning as provided by law, substantially limits alternatives to the use of rural land and, with the importance of rural lands to the public, justifies incentives and privileges offered to encourage owners of rural lands to hold such lands in exclusive farm use zones."

This land use policy was implemented through the establishment of Exclusive Farm Use (EFU) zoning and taxation assessment. The E.F.U. zoning was later embodied in State-wide Planning Goal #3 (Agricultural Lands).

FINDING: Based on the application, the *"entire tract is fully stocked with shore pine"*. The subject property is currently mostly covered in Gorse and beach grass as the understory layer; Gorse is an invasive species. In staff's review it appears that the undeveloped open space lands to the north are also covered in a mixture of Gorse and Scotch broom. This is based on previous applications to the planning department where the applicants identified the vegetation cover as these invasive species.

The parcels to the south of the subject property are described as "open space" in their dwelling applications. The Oregon Department of State Lands inferred there may be wetlands covering these parcels. Either way, Staff has never been given any evidence of farming on the adjacent lands other than the aerial imagery showing the cranberry bogs to the east of the subject property.

Based on the attached soils reports and analysis presented in the report. These nearby lands do not appear to have much potential "*for the primary purpose of obtaining a profit in money*".

1.9 Definition of 'Commercial Agriculture'

In accordance with the Oregon Administrative Rules, Chapter 660, Division 5 – Land Conservation and Development Commission, the definition of commercial agriculture is as follows:

"COMMERCIAL AGRICULTURAL ENTERPRISE" consists of farm operations which will:

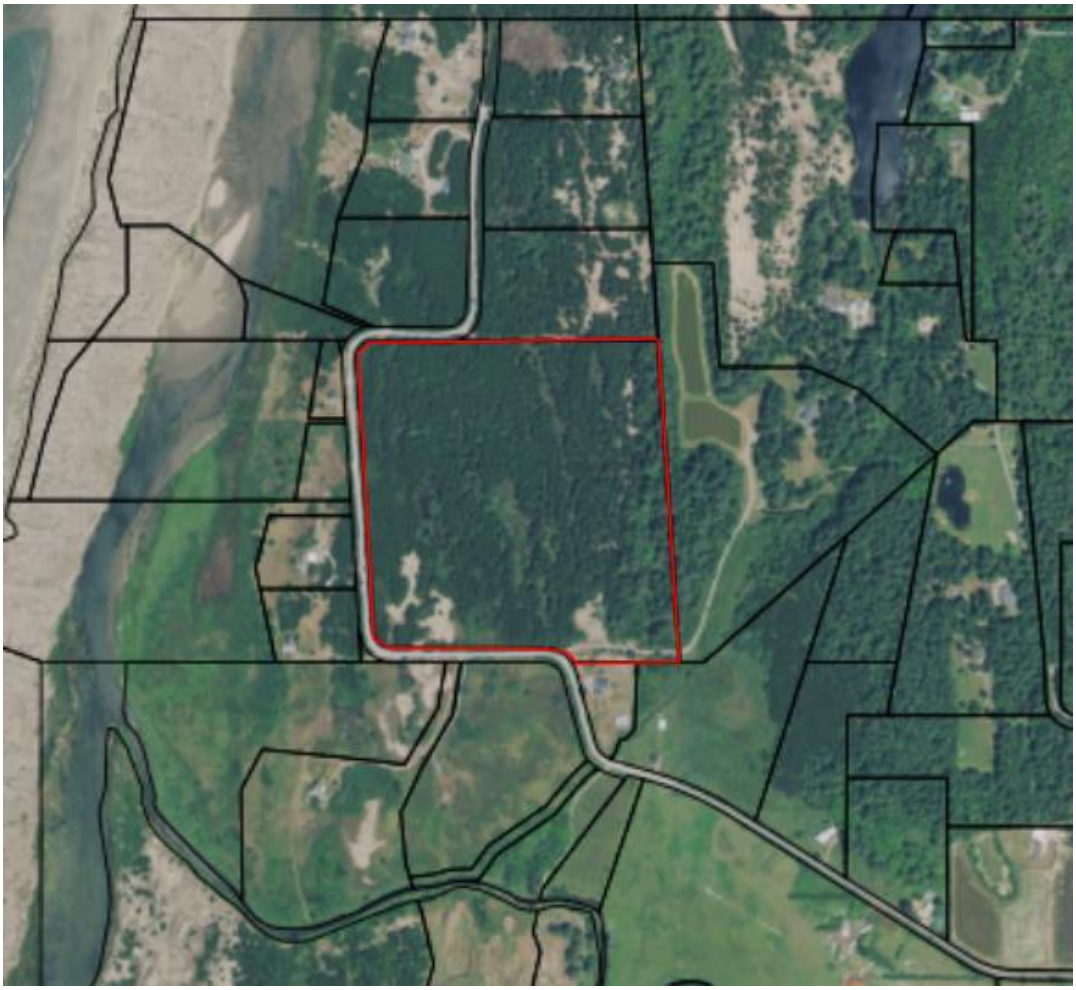
(a) Contribute in a substantial way to the area's existing agricultural economy; and
(b) help maintain agricultural processors and established farm markets;
(c) when determining whether a farm is part of the commercial agricultural enterprise, not only what is produced, but how much and how it is marketed shall be considered.

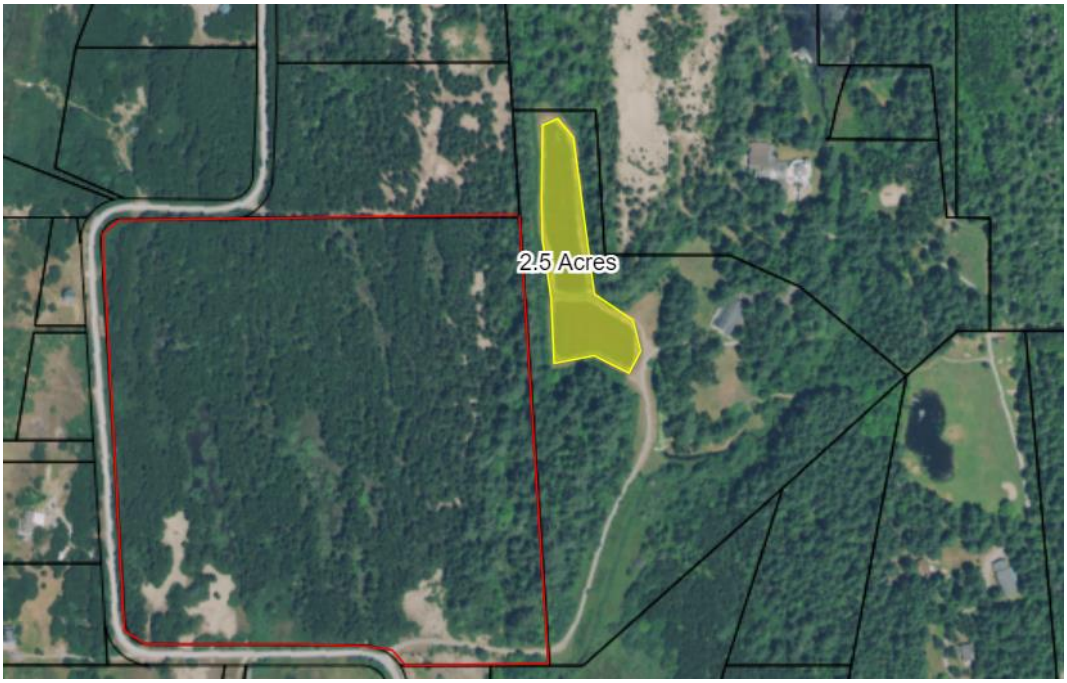
The type and value of products produced and how they are marketed are key factors in identifying the existing commercial agricultural enterprise. Owner characteristics, such as percent of income from farming and primary occupation, do not necessarily define a commercial farmer, or a commercial farm unit. Commercial agriculture in Oregon is supported in part, by less than full-time farmers. However, profitability or gross farm income is a factor in determining whether a farm operation is part of the commercial agricultural enterprise. Appropriate minimum lot size or performance standards as are utilized for any farm use zone shall be appropriate for the continuation of the existing agricultural enterprise within the area.

The inclusion of part-time or "small-acreage" farmers is of special relevance to Coos County, where a significant volume of farm products are produced by these farmers. This is substantiated in the sections which follow discussing farm size distribution and types of agricultural practices and products.

FINDING: Staff reviewed the aerial imagery of the subject property and nearby lands and did not find any commercial agricultural enterprise inside of this area. There is a small amount of cranberry farming located on the tract to the east. Staff estimates there is 2.5 acres of cranberry bogs.

The County's comprehensive plan identifies the average cranberry farm is 7 to 10 acres. Staff has not received any indication from the owner of tract, Whale Watch Sisters, whether their 2.5 acres in profitable or not. This property is under farm tax deferral, so the County Assessor does recognize the property is at least trying to be commercial farm operation.




2.5 Acres

Staff still must analyze whether the rezone will have any effect on this adjacent cranberry farm.

To provide the Board of Commissioners with at least some context of cranberry farming practices and the effects of nearby development. Friday Farms, operated by the Freitag's, have successfully grown cranberries directly adjacent to the City of Bandon for decades. The majority of cranberry farmers live on-site at their farming operations. Modern commercial cranberry growing has little direct correlation to adjacent lands, other than water rights and during the fall crop transportation.

Based on the NRCS custom soils report of the subject property, the subject property is capable of growing 5 tons of cranberries per year.

Custom Soil Resource Report

Irrigated and Nonirrigated Yields by Map Unit Component–Coos County, Oregon										
Map symbol and soil name	Land capability		Cranberries		Grass hay		Grass-legume hay		Pasture	
	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated
			Tons		Tons		Tons		AUM	
9—Chetco silty clay loam										
Chetco	4w	4w	—	—	3.50	2.00	—	—	6.0	1.5
Coquille	4w	4w	—	—	3.50	2.00	—	—	10.0	6.0
Langlois	4w	4w	—	—	10.00	6.00	—	6.00	12.0	8.0
28—Heceta fine sand										
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
59D—Waldport fine sand, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Dune land	—	8	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
Yaquina	—	4w	—	—	—	—	—	—	—	3.0

Onsite Cranberry Production:
Just because there are currently not cranberries on the subject property does not mean that the land could not be used for cranberry production. However, cranberries are an irrigated crop. This mean the landowners would need a water right to irrigate the subject property.

The subject property is the SESW of Section 35 of T29S-R15W. Below a map of the Oregon Water Resources Department Water Rights Mapping Tool.

There are no water rights on the subject property according to the map tool and verification with Water Resources.

The next logical thought is could a landowner owner apply for water rights. Staff verified thru the Oregon Water Resources Department Water Availability Analysis website.

Water Availability Analysis

FOURMILE CR > NEW R - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 4/18/2022

Watershed ID #: 70915 (Map)
Date: 4/18/2022

Exceedance Level: 80%
Time: 3:50 PM

Download Data

Water Availability

Select any Watershed for Details

Nesting Order	Watershed ID #	Stream Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	70915	FOURMILE CR> NEW R- AT MOUTH	No	No	No	No	No	No	No	No	No	No	No	No	Yes

Limiting Watersheds

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Limiting Watershed ID #	Stream Name	Water Available?	Net Water Available
JAN	70915	FOURMILE CR > NEW R - AT MOUTH	No	-40.60
FEB	70915	FOURMILE CR > NEW R - AT MOUTH	No	-25.20
MAR	70915	FOURMILE CR > NEW R - AT MOUTH	No	-30.10
APR	70915	FOURMILE CR > NEW R - AT MOUTH	No	-17.60
MAY	70915	FOURMILE CR > NEW R - AT MOUTH	No	-3.88
JUN	70915	FOURMILE CR > NEW R - AT MOUTH	No	-8.67
JUL	70915	FOURMILE CR > NEW R - AT MOUTH	No	-6.02
AUG	70915	FOURMILE CR > NEW R - AT MOUTH	No	-3.74
SEP	70915	FOURMILE CR > NEW R - AT MOUTH	No	-1.78
OCT	70915	FOURMILE CR > NEW R - AT MOUTH	No	-2.24
NOV	70915	FOURMILE CR > NEW R - AT MOUTH	No	-22.90
DEC	70915	FOURMILE CR > NEW R - AT MOUTH	No	-43.10
ANN	70915	FOURMILE CR > NEW R - AT MOUTH	Yes	3,730.00

Detailed Reports for Watershed ID #70915

FOURMILE CR > NEW R - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 4/18/2022

Watershed ID #: 70915 (Map)
Date: 4/18/2022

Exceedance Level: 80%
Time: 3:50 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	30.30	0.90	29.40	0.00	70.00	-40.60
FEB	46.20	1.41	44.80	0.00	70.00	-25.20
MAR	40.80	0.95	39.90	0.00	70.00	-30.10
APR	25.20	0.92	24.30	0.00	41.90	-17.60
MAY	10.50	1.28	9.22	0.00	13.10	-3.88
JUN	5.04	1.91	3.13	0.00	11.80	-8.67
JUL	3.56	2.43	1.13	0.00	7.15	-6.02
AUG	2.77	2.10	0.67	0.00	4.41	-3.74
SEP	2.19	1.34	0.85	0.00	2.63	-1.78
OCT	1.97	0.75	1.22	0.00	3.46	-2.24
NOV	7.96	0.61	7.35	0.00	30.20	-22.90
DEC	27.80	0.93	26.90	0.00	70.00	-43.10
ANN	27,900.00	937.00	27,000.00	0.00	23,700.00	3,730.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.31	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.90
FEB	0.81	0.00	0.00	0.04	0.00	0.01	0.54	0.00	1.41
MAR	0.35	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.95
APR	0.02	0.31	0.00	0.04	0.00	0.01	0.54	0.00	0.92
MAY	0.01	0.67	0.00	0.04	0.00	0.01	0.54	0.00	1.28
JUN	0.01	1.30	0.00	0.04	0.00	0.01	0.54	0.00	1.91
JUL	0.00	1.84	0.00	0.04	0.00	0.01	0.54	0.00	2.43
AUG	0.00	1.51	0.00	0.04	0.00	0.01	0.54	0.00	2.10
SEP	0.00	0.75	0.00	0.04	0.00	0.01	0.54	0.00	1.34
OCT	0.00	0.16	0.00	0.04	0.00	0.01	0.54	0.00	0.75
NOV	0.02	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.61
DEC	0.34	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.93

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IS70915A	CERTIFICATE	70.00	70.00	70.00	41.90	13.10	11.80	7.15	4.41	2.63	3.46	30.20	70.00
Maximum		**70.00**	**70.00**	**70.00**	**41.90**	**13.10**	**11.80**	**7.15**	**4.41**	**2.63**	**3.46**	**30.20**	**70.00**

While this report contains some technical information the red "No" under water availability means there is no available water rights, thus no availability to irrigate cranberry bogs which is a crucial component to growing and harvesting cranberries.

Onsite Grazing

The applicant quoted the following from the NRCS soil report ".... ***Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Wetness and flooding restrict grazing in winter*****". The applicant stated their professional forester visited the site in early February and part of the land was under water. Considering this both a mapped 100 year floodplain and a mapped wet deflation plane; Staff has no reason to doubt this statement and there has been no evidenced submitted to contradict the information. On site grazing may be a possibility but without onsite water to use for watering for livestock it is not likely a viable grazing.**

The Planning Commission had detailed discussions about the potential for grazing on the subject property. After much discussion, the conclusion given the limited success in grazing these wet deflation plains. The Planning Commission found that the subject property is unsuitable for summertime grazing.

Goal 5 Natural Resources, Scenic and Historic Areas, and Open Spaces
To protect natural resources and conserve scenic and historic areas and open spaces.

Local governments shall adopt programs that will protect natural resources and conserve scenic, historic and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

Applicable OARs:
OAR 660-023 – Procedures and Requirements for Complying with Goal 5
OAR 660-016 – Complying with Statewide Planning Goal 5
OAR 660-031 – State Permit Compliance and Compatibility

Coos County Comprehensive Plan, Volume 1, Part 1
5.6 FISH AND WILDLIFE HABITATS GOAL:

Coos County shall value its identified significant fish and wildlife habitat and shall strive to protect them where practicable.

PLAN IMPLEMENTATION STRATEGY
1. Coos County shall consider as "Sc" Goal #5 resources (pursuant to OAR 660-16-000) the following"

- *"Sensitive and peripheral Big-game Range" (ORD 85-08001 0L)*
- *Bird Habitat Sites {listed in the following table)*
- *Salmonid Spawning and Rearing Areas*

2. Coos County shall manage its riparian vegetation and identified non-agricultural areas so as to preserve their significant habitat value, as well as to protect their hydrological and water quality benefits (ORD 85-08-0l0L). This strategy does not apply to forest management actions, which are regulated by the Forest Practices Act. This strategy recognizes that protection of riparian vegetation and other wetland areas is essential to preserve the following qualities deriving from these areas:

- *Natural Flood Control - Flow stabilization of streams and rivers*
- *Environmental Diversity - Habitat for fish and wildlife, including fish and wildlife of economic concern*
- *Reduction of sedimentation*
- *Recreational opportunities*
- *Improved water quality*
- *Recharge of aquifers*

4. Coos County shall protect for agricultural purposes those land areas currently in agricultural use but defined as "Wet meadow" wetland areas by the U.S. Fish and Wildlife Service, and also cranberry bogs associated sumps and other artificial water bodies. Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas. The policy shall be implemented by: c. (ORD 85.08.0l0L) Use of the "Special Considerations Map" to identify (by

reference to the detail inventory map) salmonid spawning and rearing areas subject to special riparian vegetation protection; and sensitive and peripheral big game range.

6. Coos County shall consider the following to be ("5b) resources pursuant to the inventory information available in this Plan and OAR 660-16-000(5)(b): • Osprey Nesting Sites • Snowy Plover Habitat (outside the CBEMP) • Spotted Owl Nesting sites.

FINDING: Coos County relies on Oregon Department Fish & Wildlife for providing guidance for development near bird site. The way the process works is bird sites are buffered a predefined distance to create an overlay zone. Any proposal development within these overlay zones are sent to ODFW for technical guidance. There are none of these bird site overlay zone on the subject property.

There are no streams on the subject property, so no riparian corridors would be required. In addition, a rezone from Forest to Qualified – Rural Residential-5 does not have an effect on the feature. This is should also be considered an overlay zone.

There are "Wetlands" on the subject property. Approving a rezone will not have the effect of removing this feature. Any future development, or action, on the property will be addressed during any future application. Staff does not see any reason this would be a concern.

Coos County Comprehensive Plan, Volume 1, Part 1
5. 7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS

ISSUES:
*I. The historical sites and structures have been identified in uninco1porated Coos County by Dr. Stephen Dow Beckham for OCC&DC and the State Pm*s Division. Of these, the Philpott Indian Village site, the Bandon Lighthouse, and Cape Arago Lighthouse are in the National Register of*

Historic Places. In other cases, however, the presence of historical resources are either not generally known to the public or the resources may be located in areas under pressure for development. What measures can the County take to protect the value of these resources while permitting development of non-conflicting uses? 2. Both the State Office of Historic Preservation (SOHP) and local tribal authorities are aware of the exact) location of relic archaeological sites. However, once publicly identified, the sites often fall prey to amateur "pot hunters" that could desecrate gravesites and diminish the value of the resource. What can Coos County do to protect these archaeological resources without inadvertently endangering them through widespread public dissemination of site-specific invent01y information?

PLAN IMPLEMENTATION STRATEGIES
1. Coos County shall manage its historical, cultural and archaeological areas, sites, structures and objects so as to preserve their original resource value. This strategy recognizes that preservation of significant historical, cultural and archaeological resources is necessary to sustain the County's cultural heritage.

2. Coos County shall permit the expansion, enlargement or other modification of identified historical structures or sites provided that such expansion, enlargement or other modification is consistent with the original historical character of the structure or site.

3. Coos County shall continue to refraining widespread dissemination [sic} site specific inventory information concerning identified archaeological sites. Rather, Coos County shall manage development in these areas so as to preserve their value as archaeological resources.

This strategy shall be implemented by requiring development proposals to be accompanied by documentation that the proposed project would not adversely impact the historical, cultural and archaeological values of the project's site. "Sufficient document" shall be a letter from a qualified archaeologist/historian and/or duly authorized representative of a local Indian tribe(s). . . . "Appropriate measures" are deemed to be those which do not compromise the integrity of remains, such as (1) paving over the sites, (2) incorporating cluster-type housing design to avoid the sensitive areas, or (3) contracting with a qualified archaeologist to remove and re-inter the cultural remains or burial(s) at the developer's expense. If an archaeological site is encountered in the process of development, which previously had been unknown to exist, then these three appropriate measures shall still apply. Land development activities found to violate the intent of this strategy shall be subject to penalties prescribed by ORS 97. 745. - Coos Bay Plan.

FINDING: There are adopted cultural resources maps. Staff did check the map that was adopted. There are no known sites on the subject property. Therefore, there really can not be any affects of rezoning the subject property. Realistically, this provides further rationale for rezoning this parcel to Qualified - Rural Residential-5 since there are not any known archaeological sites on this parcel.

Goal 6 Air, Water and Land Resource Quality
To maintain and improve the quality of the air, water and land resources of the state.

Applicable OARs: None

Coos County Comprehensive Plan, Volume 1, Part 1
5.12 AIR, LAND & WATER QUALITY

Problem/Opportunity Statement

Protection of the quality of air, land, and water resources is especially important in Coos county because the region's economy is almost totally dependent on natural resources for agriculture, forestry, fishing, and tourism. At the same time, development needs often conflict with stringent legal requirements for maintaining environmental quality.

GOAL

Coos County shall exercise sound land use practices to maintain the quality of its air, land, and water resources in a manner that reflects County citizens' desires for a quality environment and a healthy economy.

FINDING: If the Planning Commission recommends the zone change from Forest to Qualified – Rural Residential -5. There will no significant negative effect air, land, or water quality. This land use goal is encouraging franchise system of private solid waste, the County's Beaver Hill solid waste site, promotes general air quality standards. Rezoning 38 acres to either Q-RR-5, or even RR-5 will not have any significant effect on any of these programs.

Goal 7 Areas Subject to Natural Hazards
To protect people and property from natural hazards.

Applicable OAR: None

Coos County Comprehensive Plan, Volume 1, Part 1
5.11 NATURAL HAZARDS

Problem/Opportunity Statement

Coos County's topography, geology and climate create a variety of hazards to life, structures and natural resources such as farm and forestlands.

GOAL

Coos County shall strive to protect life and property from natural disasters and hazards, based on an inventory of areas potentially subject to such problems

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall regulate development in known areas potentially subject to natural disasters and hazards, so as to minimize possible risks to life and property. Coos County

*considers natural disasters and hazards to include stream and ocean flooding, wind hazards, wind erosion and disposition, *critical streambank erosion, coastal erosion and deposition, mass movement (earthflow and slump topography), earthquakes, and weak foundation soils.*

This strategy shall be implemented by enacting special protective measures through zoning and other implementing devices, designed to minimize risks to life and property.

This strategy recognizes that it is Coos County's responsibility (1) to inform its citizens of potential risks associated with development in known hazard areas, and (2) to provide appropriate safeguards to minimize such potential risks.

Finding: The subject property has the following natural hazards overlays:

- Wind Erosion
- Earthquake & Liquefaction
- Tsunami

Coos County Zoning & Land Development Ordinance
4.11.132 Natural Hazards (Balance of County Policy 5.11)

Coos County has inventoried the following hazards:

- *Flood Hazard*
  - *o Riverine flooding*
  - *o Coastal flooding*
- *Landslides and Earthquakes*
  - *o Landslide Susceptibility*
  - *o Liquefaction potential*
- *Tsunamis*
- *Erosion*
  - *o Riverine streambank erosion*
  - *o Coastal*
    - *♣ Shoreline and headlands*
    - *♣ Wind*
- *Wildfire*

Purpose Statements: Coos County shall regulate development in known areas potentially subject to natural disasters and hazards, so as to minimize possible risks to life and property. Coos County considers natural disasters and hazards to include river and coastal flooding, landslides, liquefaction potential due to earthquakes, fault lines, tsunamis, river bank erosion, coastal erosion along shorelines and headlands, coastal erosion due to wind, and wildfires, including those areas affected by gorse.

This strategy shall be implemented by enacting special protective measures through zoning and other implementing devices, designed to minimize risks to life and property associated with new development and substantial improvements. The determination of whether a property is located in one of the above referenced potentially hazardous areas shall be made by the reviewing body (Planning Director, Planning Commission, Board of Commissioners, or any designee based

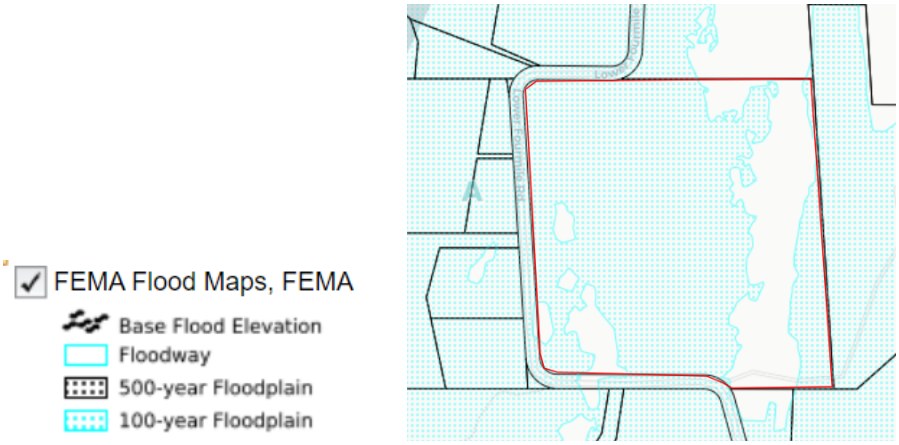
upon adopted inventory mapping). A specific site may not include the characteristics for which it is mapped. In these circumstances staff shall apply § 4.11.132.ii.2m

a. Flooding: Coos County shall promote protection of valued property from risks associated with river and coastal flooding along waterways in the County through the establishment of a floodplain overlay zone (/FP) that conforms to the requirements for participation in the National Flood Insurance Program. See Sections 4.11.211-257 for the requirements of this overlay zone. See Sections 4.11.211-257 for the requirements of this overlay zone.

Comprehensive Plan
2. Coos County shall continue to participate in the National Flood Insurance Program (Public Law 90-448), recognizing that participation in this program substantially insures the health and safety of County residents and allows property owners to benefit from subsidized insurance rates. Further, this strategy also recognizes that failure to participate in this program would prohibit affected property owners from receiving construction and permanent mortgage loans by federally insured lending institutions.

2a. The areas of special flood hazard, identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Coos County" dated September 25, 2009, with accompanying Flood Insurance Rate Maps and Flood Boundary - Floodway Maps is hereby adopted by reference and declared to be a part of the Coos County Comprehensive Plan Inventory.

FINDING: The subject is within the A zone of the 100-year floodplain. This is part of the area adopted into the National Floodplain Insurance program. Below is a map of the subject property with the floodplain identified. Most of the subject property is covered in the 100 year floodplain.

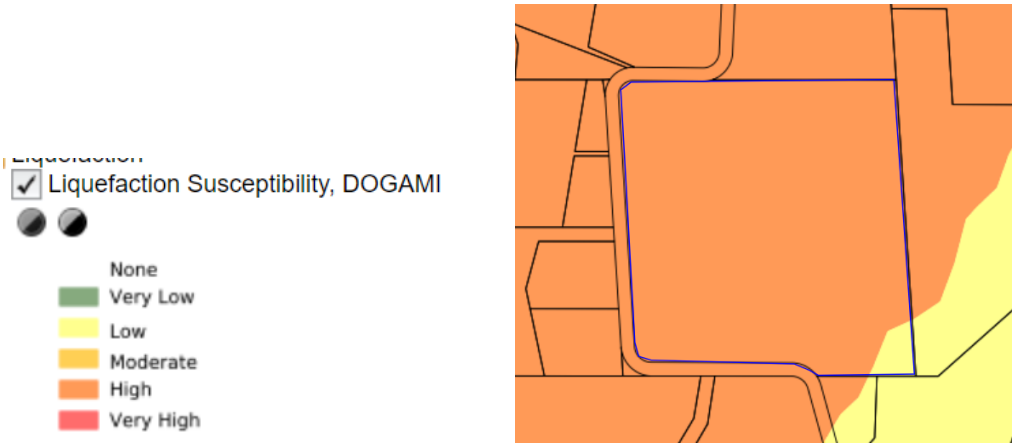


However, changing the zoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district will have no effect on the floodplain overlay zone.

b. Landslides and Earthquakes
Earthquakes: Coos County shall promote protection of life and property in areas potentially subject to earthquake hazards. New development or substantial improvements in mapped areas

identified as potentially subject to earthquake induced liquefaction shall be subject to a geologic assessment review as set out in this section. Such areas shall include lands subject to "very high" and "high" liquefaction identified in DOGAMI Open File Report O-13-06, "Ground motion, ground deformation, tsunami inundation, co-seismic subsidence, and damage potential maps for the 2012 Oregon Resilience Plan for Cascadia Subduction Zone Earthquakes."

FINDING: The subject is within the liquefication zone. This is part of the area adopted into the County's natural hazard program. Below is a map of the subject property with the liquefaction susceptibility identified. Most of the subject property is covered in the High liquefaction zone.



However, changing the zoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district will have no effect on the liquefaction susceptibility overlay zone.

c. Tsunamis: Coos County shall promote increased resilience to a potentially catastrophic Cascadia Subduction Zone (CSZ) tsunami through the establishment of a Tsunami Hazard Overlay Zone (THO) in the Balance of County Zoning. See Sections 4.11.260-4.11.270 for the requirements of this overlay zone.

FINDING: The subject property is mapped as an area susceptible to both small and medium scenario tsunami. Changing the zoning will not have a direct effect on the overlay zone. Specific land use actions will trigger different rules or regulations. This overlay zone will be addressed during those applications.

e. Erosion: Coos County shall promote protection of property from risks associated with shoreline, headland, and wind erosion and deposition hazards.

Coos County shall promote protection of property from risks associated with bank erosion along rivers and streams through necessary erosion-control and stabilization measures, preferring nonstructural solutions when practical.

Any proposed structural development within a wind erosion/deposition area, within 100 feet of a designated bank erosion area, or on a parcel subject to wave attack, including all oceanfront lots, will be subject to a geologic assessment review as set out in Section 4.11.150. There is a setback of 100 feet from any rivers or streams that have been inventoried in the erosion layer. If a variance is requested, a geologic assessment will be required.

FINDING: This overlay zone will need to be addressed during any application process. Staff does not have any proposal other than rezoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district.

Goal 8 Recreational Needs
To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Applicable OAR:
OAR 660-034

Coos County Comprehensive Plan, Volume 1 Part 1
5.20 RECREATION
County residents have difficulty engaging in certain recreational activities because the opportunity or supply is lacking.

FINDING: Most of the comprehensive plan implementation strategies revolve government parks, specifically County operated parks. This proposal is about a rezone to Qualified – Rural Residential-5, so no major effects to County recreation is expected.

Goal 9 Economic Development
To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Applicable OARs:
OAR 660-009

5.16 INDUSTRIAL & COMMERCIAL LANDS

GOAL

Coos County shall strive to diversify and improve its regional economy.

FINDING: Goal 9 revolves around implementation of strategies for commercial and industrial development. This application is rezoning Forest zoned lands to Rural Residential zoning. There is not much relevance between the request and this goal. The applicant did state that *"New development can enhance the tax base and contribute to the business climate of the community".* Staff wishes to caution the Board of Commissioners that increases to the tax base is not criteria for approval of a land use planning action.

Goal 10 Housing
To provide for the housing needs of citizens of the state.

Applicable OARs:
OAR 660-007
OAR 660-008
OAR 660-038
OAR 660-039

5.17 HOUSING

GOAL

Coos County shall provide for the housing needs of its residents.

PLAN IMPLEMENTATION STRATEGIES

1. *Coos County shall provide zoning for adequate buildable lands and shall encourage the availability of adequate numbers of housing units for future housing needs at price ranges and rent levels, which are commensurate with the financial capabilities of Coos County households.*

   This strategy shall be implemented: (1) through appropriate Comprehensive Plan map and zoning designations, as appropriately determined to meet housing and estimates established in this plan's inventory and assessment, (2) through cooperation by Coos County with the Coos-Curry Housing Authority (CCHA) in their efforts to develop housing assistance programs for people with low and moderate incomes. This strategy recognizes (1) the lead role of CCHA in housing assistance planning, (2) each city's

responsibility for assessing housing needs within its urban growth boundary (UGB), and (3) the County's responsibility for assessing housing needs within all other unincorporated areas and for coordinating the UGB housing assessments of each city.

2. *Coos County shall encourage the availability of a wide variety of housing locations in urban and rural areas. For urban and urbanizable areas, this strategy shall be implemented through urban growth management agreements and appropriate coordinated land use designations. For rural areas, this strategy shall be implemented through appropriate land use designations for acreage homesites as selected and justified in the County's rural housing exception.*

   This strategy recognizes that the selected urban and rural locations are necessary to provide flexibility in housing location.

3. *Coos County shall structure its implementing zoning ordinance such that it: (1) permits mobile homes, (2) permits mobile homes and clustering of dwellings under a Planned Unit Development concept in most residential zones, (3) permits multiple family dwellings in selected locations within urban growth boundaries (UGB's), and (4) permits multiple family dwellings outside UGB's when part of a Recreation Planned Unit development. This strategy recognizes that such flexibility of housing type provides greater choice and enhanced ability to meet the housing needs of the citizens of Coos County.*

4. *Coos County shall structure its implementing ordinance so that it allows increasing density for (from lowest to highest) acreage homesites, rural centers, and UGA's.*

FINDING: The applicant is making the argument that since the subject property will not be considered Goal 3 or Goal 4 lands, and thus be considered non-resource lands. Then the property may be under Goal 10. Staff does not necessary disagree that if lands are not considered farm or forest, then lands could then be used for rural housing.

County housing inventories are a complex matter and beyond the scope of this application. There is not necessarily a shortage of existing housing in Coos County, or especially the Bandon area. There appears to be a shortage of affordable housing, workforce housing, houses for citizens wishing reside in their dwellings. Based on the City of Bandon's 2018 Housing Needs Assessment identified that approximately 20% of the City's housing stock were not being used for long term housing because the land owners simply choose for them not to be occupy. The County's rural residential housing stock, in the Bandon, could easily be in the same situation.

Staff wishes to point out to the Board of Commissioners that is currently no shortage of vacant, or undeveloped, Rural Residential, Commercial, or Industrial lands. Changing to a Rural Residential zoning would not necessary be a positive or negative benefit.

Goal 11 Public Facilities and Services
"To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development".

Applicable OARs:
OAR 660-011

5.18 PUBLIC FACILITIES & SERVICES

GOAL

Coos County shall encourage the timely, orderly and efficient development of public facilities and services necessary to support appropriate for needed rural and urban development.

PLAN IMPLEMENTATION STRATEGIES

2. Coos County shall provide opportunities to its citizens for a rural residential living experience, where the minimum rural public services necessary to support such development are defined as police (sheriff) protection, public education (but not necessarily a rural facility), and fire protection (either through membership in a rural fire protection district or through appropriate on-site fire precaution measures for each dwelling). Implementation shall be based on the procedures outlined in the County's Rural Housing State Goal Exception.

This strategy is based on the recognition: (1) that physical and financial problems associated with public services in Coos Bay and North Bend present severe constraints to the systems' ability to provide urban level services, and (2) that rural housing is an appropriate and needed means for meeting housing needs of Coos County's citizens.

FINDING: The subject property will meet at least the minimum rural public services. Realistically, the property is already zoned Forest and the landowner could apply for either a template or 200-acre non-contiguous dwelling. The Coos County Sheriff Department will provide police protection no matter what the zoning is. The same is true for structural fire protection from Bandon Rural Fire Protection District. Wildfire protection is provided thru the Coos Forest Protective Association under an Oregon Department of Forestry contract. Port Orford Langlois School District provides local public educational services for the subject property. Staff recommends the Board of Commissioners finds that Goal 11 is met either with or without approval of this zone change.

Goal 12 Transportation
To provide and encourage a safe, convenient and economic transportation system.

Applicable OARs:
OAR 660-012
OAR 660-034

5.19 <u>TRANSPORTATION</u>

GOAL

Coos County shall strive to provide and encourage a transportation system that promotes safety and convenience for citizens and travelers and that strengthens the local and regional economy by facilitating the flow of goods and services.

Finding: The County Comprehensive has various strategies for implementing Goal 12 elements. However, the request is for rezoning Forest to Rural Residential zone change. Staff recommends the Planning Commission finds that Goal 11 is met either with or without approval of this zone change.

Goal 13 Energy Conservation
To conserve energy.

Applicable OARs:
None

5.21 ENERGY

PLAN IMPLEMENTATION STRATEGIES

6. Coos County shall ensure that its implementing ordinances promote the conservation of energy, based upon sound economic principles, by considering utilization of the following techniques as incentives:

i. lot size, dimension and siting controls;

ii. building height, bulk and surface area;

iii. density of uses, particularly housing;

iv. availability of light, wind, and air.

In addition, alternate energy devices (such as wind energy towers) shall be conditionally permitted to exceed the maximum height limitation of its particular zone if found to be visually compatible with the immediate neighborhood.

This strategy recognizes that implementing ordinances can provide incentives in development to promote energy conservation.

FINDING: The applicant's is requesting a zone change from the Forest zone to a Rural Residential zoning district. The applicant is requesting a qualifier that would raise the minimum lot size to 10 acres. Even if the Board of Commissioners approves a standard Rural Residential-5 zoning district with 5 acres and further goal exceptions. This is only an increase the density of three to four more dwellings in typical part of Coos County, that is relatively sparse. Staff could not could to any real, useful, reason that this proposal would not necessary comply with the intent of Goal 13.

Goal 14 Urbanization
To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Applicable OARs:
OAR 660-011 – Public Facilities Planning
OAR 660-012 – Transportation Planning
OAR 660-014 – Newly Incorporated Cities, Annexations, Urban Development on Rural Lands
OAR 660-021 – Urban Reserves (applies statewide except the Portland Metro area)
OAR 660-022 – Unincorporated Communities
OAR 660-024 – Urban Growth Boundaries
OAR 660-025 – Periodic Review
OAR 660-027 – Urban and Rural Reserves in the Portland Metro Area
OAR 660-032 – Population Forecasts
OAR 660-038 – Simplified Urban Growth Boundary Method

5.22 URBANIZATION

GOAL

Coos County shall provide for an orderly and efficient transition from rural to urban land use, and shall establish urban growth boundaries to identify and separate urbanizable land from rural land.

FINDING: Goal 14 is important for Coos County. However, this proposal is not requesting any development that would trigger Goal 14 level of reviews. The requested lot size is above 10 acres.

Goal 15 Willamette River Greenway
To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Applicable OARs:
660-020 – Willamette River Greenway Plan

FINDING: The Willamette River Greenway is outside of the jurisdiction of Coos County.

Goal 16 Estuarine Resources
To recognize and protect the unique environmental, economic and social values of each estuary and associated wetlands; and

To protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Applicable OARs:
OAR 660-017 – Classifying Oregon Estuaries
OAR 660-031 – State Permit Compliance and Compatibility

OAR 660-035 – Federal Consistency

FINDING: Goal 16 is important land goal in Coos County. It is so important that the County has adopted two federally recognized estuary management plans, Coos Bay and Coquille. But the subject property is located approximately 7 miles south of the Coquille River Estuary Management Plan. Therefore, Goal 16 does not apply to this application.

Goal 17 Coastal Shorelands
To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and

To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Applicable OARs:
OAR 660-035 – Federal Consistency
OAR 660-037 – Goal 17 Water-Dependent Shorelands

5.10 DUNES, AND OCEAN AND COASTAL LAKE SHORELANDS

GOAL

Coos County shall manage its dune areas, ocean and coastal lake shorelands, and minor estuary shorelands, to provide for diverse uses consistent with maintenance of the natural values associated with such areas and with the need to reduce hazards to human life and property.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall base policy decisions for dunes and ocean, coastal lake, and minor estuary shorelands on the boundaries for these areas as identified on the Special Considerations Map.

In addition, the County shall utilize the Special Considerations Map and the boundaries it delineates for the following specific areas:

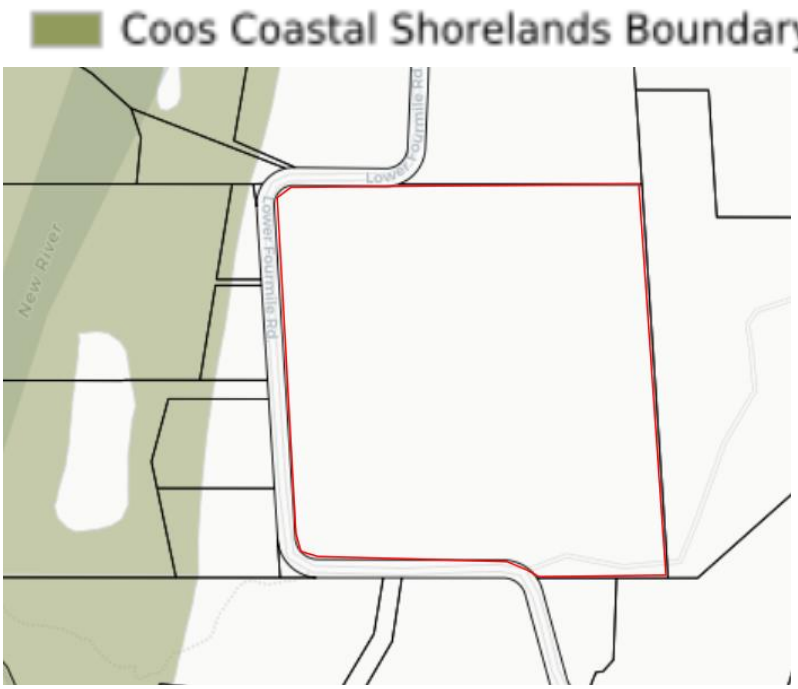
i. "Coastal Shorelands Boundary"'

ii. "Coastal Lake Shorelands Boundary:'

iii. "Suitable", "Limited Suitability" and "Not Suitable" areas of development potential.

This strategy recognizes that the Special Considerations Map specifically delineates the boundaries for areas identified in the Dunes and Ocean, Coastal Lakes Inventory and Assessment.

FINDING: Coastal Shoreland Boundary is also an important aspect of Coos County Comprehensive Plan. Attached is a map of the subject property and the location to the CSB. The location of the CSB is close to the subject property, however Lower Fourmile County Road is between the CSB and the subject property.



Goal 18 Beaches and Dunes
To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and

To reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Applicable OARs:
OAR 660-034 – State and Local Parks Planning
OAR 660-035 – Federal Consistency

5.10 <u>DUNES, AND OCEAN AND COASTAL LAKE SHORELANDS</u>

GOAL

Coos County shall manage its dune areas, ocean and coastal lake shorelands, and minor estuary shorelands, to provide for diverse uses consistent with maintenance of the natural values

associated with such areas and with the need to reduce hazards to human life and property.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall base policy decisions for dunes and ocean, coastal lake, and minor estuary shorelands on the boundaries for these areas as identified on the Special Considerations Map.

In addition, the County shall utilize the Special Considerations Map and the boundaries it delineates for the following specific areas:

i. "Coastal Shorelands Boundary"'

ii. "Coastal Lake Shorelands Boundary:'

iii. "Suitable", "Limited Suitability" and "Not Suitable" areas of development potential.

This strategy recognizes that the Special Considerations Map specifically delineates the boundaries for areas identified in the Dunes and Ocean, Coastal Lakes Inventory and Assessment.

2. Coos County shall permit development within areas designated as "Beach and Dunes Areas with Limited Development Suitability" on the Special Considerations Map only upon the establishment of findings that consider at least:

i. the type of use proposed and the adverse effects it might have on the site and adjacent areas,

ii. the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation,

iii. the need for methods for protecting the surrounding area from any adverse effects of the development, and

iv. hazards to life, public and private property, and the natural environment which may be caused by the proposed use.

Further, Coos County shall cooperate with affected local, state and federal agencies to protect the groundwater from drawdown, which would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of salt water into water supplies.

Implementation shall occur through an Administrative Conditional Use process, which shall include submission of a site investigation report by the developer that addresses the five considerations above.

This policy recognizes that:

i. The Special Considerations Map Category of "Beach and Dune Areas with Limited Development Suitability" includes all dune forms except older stabilized dunes, active foredunes, conditionally stable foredunes that are subject to ocean undercutting or wave-overtopping, and interdune areas (deflation plains) subject to ocean flooding.

ii. the measures prescribed in this policy are specifically required by LCDC Goal #18 for the above-referenced dune forms, and that this strategy recognizes that potential mitigation sites must be protected from pre-emptory uses.

3. Coos County shall prohibit residential development and commercial and industrial buildings within areas designated as "Beach and Dunes Areas Unsuitable for Development" on the Special Considerations Map.

Further, Coos County shall permit other developments in these areas only:

i. When specific findings have been made that consider at least:

a) the type of use proposed and the adverse effects it might have on the site and adjacent areas;

b) the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;

c) the need for methods for protecting the surrounding area from any adverse effects of the development; and

d) hazards to life, public and private property, and the natural environment which may be caused by the proposed use; and

ii. When it is demonstrated that the proposed development:

a) is adequately protected from any geologic hazards, wind erosion, undercutting, ocean flooding and storm waves; or is of minimal value, and

b) is designed to minimize adverse environmental effects, and

iii. When specific findings have been made, where breaching of foredunes is contemplated, that (1) the breaching and subsequent restoration is consistent with sound principles of conservation, and either (2) the breaching is necessary to replenish sand supply in interdune areas, or (3) the breaching is done on a temporary basis in an emergency (e.g., fire control, cleaning up oil spills, draining farm lands, and alleviating flood hazards).

Further, Coos County shall cooperate with affected local, state and federal agencies to protect the groundwater from drawdown, which would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.

This policy shall be implemented through (1) review of the Special Considerations Map when development is proposed in these areas, and (2) an Administrative Conditional Use process where findings are developed based upon a site investigation report submitted by the developer, which addresses the considerations set forth above.

iv. This policy recognizes that:

a) The Special Considerations Map category of "Beach and Dune Areas Unsuitable for Development" includes the following dune forms:

1) active foredunes

2) other foredunes which are conditionally stable and that are subject to ocean undercutting or wave overtopping, and

3) interdune areas (deflation plains) that are subject to ocean flooding,

b) the measures prescribed in this policy are specifically required by LCDC Goal #18 for the above referenced dune forms, and that

c) it is important to ensure that development in sensitive beach and dune areas is compatible with or can be made compatible with, the fragile and hazardous conditions common to such areas.

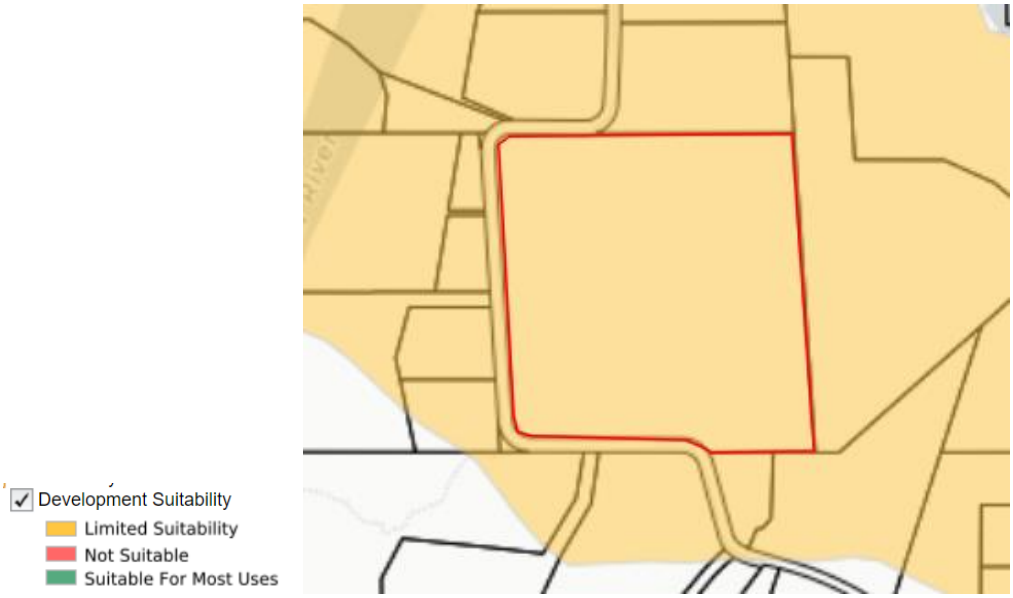
4. Coos County shall cooperate with state and federal agencies in regulating the following actions in the beach and dune areas described in subparagraph (iii) of Policy #1: (1) destruction of desirable vegetation (including inadvertent destruction by moisture loss or root damage), (2) the exposure of stable and conditionally stable areas to erosion, (3) construction of shore structures which modify current or wave patterns leading to beach erosion, and (4) any other development actions with potential adverse impacts.

This strategy shall be implemented through the processes described in Policies #2 and #3 above and through review and comment by the County on state and federal permits in beach and dune areas.

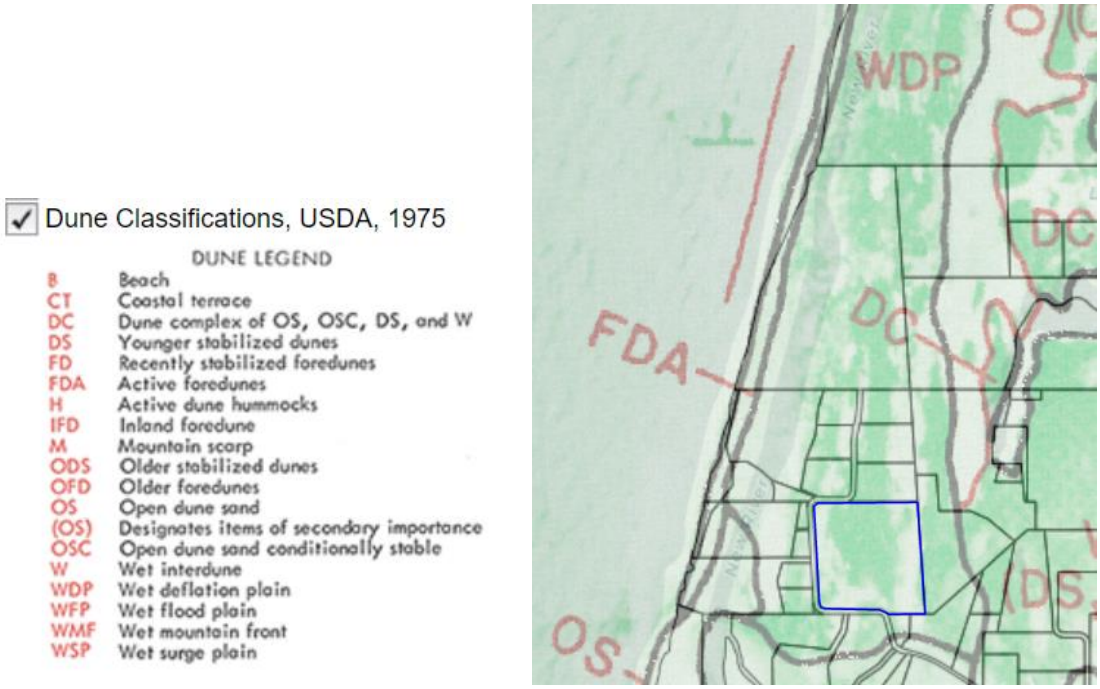
This strategy recognizes that regulation of these actions is necessary to minimize potential erosion.

FINDING: While applicant stated that "*there are no dune areas identified though this application",* meaning the subject property. The subject property is entirely covered by the Beaches and Dunes overlay, specifically classified as "Limited Suitability".

Below is a map of the subject property identified in red.



Below is a map of the 1975 USDA Dune Classification, with the subject identified in blue. The subject property is within the "Wet deflation plane".



Since Coos County implements Goal 18 as an overlay zone, changing the zoning from Forest to Rural Residential will not have an effect on the County's implementation of Goal 18.

The Planning Commission had much discussion about the wet deflation plains on the subject property and found that because of soil compaction concerns, these lands are unsuitable for livestock grazing.

Goal 19 Ocean Resources
To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.

Applicable OARs:
OAR 660-036 – Ocean Planning

FINDING: The subject property is close to the ocean, but on the dry side of 1967 OPRD Statutory Vegetation Line. Therefore, this goal does not apply.

RECOMMENDATION:
The Planning Commission recommended approval of the requested rezone from Forest to Qualified – Rural Residential-5 zoning district. The qualifier for this zoning district will be a 10-acre minimum lot size. The rezone will also remove the subject property from the Forest Mixed Use overlay map.

Staff only received one public comment during the public hearing. Mr. Kent Howe, 86200 Lower Fourmile Lane, expressed comments concerning the maintenance of the gravel portion of Lower Fourmile Road. Mr. Howe requested that the subject property have a condition of approval that it must participate in road maintenance. While this is a valid request for the Board of Commissioners in broad sense. This is not land use criteria. There is process thru either the County Counsel office or County Road Department to form a local improvement district for road maintenance.

Staff also received a few phone calls prior the hearing from neighbors. They also expressed concerns about road maintenance of Lower Fourmile Road. To assistance the Board, Staff confirmed with the County Roadmaster that the County ends maintenance responsibility at mile post 1.52, which is just past where the pavement ends near 86655 Lower Fourmile Road. Staff estimated using GIS software that the subject property is an additional 500 feet beyond this point.

BOARD OF COMMISSIONERS

COOS COUNTY

STATE OF OREGON

In the Matter of Amending the Coos County Comprehensive Plan Designation and Zone Map from Forest to Qualified – Rural Residential-5 and the Official Zone Map from Forest with a Mixed-Use overlay (F/MU) to Qualified – Rural Residential -5. File Nos. AM-22-002/RZ-22-001	ORDINANCE No.: 22-03-002PL

SECTION 1. TITLE

This Ordinance shall be known as the "Coos County Ordinance No. 22-03-002 PL".

SECTION 2. AUTHORITY

This ordinance is enacted pursuant to the provisions of ORS 203.035 and Chapter 215;

SECTION 3. PURPOSE

The purpose of this Ordinance is to amend Ordinance 85-12-020L that adopted Coos County Comprehensive Plan Volume I (Balance of County) Plan Zone Map and Ordinance 85-03-004L that adopted Coos County Zoning & Land Development Ordinance which implements Volume I of the Coos County Comprehensive Plan;

SECTION 4. FINDINGS AND ORDER

WHEREAS the property owners Coos County applied on properties described as map number: Township 29S, Range 15W, Section 35C, Tax Lots 1300. The subject properties are located south of the City of Bandon. The properties are currently zoned Forest with a Mixed Use Overlay. The request is to amend the plan and implementing zone on these property from Forest with a Mixed Use Overlay to Qualified – Rural Residential-5 (Q-RR-5) as presented in the application and proposal to found at Attachment A;

WHEREAS Staff reviewed the proposal and made findings in the April 28, 2022, staff report that the applicant met the required criteria and recommended that the Planning Commission (Hearings Body) find that the application complied with CCZLDO § 5.1.400.;

WHEREAS the Planning Commission took testimony at the May 5, 2022 hearing, there was no one else besides the applicant's representative to present and no written testimony in the record on this proposed. The Planning Commission found that the plan amendment and rezone would meet the criteria.;

AND IT APPEARING to the Board of Commissioners that given the definition of compatibility the Board of Commissioners found that the rezone would be compatible with a qualifier to limit the minimum lot size of the property to ten (10) acres. The application and staff findings along with the soil and forest inventory information support the zone change request.

The proposal was reviewed by the Department of Land Conservation and Development (DLCD) at the pre-application meeting and no conflicts with the Statewide Planning Goals, Statues or Rules in regards to the request.

NOW, THEREFORE, IT IS HEREBY ORDERED that the Coos County Board of Commissioners reviewed the Hearings Body recommendations and found the proposal met the objectives of the comprehensive plan. The evidence and testimony in the record supported the rezone to Qualified – Rural Residential-5. The Board of Commissioners took into consideration the evidence and determined that the proposal complied with other polices and ordinances as may be adopted by the Board of Commissioners. The findings in this matter can be found at Attachment B.

SECTION 5. SEVERANCE CLAUSE

If any section, subsection, provision, clause or paragraph of this ordinance shall be adjudged or declared by any court of competent jurisdiction to be unconstitutional or invalid, such judgment shall not affect the validity of the remaining portions of this ordinance; and it is hereby expressly declared that every other section, subsection, provision, clause or paragraph of this ordinance enacted, irrespective of the enactment or validity of the portion thereof declared to be unconstitutional or invalid, is valid.

SECTION 6. REPEAL OF INCONSISTENT ORDINANCES

Coos County Ordinances 85-12-020L, 85-03-004L and any subsequent amendments thereto are repealed to the extent that they are in conflict with this ordinance. Coos County Ordinances 85-12-020L and 85-03-004L shall remain in full force and effect in all other respects.

SECTION 7. EMERGENCY CLAUSE

The Board of Commissioners for the County of Coos deems this Ordinance necessary for the immediate preservation and protection of the public peace, safety, health and general welfare for Coos County and declares an emergency exists, and this Ordinance shall be in full force and effective upon its passage.

//

//

Adopted this Dated this 1st day of June, 2022.

BOARD OF COMMISSIONERS

ATTEST

_____
Recording Secretary

_____
Chair

Approved as to form:

_____
Office of Legal Counsel

_____
Vice Chair

Planning Commission Reading: May 5, 2022
Board of Commissioner Reading: June 1, 2022
Effective Date of Adoption: June 1, 2022

_____
Commissioner

Coos County Planning Department
Coos County Courthouse Annex, Coquille, Oregon 97423
Mailing Address: 250 N. Baxter, Coos County Courthouse, Coquille, OR 97423
Physical Address: 225 N. Adams, Coquille, Oregon
(541) 396-7770
FAX (541) 396-1022 / TDD (800) 735-2900
planning@co.coos.or.us

Official Use Only
FEE: _____
Receipt No. _____
Check No./Cash _____
Date _____
Received By _____
File No. Am-22-002/RZ-22-001

AMENDMENT/REZONE APPLICATION

PLEASE SUBMIT 2 COMPLETE UNBOUND COPIES OF THIS APPLICATION
OR 1 ELECTRONIC AND ONE UNBOUND COPY

The following questions are to be completed in full. An application **will not** be accepted for an Amendment/Rezone without this information. The applicant should contact the Planning Department prior to filing, in order to determine a valid basis for the request.

The Board of Commissioners and Hearings Body will use these answers in their analysis of the merits of the request.

PLEASE PRINT OR TYPE:

A. APPLICANT:

Name: Lance Morgan, County Forester Telephone: 541-396-7750
Address: 250 N. Baxter St,
Coquille, OR 97423

As applicant, I am (check one):

☐ Property owner or a purchaser under a recorded land sale contract. "Property owner" means the owner of record, including a contract purchaser. The application shall include the signature of all owners of the property. A legal representative may sign on behalf of an owner upon providing evidence of formal legal authority to sign;

☐ A person or persons that have written consent of the property owner to make an application. A legal representative may sign on behalf of an owner upon providing evidence of formal legal authority to sign. In the case of an attorney a statement of representation shall accompany the application;

☐ Transportation agency, utility or entity that meets the criteria in Section 5.0.175 of the Coos County Zoning and Land Use Development Ordinance (CCZLDO)

If other than the owner, please give the owner's name and address:
Subject Property is owned by Coos County under the jurisdiction of the Coos County Forestry Department. Coos County is under the jurisdiction of the Coos County Board of Commissioners, 250 North Baxter Street, Coquille, OR 97423.

B. DESCRIPTION OF PROPERTY:

Township 29S Range 15W Section SE quarter of SW quarter 35C Tax Lot 1300
Account No. 1243302 Lot Size 38.17 Acres Zoning District FMU
Existing Use Vacant - no use

C. STATE SPECIFIC ZONE DISTRICT REQUESTED: Rural Residential (RR-5) with a Q-RR-5:10-acre minimum lot size

D. JUSTIFICATION:

(1) If the purpose of this rezone request is to rezone one or more lots or parcels in the interior of an exclusive farm use zone for non-farm uses, the following question must be answered:
Were the lots or parcels for which a rezone request is made, physically developed for a non-farm use prior to February 16, 1983? N/A
Explain and provide documentation: _____

(2) If the purpose of this rezone request is for other than (1) above the following questions must be answered:

a. Will the rezone conform with the comprehensive plan? Yes.
Explain: Included with this Application form is a document titled, "Application - Criteria, Findings and Exhibits." The document provides all of the criteria language, the findings, and Attachments A - S, to explain the proposal. The document explains how the rezone conforms.

b. Will the rezone seriously interfere with the permitted uses on other nearby parcels? _____
Explain: The Application document explains how any negative effects on permitted uses on other nearby parcels can be mitigated. There are a few nearby parcels with farm and forest use that need protections as explained within the document.

c. Will the rezone comply with other adopted plan policies and ordinances? _____
Explain: Yes. The document explains how the proposal for the rezone will comply with the Coos County Zoning and Land Development Ordinance, the Statewide Planning Goals, and the Coos County Comprehensive Plan.

(3) If a Goal Exception is required please review and address this section.

All land use plans shall include identification of issues and problems, inventories and other factual information for each applicable statewide planning goal, evaluation of alternative courses of action and ultimate policy choices, taking into consideration social, economic, energy and environmental needs. The Coos County Comprehensive Plan (CCCP) and Implementing Zoning Land Development Ordinance (CCZLDO) was acknowledge[1] as having all necessary components of a comprehensive plan as defined in ORS 197.015(5) after the Coos County adopted the documents on April 4, 1985. The date of the effective plan and ordinance is January 1, 1986. Coos County did go through a periodic review exercise in the 1990's but due to lack of gain in population, economic growth and public request plan zones were not altered. Changes to the comprehensive plan and implementing ordinance have been done to ensure that any required statutory or rules requirements have been complied with. However, sometimes it is necessary for property owners or applicants to make a request to have certain properties or situations such as text amendments considered to reflect a current condition or conditions. These applications are reviewed on a case by case basis with the Board of Commissioners making a final determination. This type application and process is way to ensure that process is available to ensure changing needs are considered and met. The process for plan amendments and rezones are set out in CCZLDO Article 5.1.

Exception means a comprehensive plan provision, including an amendment to an acknowledged comprehensive plan, that; (a) Is applicable to specific properties or situations and does not establish a planning or zoning policy of general

[1] "Acknowledgment" means a commission order that certifies that a comprehensive plan and land use regulations, land use regulation or plan or regulation amendment complies with the goals or certifies that Metro land use planning goals and objectives, Metro regional framework plan, amendments to Metro planning goals and objectives or amendments to the Metro regional framework plan comply with the goals. In Coos County's case the commission refers to the Land Conservation and Development Commission.

applicability; (b) Does not comply with some or all goal requirements applicable to the subject properties or situations; and (c) Complies with standards for an exception.

NOTE: This information outlines standards at OAR 660-004-0025, 660-004-0028 and 660-04-0022 for goal exceptions, but is NOT to be considered a substitute for specific language of the OARs. Consult the specific Oregon Administrative Rule for the detailed legal requirements.

A local government may adopt an exception to a goal when one of the following exception process is justified:

(a) The land subject to the exception is "physically developed" to the extent that it is no longer available for uses allowed by the applicable goal;

(b) The land subject to the exception is "irrevocably committed" to uses not allowed by the applicable goal because existing adjacent uses and other relevant factors make uses allowed by the applicable goal impracticable; or

(c) A "reasons exception" addressing the following standards is met:

(1) Reasons justify why the state policy embodied in the applicable goals should not apply;

(2) Areas which do not require a new exception cannot reasonably accommodate the use;

(3) The long-term environmental, economic, social and energy consequences resulting from the use of the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located in areas requiring a goal exception other than the proposed site; and

(4) The proposed uses are compatible with other adjacent uses or will be so rendered through measures designed to reduce adverse impacts. Compatible, as used in subparagraph (4) is not intended as an absolute term meaning no interference or adverse impacts of any type with adjacent uses. A local government approving or denying a proposed exception shall set forth findings of fact and a statement of reasons which demonstrate that the

Compatible, as used in subparagraph (4) is not intended as an absolute term meaning no interference or adverse impacts of any type with adjacent uses. A local government approving or denying a proposed exception shall set forth findings of fact and a statement of reasons which demonstrate that the standards for an exception have or have not been met.

PART III -- USE OF GUIDELINES Governmental units shall review the guidelines set forth for the goals and either utilize the guidelines or develop alternative means that will achieve the

E. REQUIRED SUPPLEMENTAL INFORMATION TO BE SUBMITTED WITH APPLICATION:

1. A legal description of the subject property (deed);
2. Covenants or deed restrictions on property, if any;
3. A general location map of the property;
4. A detailed parcel map of the property illustrating the size and location of existing and proposed uses and structures on 8 ½" x 11" paper. If proposed structures are not know then the plot plan will need to include only existing with a note that no new structures are proposed at this time;

5. If applicant is not the owner, documentation of consent of the owner, including:
   a. A description of the property;
   b. Date of consent
   c. Signature of owner
   d. Party to whom consent is given

6. The applicant must supply a minimum of 2 copies of the entire application or one paper copy and electronic copy (email is acceptable), including all exhibits and color photocopies, or as directed by the Planning Staff.

G. Authorization:

All areas must be initialed by all applicants, if this application pertains to a certain property all property owners[2] must either sign or provide consistent for application unless otherwise allowed by Section 5.0.175 of the CCZLDO. As an applicant by initializing each statement I am accepting or agreeing to the statements next to each area designated for my initials and/or signature. All property owners shall sign and initial the designated areas of the application or provide consent from another party to sign on their behalf. If another party is signing as part of a consent that does not release that party that gave consent from complying with requirements listed below or any conditions that may be placed on an application. In the case of a text amendment the procedures for set out in Section 5.1.110 WHO SEEK CHANGE applies and an applicant may not be a property owner.

__✓__ I hereby attest that I am authorized to make the application and the statements within this application are true and correct to the best of my knowledge. I affirm to the best of my knowledge that the property is in compliance with or will become in compliance with CCCP and CCZLDO. I understand that any action authorized by Coos County may be revoked if it is determined that the action was issued based upon false statements or misrepresentation.

__✓__ I understand it is the function of the planning staff to impartially review my application and to address all issues affecting it regardless of whether the issues promote or hinder the approval of my application. In the event a public hearing is required to consider my application, I agree, as applicant I have the burden of proof. I understand that approval is not guaranteed and the applicant(s) has the burden of proof to demonstrate compliance with the applicable review criteria.

__✓__ As the applicant(s) I acknowledge that is in my desire to submit this application of free will and staff has not encouraged or discouraged the submittal of this application.

__✓__ I understand as applicant I am responsible for actual cost of that review if the Board of Commissioners appoints a hearings officer to hear the application I have submitted. As applicant I will be billed for actual time of planning services, materials and hearings officer cost and if not paid the application maybe become void.

_____
Applicant(s) Original Signature

_____
Applicant(s) Original Signature

3-2-22
Date

[2] Property owner" means the owner of record, including a contract purchaser

Application - Criteria, Findings and Exhibits

Proposal: This application is for a Rezone and Comprehensive Plan Map Amendment. The applicant is seeking to gain approval of amendments in order to permit modifications from Forest Mixed Use, (FMU) to Rural Residential (RR-5) zoning in order to permit partitioning Subject Property into three (3) rural homesites.

With the owner's intent for three maximum parcels, the applicants expect that a Q-RR-5 with a 10-acre minimum size would be appropriate in protecting the use and permitting a land use pattern similar to that existing on adjacent properties. Following the approval of the amendments, Coos County Forestry will submit for the land division that will result in a total of three parcels, with a required survey.

Subject Property: Assessor's Map: T29S, R15W, Sec. 35C, TL 01300
Subject Property includes a lawfully created parcel of 38.17 acres located south of the City of Bandon, north of Croft Lake, and west of Highway 101. See Attachment A, Vicinity Map; Attachment B, Tax Lot Map, and; Attachment C, Aerial Map.

Property Owner and Applicant:

Coos County Board of Commissioners
250 North Baxter Street
Coquille, OR 97423

Lance Morgan, County Forester
1309 W Central Blvd
Coquille, OR 97423
(541)396-7751; lmorgan@co.coos.or.us

Application Compiled by:

Shoji Planning, LLC
Crystal Shoji, AICP, Planner
P.O. Box462
Coos Bay, OR 97420
(541)267-2491; crystal@shojiplanning.com

Professional Consulting Forester:

Farm Environmental Services LLC dba Farm Unlimited
Eric Farm, PE, ACF
PO Box 761, North Bend, OR 97459
(458) 230-0537; eric@farm-unlimited.com

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Attachment D..... Floodplain Overlay zone

Attachment E .....Beaches and Dunes – Goal 18, (limited development)

Attachment F .....Liquefaction Susceptibility

Attachment G .....Hillshade and Contour Map (Topography)

Attachment H.....Attempted 2009 Sale of Subject Property

Attachment I ..... Bussmann Subdivision Plat, 1981

Attachment J..... Roaring Surf Estates Plat, 1982

Attachment K.....Zone Map of Properties in the Vicinity

Attachment L..... Subject Property with 750-ft. Perimeter Ownership

Attachment M .....National Resource Conservation Service (NRCS) Custom Soil Resource Report for Coos County (NCRS Report)

Attachment N .....Visual Analysis of Land Use – 750 Ft. Buffer Polygon – Farm/Forest Use

Attachment O .....Hard Copy NRCS Report Excerpts – 9-Chetco silty clay loam; Table 5.- Yields Per Acre of Crops and Pasture

Attachment P .....Forest Productivity/Suitability Report by Farm Unlimited

Attachment Q .....Land Use Planning Notes Number 3, April 1998, Updated for Clarity April 2010

Attachment R .....Coos County Forest Site Class Maps, Oregon Department of Revenue Western Oregon

Attachment S .....Chart of Goal #5 "5c" Bird Habitat Areas

Subject Property Background and Conditions

Subject Property, comprised of 38.17 acres, has been acknowledged as a lawfully created parcel pursuant to the Coos County Zoning and Land Development Ordinance (CCZLDO), Section 6.1.125(8) described in Deed Doc #Book 115, page 437, conveying real property prior to 1986. This information was confirmed by Coos County Planning Director Jill Rolfe, October 15, 2021. Subject Property has been in the ownership of Coos County since October 5, 1929.

Subject Property has poor soils that are poorly drained, with property especially suited for the growth of shore pine. With close proximity to the Pacific Ocean on the west, high winds are a factor that limits tree growth except within protected areas. Soil conditions for agricultural use are also a problem limiting suitability for agricultural uses. These topics will be explained in detail, and analysis will be provided within this document.

Beaches and dunes are to the south and west, providing views of the Pacific Ocean from portions of Subject Property. Beach grass and gorse are both visible and abundant on Subject Property, which has a number of Special Development Considerations and overlays that are applicable. Included are Archaeological Sites (ARC), Beaches/Dunes-Limited (BDL) and Natural Hazards Wind Erosion (HZW), Floodplain (FP), Wetlands, National Wetland Inventory Site (NWI), and Natural Hazards including Earthquake-Liquefaction (NHEQL), and Tsunami (NHTHO). The Planning Director has confirmed that these are the special considerations that apply. The special considerations are pertinent to any future development of the property. See the following maps*:

Floodplain Overlay zone, Attachment D
Beaches and Dunes Overlay zone, Attachment E
Liquefaction Susceptibility, Attachment F
Hillshade and Contour Map (Topography), Attachment G

*(750- foot buffer/boundary shown on maps will be explained within this document)

Subject Property is vacant property that does not currently contribute to the economy or livelihood of Coos County. If the property were suitable for forest use, the County Forestry Department could be managing the property for forest production; the Forestry Department includes professional foresters, with the goal of maintaining and maximizing forest property for sustained yield timber harvest, but the property is not conducive to forest management. Coos County is, however, in need of housing at all price ranges as confirmed in their Comprehensive Plan and understood within our communities. Adjacent properties, and others in the vicinity exist in rural residential lots of various sizes. The County would like to offer this property for rural residential use.

Steps have been taken to sell the property in the past, but the FMU zoning is thought to be detrimental to such a sale; no sale took place. See Agenda Item Coversheet with background information about this property and another property dated February 18, 2009, along with the Notice and publication of the public hearing. See Attachment H.

Access

Lower Fourmile Road provides access from Highway 101 on the west side at the location of West Coast Game Park south of Bandon. There may be a little confusion about the access road created by this document. While the application is for a zone change, rather than a specific use at this time, it is important to note that the map shows Lower Fourmile Road (referenced on the Assessor's map as Roaring Surf Road) proceeding from the southern border of the property all around the western border, and partially on the northern border. Access to any future parcels could be from Lower Fourmile Road. The tax lot map shows Roaring Surf Road on the south, west and north side of Subject Property, but we are informed that the name of the road is Lower Fourmile Road and that there is no official Roaring Surf Road. See Tax Lot Map, Attachment B.

The NRCS Report, front map shows Lower Fourmile Road proceeding through Subject Property with driveways, but this base map from NRCS appears to be out of date or from a specific previous time. Coos County Forester Lance Morgan has confirmed that the roads shown on the cover of the Custom Soils Report are not in existence at this time.

Zoning and Adjacent Uses

Subject properties and adjacent properties are zoned Forest Mixed Use (FMU). There are a number of zones within the vicinity, but not adjacent, including Rural Residential (RR-5), Recreation, Estuary and Minor Estuary, Shorelands, and Exclusive Farm Use.

Forest Mixed Use (FMU) zoned land may currently be in rural residential or farm-forest use. FMU lands may be those with soils, topographic features and ground cover that are best suited to a combination of forest and grazing uses, although that is not always the case. The areas are described as generally occupying land on the periphery of large corporate and agency holdings. FMU is useful for forming a buffer between more remote uplands and populated valleys. These "mixed use" areas contain ownerships of smaller size than in prime forest areas. The Comprehensive Plan states that some FMU lands are marginal in terms of forest productivity, such as areas close to the ocean. FMU zoning permits both farm and forest uses. One dwelling may be sited based on the predominate use of the tract, January 1, 1993. Information about properties that are adjacent to Subject Property is provided below:

Property to the South, East and Northeast are part of Bussmann Subdivision platted in 1980, including the following:

- South: T30, R15W, Sec.02, Tax Lot 104 (9.74 acres); Tax Lot 107 (1.54 acres), Tax Lot 110 (9.95 acres) and a portion of Tax Lot 501 (14.20 acres in its entirety).
- East: T29S, R15W, Section 35D,Tax Lot 700, (22.87 acres). See Attachments B, and Bussmann Subdivision, Attachment I.

Adjacent properties to the North and Northwest are part of Roaring Surf Estates Subdivision platted in 1982, including:

- North: T29S, R15W, Section 35C with lots including Tax Lot 800 (7.74 acres), and Tax Lot 900 (5.54) acres. See Attachments B, and Roaring Surf Estates, Attachment J.

Adjacent properties to the West include:

- West: T29S, R15W, Section 35C, Tax Lot 1200 (.90 acres), Tax Lot 1201 (1.41 acres), Tax Lot 1400 (2.70 acres), and Tax Lot 1500 (2.60 acres). See Tax Lot Map, Attachment B.

This document includes analysis addressing the adjacent properties described above, and other properties within a 750-feet radius of Subject Property. The 750-foot radius has been selected to provide parameters for consideration of current farm and forest uses. Explanation of this radius is provided within this document.

The Applicant is seeking a rezone to Rural Residential (Q-RR-5), with a 10-acre minimum residential rural rezone that would allow three parcels from the 38.17-acre parcel (Subject Property) that currently exists. This is two additional dwellings than what would be allowed on the 38.17-acre parcel. While urban services are not available Subject Property is south of the southern border of the City of Bandon, where services are provided through the Bandon Rural Fire District, Coos-Curry Electric Co-op, the Coos County Sheriff's Office. The Coos County's Comprehensive Plan and the Coos County Zoning and Land Development Ordinance provide for orderly development of rural land to encourage the continued existence of rural family life and to provide a transition of densities between urban development and exclusive agricultural or commercial forestry uses. See the following maps:

Attachment K, Zone Map of Properties in the Vicinity
Attachment L, Subject Property Zone Map,750-ft. Perimeter/Ownerships

> Within this document language that is quoted directly from the Coos County Comprehensive Plan, Coos County Zoning and Land Development Ordinance, or NRCS Report is provided in *italic font.* Language that is developed or paraphrased to explain findings of compliance with the ordinance or explain the application is provided in regular font.

Coos County Zoning and Land Development Ordinance (CCZLDO)

SECTION 5.1.225 DECISIONS OF THE HEARINGS BODY FOR A REZONE*: The Hearings Body shall, after a public hearing on any rezone application, either*:

1. Recommend the Board of Commissioners approve the rezoning, only if on the basis of the initiation or application, investigation and evidence submitted, all the following criteria are found to exist:

a. The rezoning will conform with the Comprehensive Plan or Section 5.1.215; and

Findings:

SECTION 5.1.215 ZONING FOR APPROPRIATE NON-FARM USE:
Consistent with ORS 215.215(2) and 215.243, Coos County may zone for the appropriate nonfarm use one or more lots or parcels in the interior of an exclusive farm use zone if the lots or parcels were physically developed for the non-farm use prior to the establishment of the exclusive farm use zone.

Subject Property is not within the interior of an exclusive farm use zone (EFU). This application will provide findings of conformance with the *Coos County Comprehensive Plan* through the *CCZLDO SECTION 5.1.275 Standards for Comprehensive Plan and Rezone for Nonresource Land.*

CCZLDO Section 5.1.275 will be the final criteria to be addressed within this document because all of the analysis and findings presented within this document are applicable.

b. The rezoning will not seriously interfere with permitted uses on other nearby parcels; and

Findings: This application includes analysis and findings to determine any interference with permitted uses on nearby parcels with analysis determined using a 750- foot radius boundary.

c. The rezoning will comply with other policies and ordinances as may be adopted by the Board of Commissioners.

2. Recommend the Board of Commissioners approve, but qualify or condition a rezoning such that:

a. The property may not be utilized for all the uses ordinarily permitted in a particular zone;

b. The development of the site must conform to certain specified standards; or

c. Any combination of the above.

A qualified rezone shall be dependent on findings of fact including but not limited to the following:

i. Such limitations as are deemed necessary to protect the best interests of the surrounding property or neighborhood;
ii. Such limitations as are deemed necessary to assure compatibility with the surrounding property or neighborhood;
iii. Such limitations as are deemed necessary to secure an appropriate development in harmony with the objectives of the Comprehensive Plan; or
iv. Such limitations as are deemed necessary to prevent or mitigate potential adverse environmental effects of the zone change.

3. Deny the rezone if the findings of 1 or 2 above cannot be made. Denial of a rezone by the Hearings Body is a final decision not requiring review by the Board of Commissioners unless appealed.

Findings: The applicants are in agreement with a qualified 10-acre minimum lot size because the goal is to have a total of three parcels, which would accommodate two additional homesites. The applicant understands that the Coos County Board of Commissioners has the responsibility and authority to provide qualifiers and limitations on any rezone and/or Comprehensive Plan approvals. The applicant will comply with all limitations required by the Coos County Board of Commissioners.

Standards are included within this application for amendments to the Coos County *Comprehensive Plan and Zone Map (CCZLDO)*. Criteria for these amendments to recognize Subject Property as nonresource land are addressed throughout this document, with findings in the final section of this document to address *Section 5.1.275, Standards for Comprehensive Plan and Rezone for Nonresource Land*, as amended.

CHAPTER II. DEFINITIONS ARTICLE 2.1.

DEFINITIONS SECTION 2.1.100. General Definitions. For the purposes of this Ordinance, unless it is plainly evident from the context that a different meaning is intended, certain words and terms are herein defined. SECTION 2.1.200. Specific Definitions.

AGRICULTURAL LANDS: Those lands designated in the Coos County Comprehensive Plan (Volume 1 "Balance of County") for inclusion in Exclusive Farm Use (EFU) Zones. These lands include Soil Capability class I, II, III, and IV lands as defined by the United States Soil Conservation Service in their Soil Capability Classification system and other ands suitable for farm use.

FOREST LAND: Those lands designated in the Coos County Comprehensive Plan (Volume I- "Balance of County") for inclusion in a Forest Lands zone.

These areas include: (1) lands composed of existing and potential forest lands which are suitable for commercial forest uses, (2) other forested lands needed for watershed protection, wildlife and fisheries habitat and recreation, (3) lands where extreme conditions of climate, soil and topography require the maintenance of vegetative cover irrespective of use, and (4) other forested lands which provide urban buffers, wind breaks, wildlife and fisheries habitat, livestock habitat, scenic corridors and recreational use.

Findings: The definitions of Forest Land and Agricultural Land included within the CCZLDO are organized to comply with the Statewide Planning Goals. Coos County zoning has been organized to include Subject Property as Mixed Use, which includes both Forest Land and Agricultural Lands. Any designation of the lands within Subject Property to nonresource land will involve utilizing information within Statewide Planning Goal 3 - Agricultural Lands, and Statewide Planning Goal 4 – Forest Lands, to provide the analysis of characteristics that make up Subject Property. In addition, findings address the relationship of Subject Property to adjacent lands, and lands within close proximity. In addition there are definitions for resource land and nonresource land, and criteria for removing nonresource land from resource zoning.

OAR 660-004-0005
Definitions

For the purpose of this division, the definitions in ORS 197.015 and the Statewide Planning Goals shall apply. In addition, the following definitions shall apply:

(2) "Resource Land" is land subject to one or more of the statewide goals listed in OAR 660-004-0010(1)(a) through (g) except subsections (c) and (d).

(3) "Nonresource Land" is land not subject to any of the statewide goals listed in OAR 660-004-0010(1)(a) through (g) except subsections (c) and (d). Nothing in these definitions is meant to imply that other goals, particularly Goal 5, do not apply to nonresource land.

SECTION 4.2.500 RESOURCE ZONES

Forest (F)
The intent of the Forest District is to include all inventoried "forestlands" not otherwise found to be needed (excepted) for other uses.

The purpose of the Forest zone is to conserve and protect forest land for forest uses. Some of the areas covered by the "F" zone are exclusive forest lands, while other areas include a combination of mixed farm and forest uses.

Forest Mixed Use (FMU)
The purpose of the Forest Mixed Farm-Forest Areas ("MU" areas) is to include land which is currently or potentially in farm-forest use. Typically such lands are those with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and grazing uses. The areas generally occupy land on the periphery of large corporate and agency holdings and tend to form a buffer between more remote uplands and populated valleys. In addition, these "mixed use" areas contain ownership of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.

If land is in a zone that allows both farm and forest uses, a dwelling may be sited based on the predominate use of the tract on January 1, 1993.

If a use is only allowed in the mixed use zone it will be explained in the text. Otherwise the uses listed are allowed in both the Forest and Forest Mixed Use zones.

Exclusive Farm Use (EFU) These include all inventoried "agricultural lands" not otherwise found to be needed (excepted) for other uses.

The purpose of the EFU district is to preserve the integrity and encourage the conservation of agricultural lands within Coos County and thereby comply with the provisions of ORS 215 and OAR 660. Division 33 to minimize conflicts between agricultural practices and non-farm uses by

limiting any development to uses distinguished as dependent upon or accessory to supporting agricultural or forestry production and which qualify such farm lands for special tax relief pursuant to the provisions of Oregon Revised Statutes. This zone is also for the cultivation and marketing of specialty crops, horticultural crops and other intensive farm uses.

According to the Coos County Comprehensive Plan Exclusive Farm Use lands are inventoried as Agricultural Lands. The Main criterion for establishing the "Agricultural Lands Inventory" was land identified on the agricultural lands based on soils, Class I-IV soils or "other lands" suitable for agricultural use, with the following exceptions:
1. Committed rural residential areas and urban growth areas.
2. Proposed rural residential areas as per the Exception to Goals #3 and #4.
3. Proposed industrial/commercial sites.
4. Existing recreation areas (e.g., golf courses) [Recreation designation]
5. Isolated parcels of Class I-IV soils in upland areas, which are under, forest cover. (Forestlands designation).
6. Narrow valley bottomlands where no agricultural activity is occurring anywhere in the vicinity [Forestlands designation].

The secondary criterion for establishing the "Agricultural Lands Inventory" was the use of aerial photos used to identify additional areas without Class I-IV soils in current agricultural use which were not initially identified in the agricultural lands inventory from Assessor's Data. This situation typically occurs on benches, immediately above agricultural valleys, where grazing often takes place on non-class I-IV soils. However, if lands were zoned predominately forest it may have resulted in a Mixed Use Overlay.

Findings: Subject Property is zoned Forest Mixed Use. The code addresses that some forest mixed use areas that are close to the ocean are generally marginal relative to forest productivity, and that they can include ownerships of smaller size than prime forest. The following language is included:

> *In addition, these" mixed use" areas contain ownership of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.*

Subject Property fits within the description provided within Section 4.2.500 in that it is mixed in with smaller parcels, close to the ocean, and has not been suitable for the Coos County Forest Department's utilization for commercial forest use. To our knowledge, Subject Property has always been vacant land, and there is no known history of forest or farm activity on the site. This application addresses the requirements for removing Subject Property from resource zoning so that it can be used and managed by land owners who live on the property and maintain the property for the benefits of rural life. With respect for the organization of the resource zones and the resource uses that exist, Coos County's Zoning and Land Development Ordinance also provides opportunities for reclassifying land where it has been found to be nonresource land through analysis of soils and forestry information, utilizing definitions and procedures described at the State and local levels. There is no intent to rezone land within Coos County that complies with the definitions of agricultural or forest lands.

This document includes an intertwining of applicable farm and forest rules, just as the forest and farm (FMU) mixed use zoning provides for two resource-based uses. Data sources such as the NRCS Report are applicable to both uses. The 750-foot perimeter buffer polygon boundary was organized for utilization of both resource uses. Specific Oregon Administrative rules that incorporate the Statewide Planning Goals apply to each of the resource uses separately. Statewide Planning Goal #3 provides the requirements for agricultural land to be included in resource zoning, while Statewide Planning Goal #4 provides the requirements for forest land to be included in resource zoning. This analysis is key to any amendment that will remove land from resource zoning.

Statewide Planning Goal #3 Agricultural Lands;

660-033-0010
Purpose

The purpose of this division is to preserve and maintain agricultural lands as defined by Goal 3 for farm use, and to implement ORS 215.203 through 215.327 and 215.438 through 215.459 and 215.700 through 215.799.

OAR 660-033-0020
Definitions

For purposes of this division, the definitions in ORS 197.015, the Statewide Planning Goals, and OAR chapter 660 shall apply. In addition, the following definitions shall apply:

(1)(a) "Agricultural Land" as defined in Goal 3 includes:

(A) Lands classified by the U.S. Natural Resources Conservation Service (NRCS) as predominantly Class I-IV soils in Western Oregon and I-VI soils in Eastern Oregon;

Findings: The *U.S. Natural Resources Conservation Service (NRCS) Custom Soil Resource Report for Coos County Oregon* is provided for Subject Property with analysis to determine specific suitability for agriculture. The Report includes maps and soil classifications with information about farm and forest productivity. See Attachment M, NRCS Custom Soil Resource Report for Coos County, Oregon.

The map on the cover shows Subject Property with maps and charts in the report showing Subject Property with five (5) soil types which are referenced within the *Soil Survey of Coos County, Oregon,* a hard copy document published in 1989, and within the Custom Soil Report. Both versions of the report are used for analysis within this application. It is important to note that the Custom Soil Report boundaries for Subject Property are not surveyed boundaries. The boundaries drawn on the map to customize the report, utilizing natural and built land features such as roads for placement are utilized for this analysis.

The Map Unit Legend found on page 12 of the Custom Soil Resource Report, Attachment M, provides information about the makeup of the soils and slopes on the site, as follows:

- Map Unit Symbol 61D, with Map Unit Name, Waldport-Heceta fine sands, 0 to 30% slopes comprises the most acreage of the soil types identified on Subject Property at approximately 22.2 acres, which is 56.2% of Subject Property. This map unit is in capability subclass VIIe. Map Unit Setting, Farmland classification: "Not prime farmland"

- Map Unit Symbol 60D, with Map Unit Name, Waldorf-Dune land complex, 12 to 30 % slopes, comprises approximately 13.3 acres, which is 33.5 percent of Subject Property. This map unit is in capability subclass VIIe. Map Unit Setting, Farmland classification: "Not prime farmland"

- Map Unit Symbol 59D, with Map Unit Name, Waldorf fine sand, 0 – 30% slopes comprises approximately 3.6 acres, which is 9.2% of Subject Property. This map unit is in capability subclass VIIe. Map Unit Setting, Farmland classification: "Not prime farmland"

- Map Unit Symbol 9, with Map Unit Name, Chetco silty clay loam comprises approximately .4 acres, which is 1.1% of Subject Property. This map unit is in capability subclass IVw. Map Unit Setting, Farmland classification: "Farmland of statewide importance" if irrigated, and with other considerations as indicated shown on the Custom Soil report Map legend, page 23, explaining farmland classifications of Subject Property. Subject property includes 1.1% of the property, or .4 acres, which has an agricultural subclass. However, there is no irrigation available.

Capability subclasses are soil groups within one capability class designated by adding a small letter. The soils addressed previously in this section include two such small letters. These are described for nonirrigated capability Subclasses on the property. See page 51.

- The "e" signifies that the main hazard is erosion. The "e" is included on all of the Class VII (not prime farmland) soils addressed above within this section. These soils account for approximately 98.9 % of the soils on Subject Property.

- The "w" shows that water in or on the soil interferes with plant growth or cultivation. The "w" applies to the Chetco silty clay loam comprising .4 acres or 1.1% of Subject Property.

Subject Property is in Western Oregon; 98.9% of Subject Property is not classified by the Natural Resources Conservation Service (NRCS) as predominantly Class I-IV as explained above. The Class VII soils that are predominate throughout the site also have

high erosion "e" which is a major problem with this property close to the ocean and subject to the ravages of wind and water.

Subject Property soils are all nonirrigated with Class VII soils making up 98.9% of the soils. Class VII soils have severe limitations that make the soil unsuitable for cultivation. See Map – Nonirrigated Capability Class, Custom Soil Report, page 43, Attachment M.

The information provided from the NRCS Report shows that none of the soils and subclasses that are shown for Subject Property meet the definition of agricultural land under Goal 3 due to soil type, lack of irrigation, erosion and water in and on the soils and climate conditions due to proximity to the Pacific Ocean.

(B) Land in other soil classes that is suitable for farm use as defined in ORS 215.203(2)(a), taking into consideration soil fertility; suitability for grazing; climatic conditions; existing and future availability of water for farm irrigation purposes; existing land use patterns; technological and energy inputs required; and accepted farming practices; and

Findings: The only exception to Class VII soils on the 98.9% of Subject Property is the Chetco silty clay loam soil that comprises approximately .4 acres and represents 1.1% of Subject Property. The Chetco soil shows standing water, "w" in or on the soil that interferes with plant growth and cultivation compromising any agricultural value of this minimal area of Class 5 soil.

The Custom Soil Resource Report, Attachment M, Crop Productivity Index, page, 38, shows the entirety of Subject Property with a yellow overlay that indicates "moderately low inherent productivity."

The soils within all of the major categories of Subject Property including Map units 61D, 60D and 59D for nonirrigated crops (Component): Grass hay (Tons) is "Not rated or not available," as depicted on the map and legend on pages 65 and 66 of the Custom Soil Resource Report.

All of the soils except the Chetco soils (1.1%) are designated with a small letter "e" with the soil subclass VII, which shows thee main hazard is the risk of erosion. Only Map unit 9 with the Chetco soils has a rating, which is = 2.35 for Grass hay (Tons). This soil is susceptible to compaction, wetness, droughtiness, flooding, and high humidity, which is not conducive to the curing of hay. See Hard Copy NRCS Report Excerpts -- 9-Chetco silty clay loam; Table 5.-Yields Per Acre of Crops and Pasture, Attachment O.

The excerpt describing the 9-Chetco soil addresses flooding, and use for hay and pasture and wildlife habitat. The soil has limitations for" compaction, wetness, droughtiness in summer, the hazard of flooding, and for the curing of hay, high humidity." The soil on this .4-acre site could be drained with ongoing management to withstand livestock.

The hard copy soils report, Table 5. – *Yields Per Acre of Crops and Pasture* indicates that yields provided that can be expected with high level management. "Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. Only the soils suited to crops and pasture are listed." See Hard Copy NRCS Report Excerpts -- 9-Chetco silty clay loam; Table 5.-Yields Per Acre of Crops and Pasture, Attachment O.

The following is relevant:

- Map Unit 61D – not listed.
- Map Unit 60D - not listed
- Map Unit 59D – not listed
- Map Unit 9 – Chetco Soils show ratings for Pasture and Grass hay. Grass-legume hay and cranberries are not listed, which puts those crops into the category of "absence of yield" which indicates that the soil is not suited to the crop. The description of Chetco silty clay loam soil describes the limitations of the Chetco soils on excerpt as described above. Compaction restricts the growth of roots and reduces productivity. The following quoted from the report are relevant:

  . . . . Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

  Drainage and irrigation are needed for maximum production of crops. . .

  Wetness and flooding restrict grazing in winter.

  High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay.

An onsite visit to the southeast corner of Subject Property where the Chetco soils exist was made by the professional forester of Farm Unlimited on February 10, 2022. Following the site visit he reported that the Chetco soil area was under water. It appears that some of this area is within the floodplain overlay. This confirms the above wording from the soils report that states that drainage is needed, and that wetness and flooding restrict grazing in winter.

None of the soils within Subject Property are suitable for farm crops and pasture as depicted and explained within the NRCS Report for all of the reasons that have been provided in response to OAR 660-033-0020, Definitions, (1)(a) "Agricultural Land" as defined in Goal 3, and (A) Lands classified by the NRCS. Farm use of the property is not feasible except where there is intense management and irrigation. For a .4-acre site, this could possibly take place with an on-site owner.

C) Land that is necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands.

Findings: To carry out the analysis to determine land that is necessary to assure that farm practices can continue to be undertaken on adjacent or nearby agricultural land, the

applicant has organized a 750-foot perimeter boundary for analysis applicable to Goal 3, (1)(a) and (C). The applicant is utilizing this perimeter boundary to provide consistency in the selection of an area for analysis based upon notice areas provided in Oregon law and incorporated into Coos County's zoning. The 750-foot boundary is greater than required notice areas for public hearings for plan amendment/rezones that include exceptions, which is a stringent requirement. The 750-foot parameter is equal to those boundaries for notice of administrative decisions where the public can only be involved in the decision by requesting participation. This boundary provides for the broadest consideration of agricultural lands to be considered as an element of this rezoning from resource use to rural residential use, and to assure that land necessary for farm practices on adjacent or nearby agricultural lands will not be negatively affected by the rezone that is proposed within this application.

Notice requirements of ORS 197.763 incorporated into Chapter 5, Section 5.0.900 Notice Requirements (ORS 197.763) of the CCZLDO are summarized below.

> *Section 5.0.900 Notice Requirements (ORS 197.763)*
> *1. Notice of Public Hearing (c) (x) The Planning Director shall cause notice of the hearing to be mailed to, the applicant and to all neighborhood or community organizations recognized by the County and whose boundaries include the site and to the owners of record of property on the most recent property tax assessment roll where such property is located:*
>
> > *3) Within 500 feet of the exterior boundaries of the contiguous property ownership which is the subject of the notice if the subject property is within a farm or forest zone.*
>
> *2. Notice of Administrative Decisions*
>
> > *ii. The owners of record of property as described in ORS 215.416 (11)(c)*
> > . . .
> > *c. Within 750 feet of the exterior boundaries of the contiguous property ownership which is the subject of the notice if the subject property is within a farm or forest zone.*

The 750- foot boundary is appropriate for analysis and findings to assure that farm practices can continue to be undertaken on adjacent or nearby agricultural lands.

Findings: The zoning of properties within the vicinity is shown on Attachment K. Property ownerships are shown along with the 750-foot boundary on Attachment L. The 750-foot boundary is shown on an aerial with Subject Property where farm and forest uses can be observed on the east side of the property, Attachment N.

- Property with designated farm and forest exemptions (Whale Watch Sisters) through Assessor's records exists within the 750-ft. boundary, adjacent and directly to the east. There are cranberry bogs to the northeast.

- Property (Fox) with acreage designated for farm and forest tax exemptions by Assessor's records exist within the 750-ft. boundary, to the southeast.

From visual analysis of the map, the total acreage in farm and forest use within the 750-ft. perimeter buffer polygon is estimated at 9.5 acres on Attachment N.

The topography map, Attachment G, shows a ridge on the east and south portion of Subject Property in the area of the Chetco soils. County Forester (applicant) estimates that the ridge is approximately 200 ft. from the east property line on the south, and within 50 feet of the property line on the north. The County Forester notes that the ridge and the rolling foot of it to the west is exposed sand with scattered brush species and scattered shore pine, while the balance of the land lying to the east of the ridge line is wetland environment.

Locating any residential uses to the west of the ridge proceeding to the west side of the property where the Fourmile Road is located, would provide a barrier between the uses on Subject Property and the observed farm that are shown on the aerial of Subject property with the 750-ft buffer polygon and observed farm/forest uses, Attachment N.

Locating residences to face the west could provide views of the Pacific Ocean from some of the higher elevations. The professional forester provides information that the elevation of this parcel varies from 20 – 50 feet above sea level, as shown on the topography map, Exhibit 3, in the forestry report (also referenced as Attachment G) within this Application document. See *Forest Productivity/Suitability Report* by Farm Unlimited, Eric Farm, PE, ACF, owner and forester, Attachment P.

While a zone change that permits three residences on Subject Property next to identified farm and forest uses may not appear ideal at first glance, it is appropriate to note that Subject Property exists in an "untamed" state, and highly impacted by the forces of nature. It is doubtful that three residences, fifty to 200 feet away from farm land, behind a ridge could change the dominant forces of nature on this landscape. Residential uses within this location are secondary in impact to the forces of nature that shape the landscape, including high winds, high moisture and proximity to the Pacific Ocean with salt spray. Wave action including tsunami hazards, flood hazards, abundant rainfall, wetlands, erosion, invasive gorse, and abundant shore pine (with no commercial use or activity), as described within the NRCS Report and by the professional forester in his report take their toll on the property. With abundant sand, dense understory, and all of the forces of nature described within this document, Subject Property will not be transformed by two added dwellings for human habitation. A few families will have the opportunity to become part of the rural landscape that already exists. Any impact from the location of the dwellings in proximity to farm uses can be mitigated.

Subject Property does not require farm and forest to be maintained with plantings for vegetation, due to natural vegetation on the property. The landscape that exists restricts recreation and big game habitat with the gorse understory as pointed out within the report prepared by the professional forester.

The Forest Productivity report is based upon Land Use Planning Notes developed by the Oregon Department of Forestry incorporating OAR 660-006.0005, Goal 4 forestry analysis techniques for data and methodologies. The methodology was developed by the Oregon Department of Forestry for the following purpose:

> *. . . to help landowners and local governments when they must use an alternative to the USDA Natural Resource Conservation Service (NRCS) Soil Survey or other established data sources to determine the productivity of forestland. Under Oregon Administrative Rules (OAR) 660-006-0005, where sources of data referenced in the rule are not available or are shown to be inaccurate, an alternative method for determining productivity that provides equivalent data may be used.*

See *Land Use Planning Notes Number 3 April 1998, Updated for Clarity April 2010*, which provides the hierarchy of preferences for site productivity data and other methodologies established for forest analysis for land use planning purposes within the State of Oregon when preparing applications. The *Forest Productivity/Suitability Report* by Farm Unlimited, Attachment P followed the step by step methodology set forth in this document, as shown within the report. See Land Use Planning Notes, Attachment Q.

The final provision under the definition of "forest land" provides for Forest zoning for "lands where extreme conditions of climate, soil and topography require maintenance of vegetative cover irrespective of use. To the west of Subject Property, the Shoreland Overlay zone provides protection for existing vegetation along the bluff, which includes gorse. The Shoreland Overlay zone is in effect under Oregon law; it will remain in effect. Any residential uses adjacent to the Shorelands will be required to maintain the vegetative cover along the bluff and direct drainage away from the bluff on the Shorelands to minimize erosion.

(8)(a) "High-Value Farmland" means land in a tract composed predominantly of soils that are:

(A) Irrigated and classified prime, unique, Class I or II; or

(B) Not irrigated and classified prime, unique, Class I or II.

Findings: Subject property does not meet the definitions of "High-Value Farmland. Subject Property is not irrigated, has never been irrigated, and irrigation is not available. Subject Property does not include any Class I or II soils.

(b) In addition to that land described in subsection (a) of this section, high-value farmland, if outside the Willamette Valley, includes tracts growing specified perennials as demonstrated by the most recent aerial photography of the Agricultural Stabilization and Conservation Service of the U.S. Department of Agriculture taken prior to November 4, 1993. "Specified perennials" means perennials grown for market or research purposes

including, but not limited to, nursery stock, berries, fruits, nuts, Christmas trees, or vineyards, but not including seed crops, hay, pasture or alfalfa;

Findings: Subject Property is outside the Willamette Valley, and does not include tracts growing specified perennials grown for market or research purposes. Subject Property does not grow nursery stock, berries, fruits, nuts or Christmas trees. There are no vineyards.

(c) In addition to that land described in subsection (a) of this section, high-value farmland, if in the Willamette Valley, includes tracts composed predominantly of the following soils in Class III or IV or composed predominantly of a combination of the soils described in subsection (a) of this section and the following soils:

(A) Subclassification IIIe, specifically, Bellpine, Bornstedt, Burlington, Briedwell, Carlton, Cascade, Chehalem, Cornelius Variant, Cornelius and Kinton, Helvetia, Hillsboro, Hult, Jory, Kinton, Latourell, Laurelwood, Melbourne, Multnomah, Nekia, Powell, Price, Quatama, Salkum, Santiam, Saum, Sawtell, Silverton, Veneta, Willakenzie, Woodburn and Yamhill;

(B) Subclassification IIIw, specifically, Concord, Conser, Cornelius Variant, Dayton (thick surface) and Sifton (occasionally flooded);

(C) Subclassification IVe, specifically, Bellpine Silty Clay Loam, Carlton, Cornelius, Jory, Kinton, Latourell, Laurelwood, Powell, Quatama, Springwater, Willakenzie and Yamhill; and

(D) Subclassification IVw, specifically, Awbrig, Bashaw, Courtney, Dayton, Natroy, Noti and Whiteson.

Findings: The section above applies to soils in the Willamette Valley. It is not applicable.

(d) In addition to that land described in subsection (a) of this section, high-value farmland, if west of the summit of the Coast Range and used in conjunction with a dairy operation on January 1, 1993, includes tracts composed predominantly of the following soils in Class III or IV or composed predominantly of a combination of the soils described in subsection (a) of this section and the following soils:

(A) Subclassification IIIe, specifically, Astoria, Hembre, Knappa, Meda, Quillayutte and Winema;

(B) Subclassification IIIw, specifically, Brenner and Chitwood;

(C) Subclassification IVe, specifically, Astoria, Hembre, Meda, Nehalem, Neskowin and Winema; and

(D) Subclassification IVw, specifically, Coquille.

Findings: Coos County and the Subject Property are west of the summit of the Coast Range, and the Chetco silty clay loam soil that comprises 9% of Subject Property includes minor components of Coquille soil; there has been no dairy operation involved with Subject Property in the past or at the present time. The section above is not applicable.

(e) In addition to that land described in subsection (a) of this section, high-value farmland includes tracts located west of U.S. Highway 101 composed predominantly of the following soils in Class III or IV or composed predominantly of a combination of the soils described in subsection (a) of this section and the following soils:
(A) Subclassification IIIw, specifically, Ettersburg Silt Loam and Crofland Silty Clay Loam;
(B) Subclassification IIIe, specifically, Klooqueh Silty Clay Loam and Winchuck Silt Loam; and
(C) Subclassification IVw, specifically, Huffling Silty Clay Loam.

Findings: Subject Property is west of U.S. Highway 101, but none of the subclassification soils provided in subsection (e) above is found on Subject Property.

(9) "Irrigated" means watered by an artificial or controlled means, such as sprinklers, furrows, ditches, or spreader dikes. An area or tract is "irrigated" if it is currently watered, or has established rights to use water for irrigation, including such tracts that receive water for irrigation from a water or irrigation district or other provider. For the purposes of this division, an area or tract within a water or irrigation district that was once irrigated shall continue to be considered "irrigated" even if the irrigation water was removed or transferred to another tract.

Findings: Subject property is not irrigated, and never has been irrigated. There are no water rights for Subject Property. There has been no transfer to another tract. The above section is not applicable.

Statewide Planning Goal #3 Agricultural Lands; OAR 660-033-0030 Identifying Agricultural Land 660-033-0030 (3)

(1) All land defined as "agricultural land" in OAR 660-033-0020(1) shall be inventoried as agricultural land.

Findings: Coos County has inventoried agricultural lands, and the County has an acknowledged Comprehensive Plan and zoning. Nevertheless, Subject Property does not meet the definition of agricultural land as defined by OAR 660-033-0020 (1) as explained through analysis of the NRCS data including lack of irrigation, poor soil types, and other elements presented previously within this document. Subject Property was part of a broad sweep inventory for zoning farm and forest land, but this specific property has not previously been analyzed in any detail as to suitability for the current resource designation. The detailed analysis of soil types, land use patterns, hazards and other factors clarify that Subject Property is not agricultural land. A number of adjacent

properties had already transitioned into rural residential by the time the Comprehensive Plan and zoning were acknowledged by the State.

(2) When a jurisdiction determines the predominant soil capability classification of a lot or parcel it need only look to the land within the lot or parcel being inventoried. However, whether land is "suitable for farm use" requires an inquiry into factors beyond the mere identification of scientific soil classifications. The factors are listed in the definition of agricultural land set forth in OAR 660-033-0020(1)(a)(B). This inquiry requires the consideration of conditions existing outside the lot or parcel being inventoried. Even if a lot or parcel is not predominantly Class I-IV soils or suitable for farm use, Goal 3 nonetheless defines as agricultural "Lands in other classes which are necessary to permit farm practices to be undertaken on adjacent or nearby lands." A determination that a lot or parcel is not agricultural land requires findings supported by substantial evidence that addresses each of the factors set forth in 660-033-0020(1).

(3) Goal 3 attaches no significance to the ownership of a lot or parcel when determining whether it is agricultural land. Nearby or adjacent land, regardless of ownership, shall be examined to the extent that a lot or parcel is either "suitable for farm use" or "necessary to permit farm practices to be undertaken on adjacent or nearby lands" outside the lot or parcel.

Findings: Numbers (2) and (3) of this section address adjacent lands, nearby lands, and lands necessary to permit farm practices on adjacent or nearby lands. This addresses the 750 ft. analysis area previously addressed within this document. All of the findings made under *OAR 660-033-0020 (C) Land that is necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands* apply.

The overall land use pattern in the vicinity is mixed. Assessor's records show that only a few of the adjacent properties are utilizing tax exemptions for farm and forestry; when such tax exemptions are used, they apply to specific acreage on the lots, rather than to the extent of the parcel. The estimated acreage for farm and forest for lands within the buffer polygon of 133 acres is approximately 7% of the buffer area, or 9.5 acres as shown on Attachment N.

The proposed Comprehensive Plan amendment and rezone will permit only those uses that are consistent with patterns that existed within the vicinity of Subject Property at the time of acknowledgment of the Comprehensive Plan and zoning by the Land Conservation and Development Commission (now DLCD) and two additional residences from what is currently permitted on Subject Property. The ridge on the east and southeast sides of Subject Property can serve as a barrier to mitigate any effect from additional human activity on adjacent properties. See 750-ft. perimeter buffer polygon with ownership and lots, Attachment L.

Statewide Planning Goal #4 Forest Lands; OAR 660-006-0005

For the purpose of this division, the following definitions apply:

(1) Definitions contained in ORS 197.015 and the Statewide Planning Goals.

(2) "Commercial Tree Species" means trees recognized for commercial production under rules adopted by the State Board of Forestry pursuant to ORS 527.715.

Findings: Analysis within this document is provided for applicable Statewide Planning Goals, and commercial tree species. Commercial Tree Species are addressed relative to Subject Property within the report provided to address *Land Use Planning Notes, Number 3, April 1998 and updated for Clarity April 2010.* See Attachment P, Forest Productivity/ Suitability Report. See Land Use Planning Notes, Attachment Q.

Scope, findings and conclusions presented in Attachment P were prepared utilizing the methodology set forth in the guide, *Land Use Planning Notes, Number 3, April 1998 and updated for Clarity April 2010,* which was organized by the Oregon Forestry Department to provide methodology for land use planning analysis.

This step by step guide was utilized for all of the analysis undertaken onsite on Subject Property by the professional foresters associated with Farm Unlimited who are familiar with the guidelines and the methodology presented. Here are some findings and conclusions provided in the *Forest Productivity/Suitability Report by Farm Unlimited,* and highlighted in gray below:

***5. Findings:**

a. "Entire tract is fully stocked with shore pine, a species with no commercial uses. An increment borer and laser were used to determine the age and height of the trees. They were found to be 32 – 46 years old, and 25 – 50 feet tall. See Exhibit 2 – Picture 1 & 2"

b. Five Sitka spruce trees are found growing along the east side of the property. These trees are highly defective with very large limbs. The Sitka spruce were estimated to be 45 inches DBH and approximately 75 feet tall. Their DBH exceeded the ability of our increment borer And therefore we were unable to determine the age of the Sitka spruce trees found along the east side of the property. Due to their large size and high defect, these trees have no commercial use or value. See Exhibit 2 -Picture 3.

d. Gorse, an invasive and noxious weed, was growing across the entire tract as the understory brush component. The gorse was approximately 10 feet tall and made any access on the tract difficult. See Exhibit 2 – Picture 5.

p. No site index table for shore pine has been published that is applicable to Western Oregon.

r. No local sawmills, veneer mills, or wood chip manufacturer will accept shore pine. Additionally, mills will not pay for a load with shore pine included and may reject the load entirely and not accept/unload a truck that arrives at the mill with shore pine included on the load. It is not foreseeable that any mill will accept delivery of shore pine in the future.

s. Shore pine meets the definition of a Non-commercial Tree Species.

t. There are no visible commercial forest uses on adjacent tax lots based on both field observations and orthophotograph interpretation.

u. The Oregon Forest Practices Act has a rule for "Acceptable Species for Reforestation" (OAR 629-610-0050(1) which states, "The State Forester shall determine if tree species are acceptable for artificial reforestation, natural reforestation, and residual seedling, sapling and pole, or larger tree stocking based on all of the following criteria:
   i. (a) The species must be ecologically suited to the planting site;
   ii. (b) The species must be capable of producing logs, fiber or other wood products suitable in size and quality for the production of lumber, sheeting, pulp or other commercial forest products.
   iii. (c) The species must be marketable in the foreseeable future.

6. Conclusions:

a. Shore pine and five of the very defective Sitka spruce appear to be the only tree species capable of growing on the tract due to the wind and extremely poor soil conditions.
b. Shore pine meets the definition of a Non-commercial Tree Species.
c. Shore Pine is not an "Acceptable Species for Reforestation" in Oregon.
d. The salt spray and intense wind coming from the Pacific Ocean preclude the growing of any commercial tree species on subject property. Any efforts to grow any other tree species will either fail or result in timber that is so defective that it will not be of commercial quality.
h. The standing water and high water table on this site will not allow the production of commercial timber species.

*Note: The entire report from the professional forester is included as Attachment P with images and further detail.

Subject Property does not comply with the definitions of "Commercial Tree Species" recognized for commercial production under rules adopted by the State Board of Forestry

pursuant to ORS 527.715 or to definitions contained in ORS 197.015 and the Statewide Planning Goals.

(3) "Cubic Foot Per Acre" means the average annual increase in cubic foot volume of wood fiber per acre for fully stocked stands at the culmination of mean annual increment as reported by the USDA Natural Resource Conservation Service (NRCS) soil survey.

Findings: A header on page 55 of the NRCS Report leads to the explanation of forest productivity:

Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520) (Coos County Oregon Taxlot 1300 T29/s R15W, Sec35: Forest productivity is the volume of wood fiber that is the yield most likely to be produced by the most important tree species.

Table – Forest Productivity (Cubic Feet per Acre per Year: shore pine (Alexander 1966 (520) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Findings: The table has ratings for only two of the five soil types listed for Subject Property on page 58. The rating of 86.00 is provided for Map units 59D and 61D as follows:

- 59D Waldport fine sand, 0 to 30% slopes: Rating - 86.00
- 61D Waldport-Heceta fine sands, 0 to 30 % slopes: Rating – 86.00

(4) "Cubic Foot Per Tract Per Year" means the average annual increase in cubic foot volume of wood fiber per tract for fully stocked stands at the culmination of mean annual increment as reported by the USDA Natural Resource Conservation Service (NRCS) soil survey.

Findings: The ratings in the NRCS Report are inconclusive. The applicant will rely on the Forest Productivity/Suitability Report provided by Farm Unlimited, Attachment P, where foresters visited the site and provided findings from onsite analysis. See Excerpts below, highlighted in gray:

5. Findings:

l. The NRCS soil survey assigns no site index or CuFt/Ac/Yr value to two soil types on this tract. See Exhibit 4.

m. The NRCS soil survey does assign a site index value to remaining two soil types based on the Alexander 100-year Lodgepole Pine Site Index Table. See Exhibit 4.

n. Alexander's lodgepole pine site index paper (Page 1, Paragraph 1) indicate that the published site index table is "applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and

Eastern Washington and Oregon". Western Oregon is specifically excluded as an applicable region to use the Alexander site index table. See Exhibit 5.

o. Trees on this site have reached their full height potential given the constraints of the soil and environmental factors present on the site. Given their current height range of 25 – 50 feet tall, at 35 – 50 years old, the measured site index for this tract will be no more than 50 assuming a base 50-year site index table. And since the height will not increase over time, the site index would still be 50 if we used a base 100-year site index table such as the one Alexander developed for lodgepole pine.

p. No site index table for shore pine has been published that is applicable to Western Oregon.

The Custom Soil Resource Report for Subject Property is inconclusive; the professional forester has explained the reasoning. "Cubic Foot Per Tract Per Year" is a measurement that is not applicable to this site. No published site index is applicable. This is a Non-commercial species. The following conclusions (highlighted in gray) from the professional foresters who provided the site report following the guidelines provided by the State of Oregon are relevant:

6. Conclusions:

k. The absence of a forest productivity value for three of the soil types found on this tract indicate that the NRCS concludes that these beach/dunes soils are not suitable for the production of timber, commercial or otherwise.

(5) "Date of Creation and Existence." When a lot, parcel or tract is reconfigured pursuant to applicable law after November 4, 1993, the effect of which is to qualify a lot, parcel or tract for the siting of a dwelling, the date of the reconfiguration is the date of creation or existence. Reconfigured means any change in the boundary of the lot, parcel, or tract.

Findings: Subject Property is acknowledged as a lawfully created parcel pursuant to the CCZLDO, Section 6.1.125 (8) as confirmed by County Planning Director Jill Rolfe. Subject Property is described by legal description in Deed Document # Book 115, page 437, conveying real property prior to 1986. There is no record of reconfigurations.

(7) "Forest lands" as defined in Goal 4 are those lands acknowledged as forest lands, or, in the case of a plan amendment, forest lands shall include:

(a) Lands that are suitable for commercial forest uses, including adjacent or nearby lands which are necessary to permit forest operations or practices; and

Findings: The forestry report provides the following:

5. Findings:

m. The Oregon Department of Revenue did not classify this 40 acre tract in its Forestland Class Code Assessment for tax assessment purposes. Additionally, the adjacent 40 acre tracts to the west and north of subject property also did not receive a DOR forestland class code. The tract to the east received a "FG" forestland class code, the lowest productivity class code for forested lands. See Exhibit 6.

Subject Property was included as forest lands in Coos County's zoning, and the zoning was acknowledged by DLCD. This application is for the purpose of rezoning Subject Property to nonresource use due to unsuitability for commercial forest uses or agriculture, taking into consideration farm/forest use of approximately 9.5 acres representing approximately 7% of the 133 acres identified by the perimeter buffer polygon organized for analysis purposes. It is important to protect farm and forest uses on the northeast and southeast from any encroachment of nonresource uses. The topography provides a barrier that could serve as a natural buffer between any dwellings and nearby farm and forest uses to the east and southeast. This would require a condition that could prohibit dwellings and other structures, improvements or modifications on the top of the narrow ridge, and on the east side of the ridge.

The findings within this document show that nearby lands will not be impacted by three residential uses, and where there may be concerns, specific development standards will be involved in protecting properties. One example is setbacks and to prevent wildfire hazards.

(b) Other forested lands that maintain soil, air, water and fish and wildlife resources.

(8) "Forest Operation" means any commercial activity relating to the growing or harvesting or any forest tree species as defined in ORS 527.620(6).

Findings: There are no forest operations or commercial activity relating to the growing or harvesting of any forest species as defined in ORS 527.620 (6). The analysis of forest productivity provided in the previous section in response to OAR 660-006-0005 provides specificities and analysis that explain why forest operations are not viable.

Statewide Planning Goal #4: OAR 660-006-0010
Identifying Forest Land

(1) Governing bodies shall identify "forest lands" as defined by Goal 4 in the comprehensive plan. Lands inventoried as Goal 3 agricultural lands, lands for which an exception to Goal 4 is justified pursuant to ORS 197.732 and taken, and lands inside urban growth boundaries are not required to planned and zoned as forest lands.

Findings: Subject Property is currently identified as farm/forest land by Coos County, with a Forest Mixed use Overlay.

(2) Where a plan amendment is proposed:

(a) Lands suitable for commercial forest uses shall be identified using a mapping of average annual wood production capability by cubic foot per acre (cf/ac) as reported by the USDA Natural Resources Conservation Service. Where NRCS data are not available or are shown to be inaccurate, other site productivity data may be used to identify forest land, in the following order of priority:

Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520) Coos County Taxlot 1300. T29S R15W, Sec 35:

> *The "site Index" is the average height, in feet that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands.*

Table 6. – Woodland Management and Productivity Only the soils suitable for production of commercial trees are listed, except for those that are in map units that include such soils. Absence of an entry indicates that information was not available.

Map Unit Name and Symbol	Common Trees Site Index	Acres	Percent of AOI
9 - Chetco silty clay loam	No Listing – Not Available	.4	1.1%
59D – Waldport fine sand, 30 % slopes	Shore Pine -90	3.6	9.2%
60D – Waldport-Dune land complex, 12-30% slopes	No Listing – Not Available	13.3	33.5%
61D – Waldport-Heceta fine sands, 0-30% slopes	Shore Pine-90	22.2	56.2%

Findings: A higher site index value means that the forest is more productive and the trees will grow faster. While the Custom Soil Report shows site indexing the chart copied above, the information is not conclusive. This is because shore pine is not a commercial forest species, and Alexander's site index table is not applicable to western Oregon.

This application is for a plan amendment, with the requirement to identify commercial forest uses using a mapping of average annual wood production capability by cubic foot per acre (cf/ac) as reported by the USDA Natural Resources Conservation Service. Cubic foot per acre (cf/ac) information is provided for on pages 55 - 59 in the Custom Soil Resource Report. The information provided by the NRCS has been included within this analysis, but it is not conclusive for purposes of this report.

The applicants utilized the services of Farm Environmental Services LLC dba Farm Unlimited, Eric Farm, PE, ACF to do the onsite analysis that is needed. Findings

regarding cf/ac is within the analysis previously presented within this document, and also with additional detail in Attachment P.

(A) Oregon Department of Revenue western Oregon site class maps;

Findings: Oregon Department of Revenue western Oregon site class maps are the highest priority. We started research for this finding with the Oregon Department of Revenue and who suggested that we get our information at the local Assessor's Office. Oregon Department of Revenue Western Oregon site class information was provided by Mary Jane Starks, farm and forest appraiser, of the Coos County Assessor's office. She provided the Coos County map associated with the Forestry grid with an arrow showing Subject Property, Tax Lot 1300, with the placement on the grid. Her response from training/expertise is that if the grid is not specified as having a timber class (A-G or X) , then it isn't considered as being timber viable. Here is an explanation regarding the analysis shown by the grid provided Wednesday, June 23, 2021 by email:

a. Page 1 of the Attachment is the email from Mary Jane Starks of the Coos County Assessor's Office.
b. Page 2 is a cover sheet identifying Coos County Forest Site Class Maps.
c. Page 3 shows Forestland Classifications.
d. Page 4 is a tax lot map that includes Subject Property, Tax Lot 1300.
e. Page 5 is a grid that applies the Forestland Classifications. Mary Jane Starks identified the location of Subject Property on the bottom row of the grid map, page 5.

Subject property is not on the grid classifications because it does not have a Forestland Classification (A-G or X). Mary Jane Starks shared that Subject Property is not specified with a forest land classification (A-G or X), which indicates that it is not viable forest land. Subject Property is not timber viable forest land. Because the Oregon Department of Revenue western Oregon site class maps are the highest priority resource; Subject Property does not qualify as forest land.

See Coos County, Oregon Forest Site Class Maps and information from the Oregon Department of Revenue Western Oregon site class information provided the by farm/forest specialist at Assessor's Office, Attachment R.

(B) USDA Forest Service plant association guides; or

Findings: Shore pine was not found on this listing. The USDA Forest Service plant association guides were not helpful for Subject Property.

(C) Other information determined by the State Forester to be of comparable quality.

(b) Where data of comparable quality under paragraphs (2)(a)(A) through (C) are not available or are shown to be inaccurate, an alternative method for determining productivity may be used as described in the Oregon Department of Forestry's Technical

Bulletin entitled "Land Use Planning Notes, Number 3 April 1998, Updated for Clarity April 2010."

Findings: The applicants utilized the data that is presented above. Eric Farm, PE, ACF of Farm Unlimited provided onsite analysis utilizing the Oregon Department of Forestry's Technical Bulletin entitled *Land Use Planning Notes, Number 3 April 1998, Updated for Clarity April 2010* as the basis of their on-site analysis, which has already been referenced for the forest analysis.

(c) Counties shall identify forest lands that maintain soil air, water and fish and wildlife resources.

Findings: Coos County has identified forest lands that maintain soil, air, water and fish and wildlife resources. Such resources that are part of this property include special considerations such as wetlands and riparian areas, floodplain, and Shorelands in close proximity. The acknowledged Comprehensive Plan and CCZDLDO include the protections that are necessary to maintain soil, air, water and fish and wildlife resources. None of the Overlays that provide protection for such resources will be removed except that two additional rural residential lots will exist on Subject Property. Development Standards in place for rural residential are expected to provide more protection on Subject Property which is covered with gorse, and is not currently required to comply with such development standards.

Statewide Planning Goals and Coos County Comprehensive Plan

Goal 1: Citizen Involvement: To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

Finding: Coos County details its process for citizen involvement and balancing goals within Volume 1, Part 1 of the Comprehensive Plan. Section 1.3 provides Historical Perspective. The plan states:

Since that time, many hundreds of dedicated citizens have contributed thousands of hours towards accomplishing the product represented in part by this plan.

The plan itself provides many pages of step-by-step background information describing the citizen involvement that went into developing the Comprehensive Plan and implementing ordinances. The Plan provides for uses including both rural residential, and resource-based uses. Citizen-proposed land use alternatives were considered and incorporated to select the alternative that best addressed citizen involvement. Through this process, problems and planning issues were raised, and local goals and plan implementation strategies were organized to comply with the Statewide Planning Goals and local needs and wants. Plan Implementation Strategies were incorporated. Specific Plan Implementation strategies are addressed within this section in support of the application for the Comprehensive Plan and rezone of Subject Property.

The Coos County Planning Commission serves as an ongoing citizen involvement committee for Coos County; Coos County incorporates citizen advisory groups when working on amendments

to the planning codes. The Planning Commission takes the cumulative effects of any potential zone change and impacts on the community into consideration. The Planning Commission is familiar with the Coos County, having members from throughout the County. The Planning Commission is interested in citizen comments, taking time to understand all that is being presented. To ensure that the community's voice is heard, the Planning Commission and the Coos County Board of Commissioners, an elected body familiar with the needs of citizens and with the properties in Coos County, act upon all rezones. Each of these bodies will hold a public hearing as part of the process for this rezone and Comprehensive Plan redesignation application.

The Applicant is providing detailed information from recognized sources that are the criteria included in Oregon and Coos County law for information when decisions about this application are being made. This application and the exhibits are available to the public. This application complies with Goal 1.

Goal 2: Land Use Planning: Part 1 Planning
To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.

Coos County Comprehensive Plan, Volume 1, Part 1

PLAN IMPLEMENTATION STRATEGIES

3. Coos County shall:

b. amend its plan and implementing ordinance when studies are completed which affect land use planning in Coos County; and

c. base the review upon re-examination of data, problems and issues;

Implementing Zone(s), RR-5
**The RR zone implements the "Agriculture" designation solely to the extent permitted by Agricultural Land Strategy # 13.*

Findings: Agricultural Land Strategy #13 is provided below, along with findings pertinent to this application. Coos County has completed inventories and organized plans and ordinances that are acknowledged by DLCD. Coos County shows within their planning processes and background information that they understand the balance that is required when designating and redesignating properties to different zones. Coos County bases their decisions upon facts and findings, and maintains policies that are consistent with Oregon law. This was all part of the early process that went into organizing the acknowledged Coos County Comprehensive Plan, and the process continues today. In preparing this application, the applicants utilized various reputable sources that are part of Oregon's planning process and criteria to carry out the analysis and make findings.

This application has been organized to comply with Goal 2. Coos County has provided language with standards for amending the Comprehensive Plan and zone maps. Coos County and the State of Oregon have recognized that such redesignations will be part of an ongoing process to keep the plans current to meet the needs of the citizens and contribute to the economy.

Goal 3: Agricultural Lands: to preserve and maintain agricultural lands.

Findings: The *Coos County Comprehensive Plan Volume 1, Part 1, Plan Provisions* provides the following goals and strategies, which are in compliance with Statewide Planning Goal 3:

Coos County Comprehensive Plan Volume 1, Part 1

5.3 AGRICULTURAL LANDS

GOAL: *Coos County shall preserve and maintain agricultural lands for farm uses "consistent*

with existing and future needs for agricultural products, forest, and open space,. . . except where legitimate needs for nonfarm uses are justified.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall conserve those resources designated as "agricultural lands" on the Comprehensive Plan map by regulating uses and activities in such areas through requirements stipulated in the following Exclusive Farm Use (EFU) zone. The delineation of these zones shall be generally consistent with the locational criteria developed on the Agricultural Lands Inventory and Assessment. Land Divisions shall comply with criteria set forth in the Coos County Zoning and Land Development Ordinance. Implementation of this strategy shall be based on application of the statutory provisions governing uses in EFU zones.

13. Coos County shall permit a zone change to Rural Residential (RR-5) on lots within designated Exclusive Farm Use (EFU) that were physically developed for non-farm use prior to the establishment of the EFU zone. The applicant for such a zone change shall bear the burden of proof that such lot meets the preceding criterion.

This strategy recognizes:

a. *The provisions of ORS 215.215, which permit this strategy, and*
b. *The benefits of enabling uses on property rezoned in this manner to be considered conforming uses rather than non-conforming uses.*

Findings: Analysis within this document shows compliance with the criteria established by applicable Oregon laws, Oregon's Statewide Planning Goals, and the Coos County Zoning and Land Development Ordinance. Agricultural lands will be redesignated on the zoning and Comprehensive Plan Map to nonresource land status based upon the criteria that is established by the State of Oregon. The Coos County Comprehensive Plan policy #13 above recognizes the need to permit zone changes on lands that are designated for farm use that were physically developed for non-farm use prior to acknowledgment of the designated resource zoning. This allowed for exceptions in the case of physically developed land, and also recognizes the need for redesignation of resource-zoned land to nonresource zones. This application does not rely on an exception for physically developed land, but rather uses a process set forth in Oregon law and Coos County planning documents to amend the zoning. Subject Property is not physically developed.

Where it is determined that resource-zoned land is not supported as resource land through analysis and application of the goals, agricultural land strategies may be proven to no longer apply. Other important Comprehensive Plan policies that are addressed within this document will take precedence when the rezone and redesignation of resource lands has been adopted by ordinance by the Coos County Board of Commissioners. The application for a redesignation of Subject Property to Rural Residential, (RR-5) with a 10-acre minimum overlay is appropriate based upon the findings in this document, utilizing all of the information required by Oregon and Coos County laws.

The Coos County Comprehensive Plan Volume 1, Part 1 has a 1985 adoption date by the list of County Commissioners. The subdivisions that are adjacent to Subject Property were already developed prior to the adoption of the Plan. This includes Bussmann Subdivision platted in 1980, and Roaring Surf Estates in 1982. Adjacent properties were already recognized for rural residential use at the time of acknowledgment of the Coos County Comprehensive Plan and zoning by DLCD. It is appropriate to provide this rural residential opportunity for a few additional homesites on Subject Property, which does not meet the requirements of agricultural land, but can provide for other needs of Coos County. This application complies with Goal 3.

Goal 4: Forest Lands: To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Findings: The *Coos County Comprehensive Plan Volume 1, Part 1, Plan Provisions* provide the following goals and strategies in compliance with Statewide Planning Goal 4:

Coos County Comprehensive Plan, Volume 1, Part 1

5.4 FOREST LANDS

GOAL: *Coos County shall conserve forestlands* by retaining them for the production of wood fiber and other forest uses,* except where legitimate needs for non-forest uses are justified. [*Forestlands and forest uses are defined in the Forest Lands Inventory and Assessment.]*

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall conserve those resources designated as "Forest Lands" on the comprehensive plan map by regulating uses and activities in such areas through requirements stipulated in the Forestry zone ("F").

The delineation of this zone shall be generally consistent with the locational criteria developed in the Forest Lands Inventory and Assessment. Land divisions shall comply with criteria set forth in the Coos County Zoning and Land Development Ordinance.

This strategy recognizes that Coos County's forestlands are an extremely valuable resource, and that the above-referenced zones are (1) necessary and reasonable to respond to the varying situational characteristics addressed in the inventory, and (2) adequate to conserve the County's forest lands for forest uses.

Findings: The onsite forestry investigation concludes that Subject Property cannot be utilized as forest land for all of the reasons set forth in the findings utilizing the sources set forth in Oregon law, with onsite analysis conducted by Professional Forest Consultant Eric Farm included within this document and referenced as Attachment P.

Much of rural Coos County was placed in resource zones by the Comprehensive Plan in the early 1980's without on-site analysis of the suitability of lands that were included as resource land. This protective measure has been appropriate. Where amendments are proposed, more detailed analysis is expected. There are specific requirements for removing resource designations where detailed analysis of specific property designated as farm and forest is not proving useful for the resource designation. On-site analysis for suitability is provided within this document in response to land that appears to be noncontributing to the economy or livability of Coos County at this time. Subject Property is not useful farm or forest land; the zone change to residential can provide protections and opportunities that are not currently part of the planning for Subject Property.

2. Coos County shall ensure that new rural residential dwellings are compatible with adjacent forest and agricultural management practices and production.

Findings: Adjacent uses are for the most part, rural residential acreages of varying sizes. Within a 750-foot buffer Polygon of 133 acres, 9.5 acres are estimated to be in farm and forest land use. This is approximately 7% of the 750-foot perimeter line organized for evaluation of land necessary to permit farm practices to be undertaken on adjacent or nearby agricultural lands. . The proposed rezone from (FMU) to RR-5 with a Q-RR5 10-acre minimum size is appropriate to ensure that new rural residential dwellings are compatible with adjacent forest and agricultural management practices and production. The zoning would allow for three parcels from the 38.17-acre Subject Property parcel. Any condition that would require new homesites to be on the west side of the eastern ridge that is close to the Cranberry bogs to the northeast of Subject Property would separate the new uses from the farm land. Properties to the South could be separated by the same condition. Such conditions could be applied when Subject Property is surveyed and partitioned.

This strategy shall be implemented by requiring applicants for building and septic permits to sign a statement (to be added to the zoning clearance letter) acknowledging that the normal intensive management practices occurring on adjacent resource land will not conflict with rural residential landowner's enjoyment of his or her property.

i. That intensive forest and agricultural management practices could include herbicidal spraying, slash burning, or fertilization; and

ii. that the potential for conflicts between resource uses and rural residential uses will be reduced by alerting prospective rural residential landowners to the fact that intensive resource management uses are expected in rural areas.

3. Coos County shall require all new residential development that is on lots, parcels or tracts within or abutting the "F" zone to agree to construct and maintain a firebreak of at least 30 feet in radius around the dwelling prior to completion of the dwelling. A firebreak is defined as

an area free of readily inflammable material and may include lawns, ornamental shrubs, and scattered single specimen trees.

This strategy recognizes that these protection measures are the minimum necessary to prevent house fires from spreading to forested areas, and vice-versa.

9. Coos County shall define development to mean:

To bring about growth or availability; to construct or alter a structure, to conduct a mining operation, to make a physical change in the use or appearance of land into parcels, or to create or terminate rights of access excepting normal agricultural or forest management activities.

This strategy recognizes the important distinction between resource management and the conversion of land to more intensive uses.

Findings: Coos County has requirements to protect properties within farm and forest zones, including firebreaks and other measures to protect forest and farm land in the vicinity. The redesignation of Subject Property from resource land for three rural residential sites that will create lots similar in size or larger than the average size of adjacent properties. This is appropriate due to the unsuitability of Subject Property for farm and forest use. Adjacent properties were allowed to be subdivided prior to the adoption and acknowledgment of Coos County's Comprehensive Plan and zoning. Farm and forest zoning will remain on adjacent properties, which range in sizes from .90 acres to approximately 23 acres. Any division of Subject Property is not permitted today due to the resource zoning that was applied to Subject Property and adjacent properties.

It is important for any development that is permitted when the resource zoning is changed to Rural Residential will comply with the requirements that are set forth in the forest strategies in the Coos County Comprehensive Plan including, but not limited to fire breaks and fire safety measures. In addition new owners will be subject to signing statements that complaints about agriculture and forestry within any rural residential zone abutting a resource zone are inappropriate. Coos County has anticipated conflicts and has taken steps to minimize such conflicts within the policies of the Comprehensive Plan. This application complies with the Goal 4.

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources - To conserve open space and protect scenic resources.

Programs shall be provided that will:

1) *insure open space,*
2) *protect scenic and historic areas and natural resources for future generations, and*
3) *promote healthy and visually attractive environments in harmony with the natural landscape character.*

Coos County Comprehensive Plan, Volume 1, Part 1

5.6 FISH AND WILDLIFE HABITATS

GOAL: *Coos County shall value its identified significant fish and wildlife habitat and shall strive to protect them where practicable.*

PLAN IMPLEMENTATION STRATEGY

1. Coos County shall consider as "5c" Goal #5 resources (pursuant to OAR 660-16-000) the following"

- *"Sensitive and peripheral Big-game Range" (ORD 85-080010L)*
- *Bird Habitat Sites (listed in the following table)*
- *Salmonid Spawning and Rearing Areas*

2. Coos County shall manage its riparian vegetation and identified non-agricultural areas so as to preserve their significant habitat value, as well as to protect their hydrological and water quality benefits (ORD 85-08-010L). This strategy does not apply to forest management actions, which are regulated by the Forest Practices Act.

This strategy recognizes that protection of riparian vegetation and other wetland areas is essential to preserve the following qualities deriving from these areas:

Natural Flood Control *Flow stabilization of streams and rivers*	***Environmental diversity*** *Habitat for fish and wildlife, including fish and wildlife of economic concern*
Reduction of sedimentation	***Recreational opportunities***
Improved water quality	***Recharge of aquifers***

4. Coos County shall protect for agricultural purposes those land areas currently in agricultural use but defined as "Wet meadow" wetland areas by the U.S. Fish and Wildlife Service, and also cranberry bogs associated sumps and other artificial water bodies.

Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas.

The policy shall be implemented by:
c. (ORD 85.08.010L) Use of the "Special Considerations Map" to identify (by reference to the detail inventory map) salmonid spawning and rearing areas subject to special riparian vegetation protection; and sensitive and peripheral big game range.

6. Coos County shall consider the following to be ("5b) resources pursuant to the inventory information available in this Plan and OAR 660-16-000(5)(b):

- *Osprey Nesting Sites*
- *Snowy Plover Habitat (outside the CBEMP)*
- *Spotted Owl Nesting sites.*

Findings: Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces includes the following language:

To protect natural resources and conserve scenic and historic areas and open spaces. The following resources shall be inventoried:

a. Riparian corridors, including water and riparian areas and fish habitat;
b. Wetlands;
c. Wildlife Habitat;
d. Federal Wild and Scenic Rivers;
e. State Scenic Waterways;
f. Groundwater Resources;
g. Approved Oregon Recreation Trails;
h. Natural Areas;
i. Wilderness Areas;
j. Mineral and Aggregate Resources;
k. Energy sources;
l. Cultural areas.

Local governments and state agencies are encouraged to maintain current inventories of the following resources:

a. Historic Resources;
b. Open Space;
c. Scenic Views and Sites.

Findings: No fish and wildlife habitat or "Sensitive and peripheral Big-game Range are identified within the Coos County Comprehensive Plan on the "Special Considerations Map." Subject Property does not include rivers and streams, and there are no salmonid spawning and rearing areas. The chart referenced as ("listed in the following table") above refers to Bald Eagle nests, Great Blue Heron colonies and Band-Tailed Pigeon Mineral Springs sites, and lists the Township, Range, Section and area of Coos County where the habitat sites are found. There is no site listed within Township 29S, R15W, which includes Subject Property. See Attachment S.

The Coos County Planning Department has no identification of Osprey nesting sites, Snowy Plover Habitat (outside of the area that is within the jurisdiction of the Coos Bay Estuary Management Plan), or Spotted Owl nesting sites.

Coos County has protected Goal 5 resources of scenic, historic and open space value within its Comprehensive Plan. The language included within Section 5.6 Plan Implementation Strategy, addresses wildlife habitat and Sensitive and peripheral big-game range, bird habitat and salmonid spawning and rearing areas. There are no riparian corridors, federal wild and scenic rivers, state scenic waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, or energy sources within Subject Property. Coos County relies upon the Special Considerations Map with overlays to identify specific Goal 5 resources where Exhibits have already been provided in this document.

The site has scenic views from the ridge on the east side of the property. These are scenic views views that contribute to the property and many surrounding properties and provide passive recreation for residents and their visitors.

Special Development and Considerations Overlays include the following:

- Archaeological Sites (ARC).
- Beaches/Dunes – Limited (BDL)
- Natural Hazards Wind Erosion (HZW)
- Archaeological Sites (Arc)
- Farm and Forest Mixed Use (FMU)

The site includes the following additional development considerations:

- Floodplain (FP)
- National Wetland Inventory Site (NWI)
- NATURAL Hazard – Earthquake – Liquefaction (NHEQL)
- Natural Hazard – Tsunami (NHTHO)

Findings: Special Development and Considerations Overlay requirements will continue to be implemented. Farm and Forest use is addressed throughout this document. Any structures placed on future properties will be subject to the flood ordinance. While wetlands exist on the property, none have been delineated at this time. The location of wetlands on the property will be applicable at the time that any development is proposed on the site. Wetlands will be avoided with setbacks set forth by the Coos County Zoning and Land Development Ordinance including the 50-foot riparian setback and requirements of the Oregon Department of State Lands.

Subject Property has an area of archaeological significance, but no specific site has not been identified at this time. The rezoning and Comprehensive Plan map amendments proposed for Subject Property will not preclude future identification and protection of specific resources that are applicable at the time of the siting of any dwelling or other structures on Subject Property. The rezoning and Comprehensive Plan map amendments proposed for Subject Property will not preclude future identification and protection of specific resources that are applicable at the time of the siting of any dwelling or other structures on Subject Property. Notice will be provided to the local Indian Tribe having jurisdiction so that they can respond, and participate if and when ground disturbance takes place.

See Section 5.7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS as follows for further detail and implementation strategies.

Coos County Comprehensive Plan, Volume 1, Part 1

5.7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS

ISSUES:

1. The historical sites and structures have been identified in unincorporated Coos County by Dr. Stephen Dow Beckham for OCC&DC and the State Parks Division. Of these, the Philpott Indian Village site, the Bandon Lighthouse, and Cape Arago Lighthouse are in the National Register of Historic Places. In other cases, however, the presence of historical resources are either not

generally known to the public or the resources may be located in areas under pressure for development. What measures can the County take to protect the value of these resources while permitting development of non-conflicting uses? 2. Both the State Office of Historic Preservation (SOHP) and local tribal authorities are aware of the exact) location of relic archaeological sites. However, once publicly identified, the sites often fall prey to amateur "pot hunters" that could desecrate gravesites and diminish the value of the resource. What can Coos County do to protect these archaeological resources without inadvertently endangering them through widespread public dissemination of site-specific inventory information?

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall manage its historical, cultural and archaeological areas, sites, structures and objects so as to preserve their original resource value.

This strategy recognizes that preservation of significant historical, cultural and archaeological resources is necessary to sustain the County's cultural heritage.

2. Coos County shall permit the expansion, enlargement or other modification of identified historical structures or sites provided that such expansion, enlargement or other modification is consistent with the original historical character of the structure or site.

3. Coos County shall continue to refrain from widespread dissemination [sic] site specific inventory information concerning identified archaeological sites. Rather, Coos County shall manage development in these areas so as to preserve their value as archaeological resources.

This strategy shall be implemented by requiring development proposals to be accompanied by documentation that the proposed project would not adversely impact the historical, cultural and archaeological values of the project's site. "Sufficient document" shall be a letter from a qualified archaeologist/historian and/or duly authorized representative of a local Indian tribe(s). . . . "Appropriate measures" are deemed to be those which do not compromise the integrity of remains, such as (1) paving over the sites, (2) incorporating cluster-type housing design to avoid the sensitive areas, or (3) contracting with a qualified archaeologist to remove and re-inter the cultural remains or burial(s) at the developer's expense. If an archaeological site is encountered in the process of development, which previously had been unknown to exist, then these three appropriate measures shall still apply. Land development activities found to violate the intent of this strategy shall be subject to penalties prescribed by ORS 97.745.[4]

4Coos Bay Plan.

Findings: Goal 5 requires protection of "Natural Resources, Scenic and Historic Areas, and Open Spaces." The Coos County Comprehensive policies and strategies have been organized to comply with Goal 5. Goal 5 resources identified on Subject Property include archaeological sites and wetlands. Archaeological sites will be handled by the Planning Director consistent with the policies set forth in section *5.7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS,* included as part of this analysis.

Goal 5 resources including archaeological sites and wetlands (National Wetlands Inventory) are identified on Subject Property, but they are not specific as to their location at this time. The rezoning and Comprehensive Plan map amendments proposed for Subject Property will not preclude future identification and protection of specific resources that are applicable at the time of the siting of any dwelling or other structures on Subject Property.

The applicant is requesting three parcels from 38 acres. Subject Property includes land that is identified on the Special Development Considerations and Overlay map that includes Floodplain on what appears at least two-thirds of Subject Property.

Notice will be provided to the local Indian Tribe having jurisdiction so that the Tribe(s) can respond and have an opportunity to be present when ground disturbance takes place. This procedure is required for all archaeologically identified areas in Coos County.

Wetland areas will be identified when site development is planned. The Oregon Department of State Lands will review the proposals and respond to Coos County regarding any need for delineation of wetlands, and Coos County will require compliance with riparian requirements. The application will comply with Goal 5.

Goal 6: Air, Water, and Land Resources Quality: to maintain and improve the quality of the air, water, and land resources of the state.

2. Plans should designate areas for urban and rural residential use only where approvable sewage disposal alternatives have ben clearly identified in such plans.

Findings: Subject Property will maintain soil, air and water quality. Subject Property is within an area where nature dominates and the special considerations map takes priority. Fifty foot (50-foot) riparian overlays adjacent to the wetlands will be maintained. Floodplain areas are located on Subject Property with a number of standards that will apply for any construction. While no specific fish and wildlife habitat have been identified for protection on Subject Property, which will continue to contribute to soil, air and water quality. There is no intent, and there will be no opportunity to create subdivisions on the property as development will be limited by the 10-acre minimum zoning that is consistent with averaging the sizes of adjacent and nearby properties. The shorelands will be protected. The Pacific Ocean winds will continue to blow. The land will remain somewhat wild with heavy rains, wild winds, salt spray from the Pacific Ocean, and the attributes of the land. It is doubtful that the land will be cleared, unless an owner determines that he/she can manage the property and make it more productive or maximize fire safety. There is no big game; the Consulting Forester has explained that the understory on Subject Property is not conducive to big game habitat. Small creatures including birds and rodents will continue to exist. Firebreaks are required. These protections along with the location of the property close to the Pacific Ocean and the identified Shorelands set the landscape for maintaining soil, air, water and fish and wildlife resources where they currently exist.

The proposed amendments will not have any negative effect on air, water, and land resources for a number of reasons that have already bee addressed within this document. As shown by the Special Development Consideration on Subject Property, there are many natural forces at work

that will "have their way" with nature. Taming Subject property with all of these forces of nature at work is not a likely scenario. People who want to live in a rural setting with the aesthetics and ambiance of the Oregon Coast will be more interested in such property than those who are looking for a gently rolling river valley. All of the special considerations provide requirements of their own including special development standards. If purchasers can be part of clearing gorse from the property, which is a wildfire hazard, it would be a positive improvement for all.

The applicant understands that DEQ requirements for sewage disposal will be necessary for any residential use. This could be required as a condition of any partitioning into three lots or required prior to enactment of final approval of the rezone. With such a condition, the application complies with Goal 6.

Goal 7: Areas Subject to Natural Disasters and Hazards: To protect life and property from natural disasters and hazards.

Finding: Special Development Considerations have been identified on Subject Property by the County Planning Department as identified within the Comprehensive Plan.

a. Natural Hazard Earthquake – Liquefaction (NHEQL)
b. Natural Hazard - Tsunami
c. Beaches / Dunes – Limited (BDL)
d. Natural Hazards Wind Erosion (HZW)
e. Floodplain (FP)

Coos County will raise awareness of the hazards and Special Development Considerations when approving land partitions, planning clearance forms, and other local permits. All requirements that respond to such Special Development Considerations will be part of future permitting. The application complies with Goal 7.

Goal 8: Recreational Needs: To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Finding: This goal is not applicable to this application as the Subject Property is not proposed for recreational purposes. The Pacific Ocean and all of the ambiance and wonder that it entails are at the front doorstep of Subject Property, providing for the recreational needs of rural residents. The application does not conflict with Goal 8.

Goal 9: Economic Development: To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare and prosperity of Oregon's citizens.

Finding: The Economic goals of Coos County that have been acknowledged by the State of Oregon to comply with Goal 9. Coos County Forestry is proposing to find a suitable economic use for property that has previously been sitting vacant. Economic opportunities within Coos County are dependent upon finding employees who can live and work within the community; rural homesites are desired. Subject Property can contribute several homesites that are much

needed for the community to grow. New development can enhance the tax base and contribute to the business climate of the community. The application complies with Goal 9.

Goal 10: Housing: To provide the housing needs of the citizens of the state.

B. Implementation
1. Plans should provide for a continuing review of housing need projections and should establish a process for accommodating needed revisions.

Coos County Comprehensive Plan, Volume 1, Part 1

5.17 HOUSING

ISSUES

Coos County strongly desires to protects its valuable farm and forest lands, yet the County has conclusively established a legitimate need for acreage homesites.

What can the County do to achieve both objectives?

Local citizens have expressed the concern that plans should provide for different types and densities of housing in a variety of urban and rural locations.

What can the County do to respond to its citizens' concerns?

GOAL: *Coos county shall provide for the housing needs of its residents.*

PLAN IMPLEMENTATION STRATEGIES

1. *Coos County shall provide zoning for adequate buildable lands and shall encourage the availability of adequate numbers of housing units for future housing needs at price ranges and rent levels, which are commensurate with the financial capabilities of Coos County households.*

2. *Coos County shall encourage the availability of a wide variety of housing locations in urban and rural areas. For urban and urbanizable areas, this strategy shall be implemented through urban growth management agreements and appropriate coordinated land use designations. For rural areas this strategy shall be implemented through appropriate land use designations for acreage homesites as selected and justified in the County's rural housing exception.*

3. *Coos County shall structure its implementing zoning ordinance such that it: (1) permits mobile homes, (2) permits mobile homes and clustering of dwellings under a Planned Unit Development concept in most residential zones, (3) permits multiple family dwellings in selected locations within urban growth boundaries (UGB's), and (4) permits multiple family dwellings outside UGB's when part of a Recreation Planned Unit [sic] development. This strategy recognizes that such flexibility of housing type provides greater choice and enhanced ability to meet the housing needs of the citizens of Coos County.*

Findings: While complying with the criteria of applicable Oregon laws, Oregon's Statewide Planning Goals, and the CCZLDO, Subject Property can be recognized as nonresource land. Subject Property can be redesignated on the zoning and Comprehensive Plan Maps to nonresource land status. The applicability of the Statewide Planning Goals for farm and forest land as provided within the strategies of the Coos County Comprehensive Plan and Oregon laws provide a basis for reevaluating lands that have been zoned for farm and forest use to determine whether the resource zones are applicable. That process has been the subject of this application, and the applicants have been diligent in utilizing all of the applicable laws.

A need for housing is recognized at all levels within the State of Oregon. Statewide Planning Goal 10 addresses housing, and the Coos County Comprehensive Plan, Volume 1, Part 1 includes strategies for housing that are acknowledged to be in compliance with the Statewide Planning Goals. It is appropriate that the housing goals included within this document take precedence when the rezone and redesignation of resource lands to rural residential use is justified by findings and adopted by the Coos County Board of Commissioners.

Subject property can contribute to the needs of Coos County where data and analysis of farm and forest suitability has shown that Subject Property is not capable of contributing to the economy under the current resource zoning. Resource zoning was applied broadly in the development of the Comprehensive Plan. This application provides more detailed analysis of the specific Subject Property to remove the broad designation that has rendered Subject Property with no contributing use or on-site management over the years.

The acknowledged Comprehensive Plan thus contemplates that appropriate land shall be rezoned to allow for rural residential use. Rural housing can be provided on lands that are not suitable for commercial farm and forest uses by redesignation of resource lands to rural residential where residents will utilize the land and provide care-taking that is part of the rural lifestyle.

The site can provide housing for rural workforce housing. Workforce housing is recognized as a need throughout the Oregon Coast. The Comprehensive Plan strategies recognize that there is a need for flexibility of housing types within Coos County.

Subject Property is adjacent to a number of homesites that have been organized over the years with two adjacent subdivisions. Subject property is well situated to provide rural housing on land that is otherwise not utilized or enjoyed. Housing shortages are well documented on the Oregon Coast, and are contributing to employee shortages. According to Tom Lahey, a broker with North Point Realty, there is a shortage of houses on the market and typically there are multiple offers for housing units, which are being accepted over listing price, October 12, 2021. Subject Property is in close proximity to the City of Bandon and, within driving distance of employment that could be available within other Coos County communities. The application complies with Goal 10.

Goal 11: Public Facilities and Services: To plan and develop timely, orderly, and efficient arrangement of public facilities and services that serve as a framework for urban and rural development.

Findings: Public facilities and services will not be available to housing that is located on Subject Property. Wells and septic tanks will provide for water and sewage. Subject property is within the Bandon Rural Fire Protection District and the Port Orford Langlois School District. These districts exist to serve rural properties. Coos Curry Electric serves Subject Property. While Goal 11 is not directly applicable, Subject Property is served by special districts that have been organized to serve rural development. This application is not in conflict with Goal 11.

Goal 12: Transportation: To provide and encourage a safe, convenient and economic transportation system.

Findings: Highway 101 is the main transportation route within Coos County. Subject property is accessed by Lower Fourmile Road which connects to Subject Property from Highway 101. Goal 12 is not directly applicable; the application is not in conflict with Goal 12.

Goal 13: Energy Conservation: Land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles.

B. Implementation
1. Land use plans should be based on utilization of the following techniques and implementation devices which can have a material impact on energy efficiency.
d. Availability of light, wind and air;
e. Compatibility of and competition between competing land use activities.

Findings: Any rural residential uses on Subject Property will have the opportunity for energy savings from close proximity of communities on the South Coast of Oregon. The communities of Bandon, Coos Bay, and Coquille in Coos County are all within less than an hour's drive. Port Orford and the unincorporated community of Langlois in Curry County are also within less than an hour's drive. This provides for energy efficient trips for employment and utilization of local goods and services.

Subject Property provides availability of light, wind and air and the Pacific Ocean at the "front door" of the property. This application for a rezone has required the applicant to assure that compatibility between competing land use activities where analysis for any negative effects on farm and forest uses are part of the criteria.

This application is consistent with the energy conservation goal of Goal 13.

Goal 14: Urbanization: To provide for an orderly and efficient transition from rural to urban land use.

Findings: Goal 14 has to do with the layout of cities, and the location of areas for future growth. Goal 14 does not apply.

Goal 15: Willamette River Greenway: To protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic, and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Finding: The Willamette River Greenway goal is not applicable to this application. Goal 15 does not apply.

Goal 16: Estuarine Resources: to recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Findings: Goal 16 is not applicable to this application for proposed amendments.

Goal 17: Coastal Shorelands: To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and to reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Findings: The Shorelands have been mapped and identified by Coos County close to this property as shown on the maps. The Coastal Shorelands are valued and protected for all of the reasons set forth in the Statewide Planning Goals. The Shorelands of the Pacific Ocean are one of the reasons that Subject Property can be enjoyed and valued by any future property owner of Subject Property for their recreation and aesthetic value. Any residential use of Subject Property will result in property taxes to Coos County that will enhance the economic impact of Subject Property. In addition, the Shorelands are to be respected for the hazards that they present. Coos County has identified all of the hazards that are inherent on Subject Property. Development of Subject Property will be required to carry out measures that protect property and respect the natural features, as explained elsewhere within this document.

Goal 18: Beaches and Dunes: To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man-made induced actions associated with these areas.

Finding: There are no dune areas identified though this application. Goal 18 applies only where the beach is in close proximity to Subject Property. Coastal beach areas and hazards are discussed in the findings for Goal 17 above. Coastal beach areas are to be enjoyed and respected through adherence to all of the Coastal Goals and property development standards that have been incorporated by Coos County. This application complies with Goal 18.

Goal 19: Ocean Resources: To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.

Finding: The ocean resources goal is about respect for the ocean and its functions. While the Pacific Ocean is an imminent part of the landscape for Subject Property, there are not direct requirements that are not already applied through other Statewide Planning Goals. Goal 19 does not apply directly.

Coos County Zoning and Land Development Ordinance

SECTION 5.1.275 STANDARDS FOR COMPREHENSIVE PLAN AND REZONE FOR NONRESOURCE LAND:

1. The subject property does not meet the definition of Agricultural Land under Statewide Planning Goal 3 and /or Forest Land under Statewide Planning Goal 4.

> *NOTE:If the subject property is predominantly Class 1-IV soils or if it predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.*

Findings: Subject Property does not meet the definition of Agricultural Land under Statewide Planning Goal 3 and/or Forest Land under Statewide Planning Goal 4. All of the findings are included within this application based upon the criteria within Statewide Planning Goals 3 and 4, the Coos County Comprehensive Plan, and the Coos County Zoning and Land Development Ordinance.

2. The subject property does not contain any natural resources defined in Statewide Planning Goal 5 which are identified in the Coos County Comprehensive Plan;

Findings: Subject Property does contain Goal 5 resources, but those resources that do exist, would not be negatively affected by the rezone from the Forest Mixed Use zone to a Rural Residential (RR-5) zone with a Qualified 10-acre minimum lot size. This is explained under the Goal 5 analysis in the previous section of this report that responds to Statewide Planning Goal 5

and Coos County Comprehensive Plan policies. Resources that exist are already protected by Overlay zones, and by specific development policies that will apply at the time of development. Subject Property does not include big game, fish bearing streams, or identified bird habitat.

3. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract.

Findings: Subject Property is generally unsuitable for production of farm crops and livestock or merchantable tree species. Farm and forest analysis is provided in detail within this document, and Attachments including the NRCS Report, Attachment M, and the *Forest Productivity/Suitability Report*, Attachment P.

Findings: Findings to respond to soil suitability for production of farm crops and livestock, merchantable tree species, considering terrain, adverse soil conditions, drainage and flooding, and vegetation, are presented throughout this report in response to Oregon farm and forestry laws, and with the use of the Soil Survey of Coos County and Custom Soil reports and other methodology specified by Oregon law. The location and size of tract have been provided as introductory information to explain the property. The application for the rezone will permit Subject Property to have a use in addition to contributing to air, land and water quality by making it available for a few homesites that are more consistent in size with a number of the adjacent properties, and with the average size of surrounding properties.

4. The subject property is not considered to be nonresource land simply because it is too small to be farmed or forest managed profitably by itself. If the subject property can be sold, leased, rented or otherwise managed as part of a commercial farm, ranch or other forestland it is not considered to be nonresource land.

Findings: There is no attempt to consider Subject Property nonresource land based upon size. In fact, if Subject Property of 39+ acres were capable of producing marketable forest products, the Coos County Forestry Department would have been able to utilize the property that they have managed for Coos County since 1929 over the decades. Instead, Subject Property remains vacant and unused. None of this lack of use is based upon size, but rather upon the suitability of the Subject Property itself, which is not in sync with the resource zoning that exists.

In 2009, Coos County Forestry attempted to sell the property, but with no viable uses allowed, there was no purchaser. Coos County Forestry has offered Subject Property or portions thereof, that can be organized with adjacent properties through a lot line adjustment for sale. Information that was used for the 2009 proposed sale is included as Attachment H.

5. The subject property is not considered to be nonresource land if it has been given a special tax assessment for farm use or as designated forestland at any time in the past five years.

Findings: There has been no special tax assessment for farm or forest use.

6. If the subject property is found to meet all of the standards above to be considered nonresource land the county shall also determine that rezoning the property to a nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.

7. The subject property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use. Any proposal of at least 2 acres but less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040.

Findings: Subject Property is not contiguous to an area zoned for nonresource use. However, it is contiguous to numerous rural residential properties that have existed within the farm and forest mixed use zone for decades. Subject Property is 38+ acres in size, and the intent is to divide it into three parcels, all of which should be more than 10 acres. Three lots of over 10 acres each will be of a size similar to averages of adjacent properties and other properties within the 750-ft. perimeter barrier polygon utilized for analysis within this document. Adjacent properties have been identified within this document, shown on maps and incorporated through appropriate analysis.

8. Rezoning of land that is found to be nonresource land shall be to a "rural" zone that is appropriate for the type of land and its intended use.

Rural commercial or industrial development must comply with standards for small-scale, low impact commercial and industrial use.

Findings: The applicant understands that Subject Property suitable for 10-acre zoning in that it is not contiguous to an area that is zoned for nonresource use. No commercial or industrial development is proposed as part of this rezone application. Coos County has completed analysis of Subject Property and its highest and best use over a number of years. There should be no negative impacts from any use that is permitted for Subject Property due to the applicant's zoning proposal that will conform to Coos County's acknowledged Comprehensive Plan, the CCZLDO and all development standards that show respect for and solutions to minimize hazards, wildfires and other impacts from rural residential management of Subject Property.

Development of property rezoned from Forest or Forest Mixed use to a nonresource zone shall comply with the resource development and siting standards. (ORD NO. 04-01- 001PL February 10, 2004)

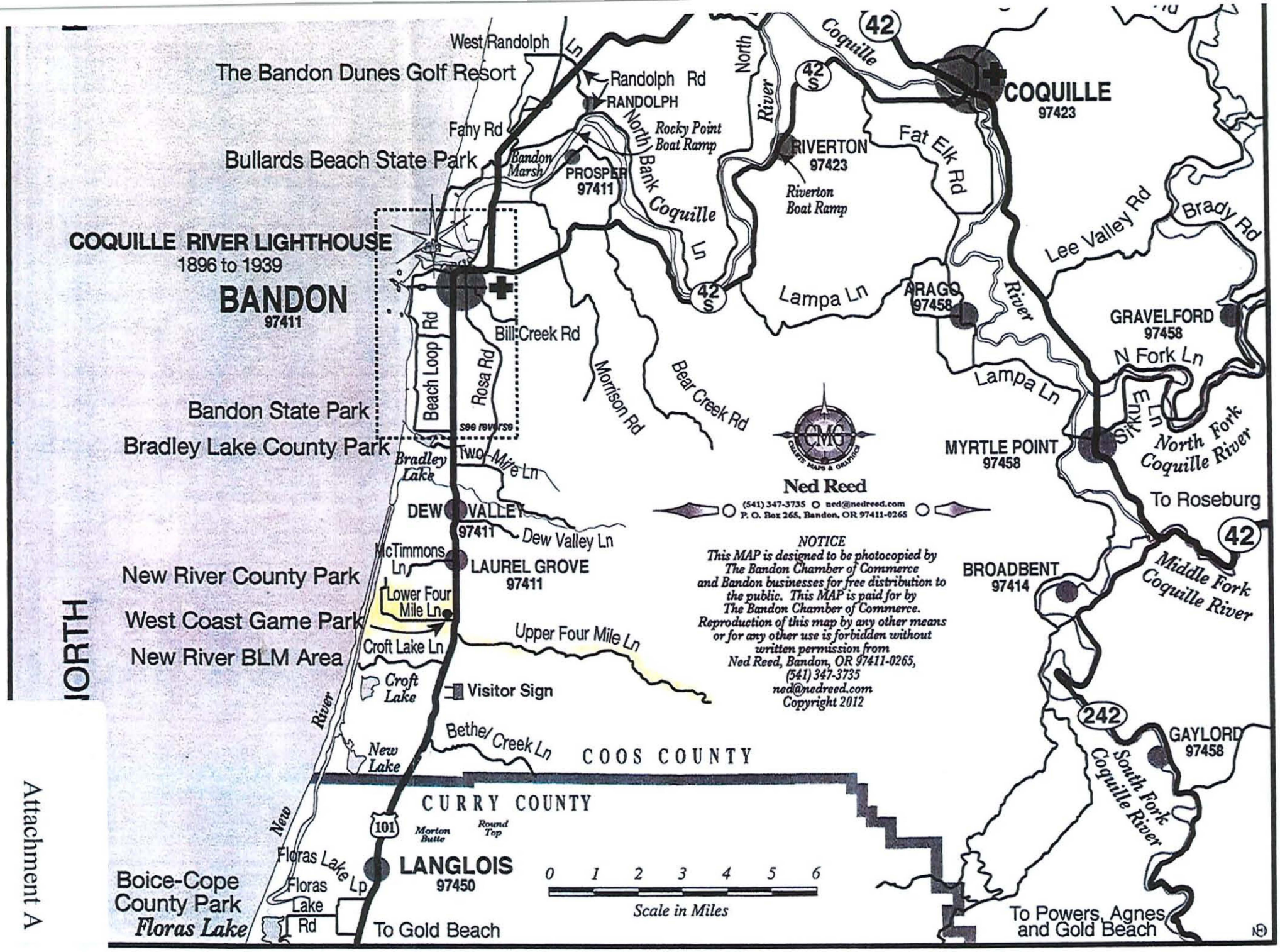
Findings: The Coos County Forestry Department will work with Coos County Planning Department to assure that purchasers understand all that is required in any future development and siting on Subject Property.

Conclusion

This application provides consideration of County and State criteria, resource analysis, and findings to support the rezone of Subject Property.

The applicant understands that safeguards to protect and enhance Subject Property and neighboring properties are in place.

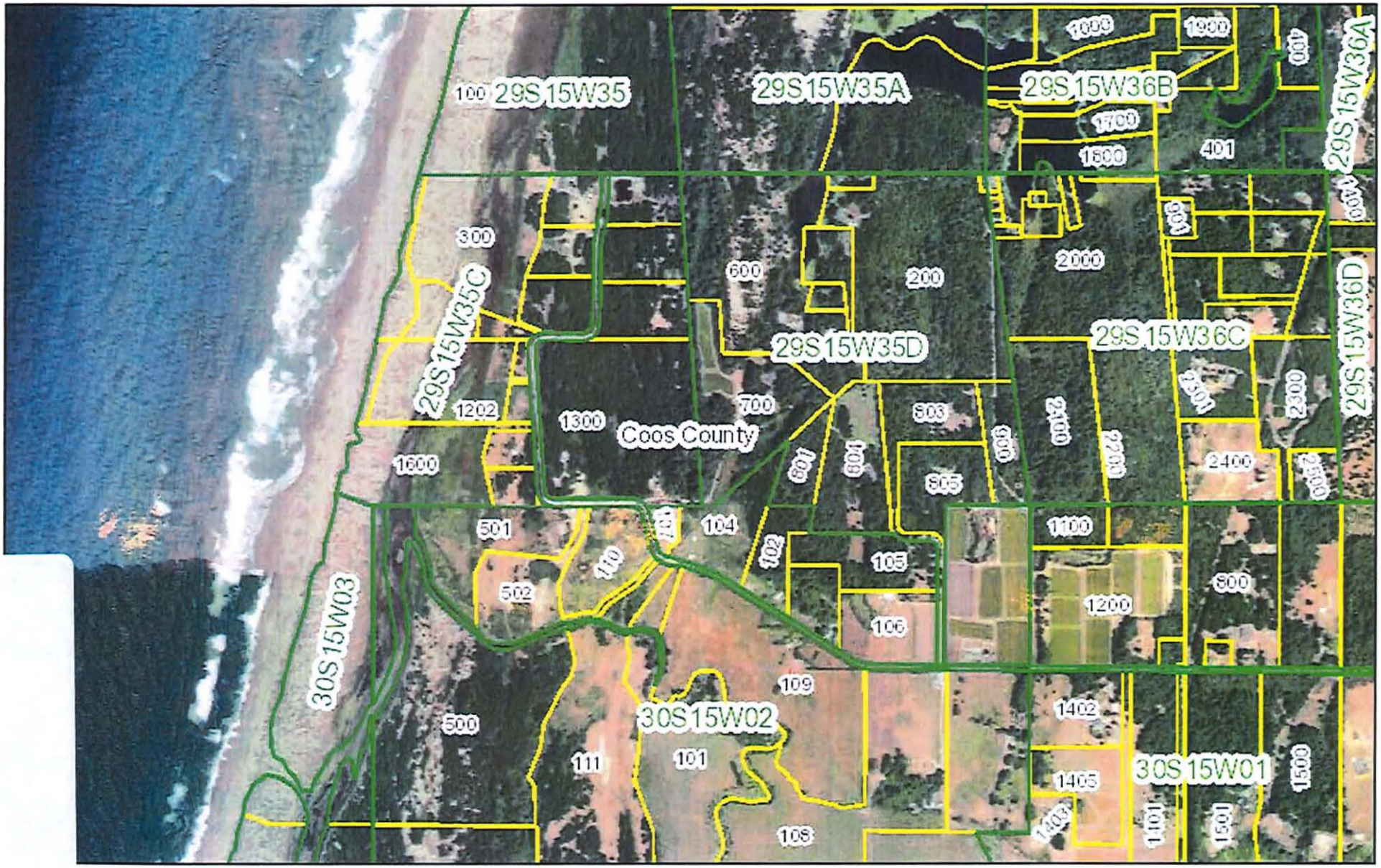
The applicant respectfully requests approval of this application along with any conditions that may be applied as part of the approval.



Attachment A

Attachment B

ArcGIS Web Map



Attachment C

:1, 11:33:20 AM

taxlot mapIndex CountyLines

1:18,056

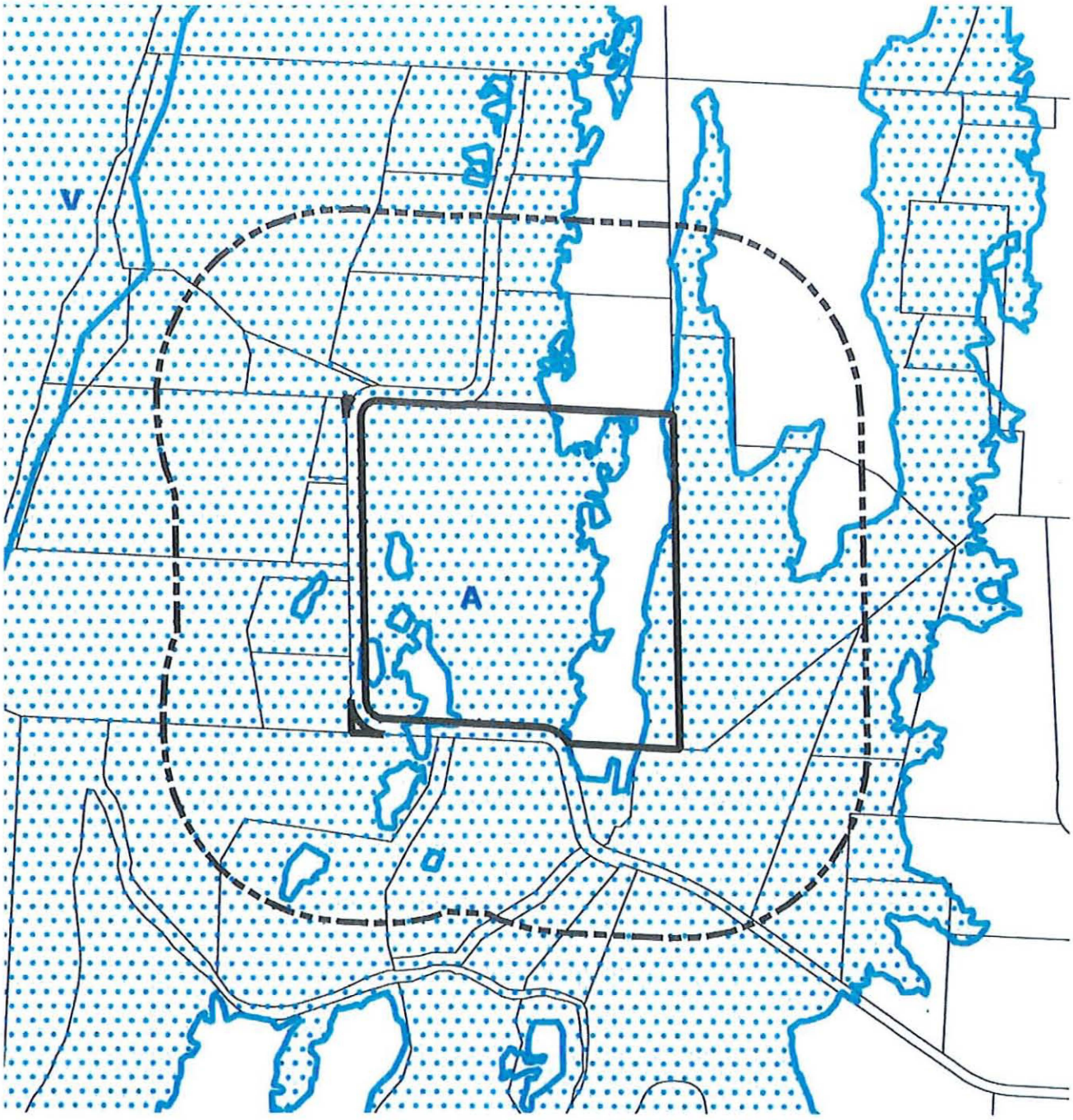
0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

OREGON DOR, GEO, Maxar

Web AppBuilder for ArcGIS
Maxar | OREGON DOR, GEO |

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300



0 500 1,000 ft

750ft Buffer
Subject Property
FEMA Floodplain
Floodplain Zones

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

Attachment D

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300

750ft Buffer

Subject Property

Beaches and Dunes - Goal 18

Limited Suitability; Special Measures Required For Most Development

Not Suitable For Residential,Commerical,Or Industrial Structures

Suitable For Most Uses; Few Or No Constraints

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

0 500 1,000 ft

Attachment E

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300

0 500 1,000 ft

750ft Buffer
Subject Property
Liquefaction Susceptibility - High & Very High

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

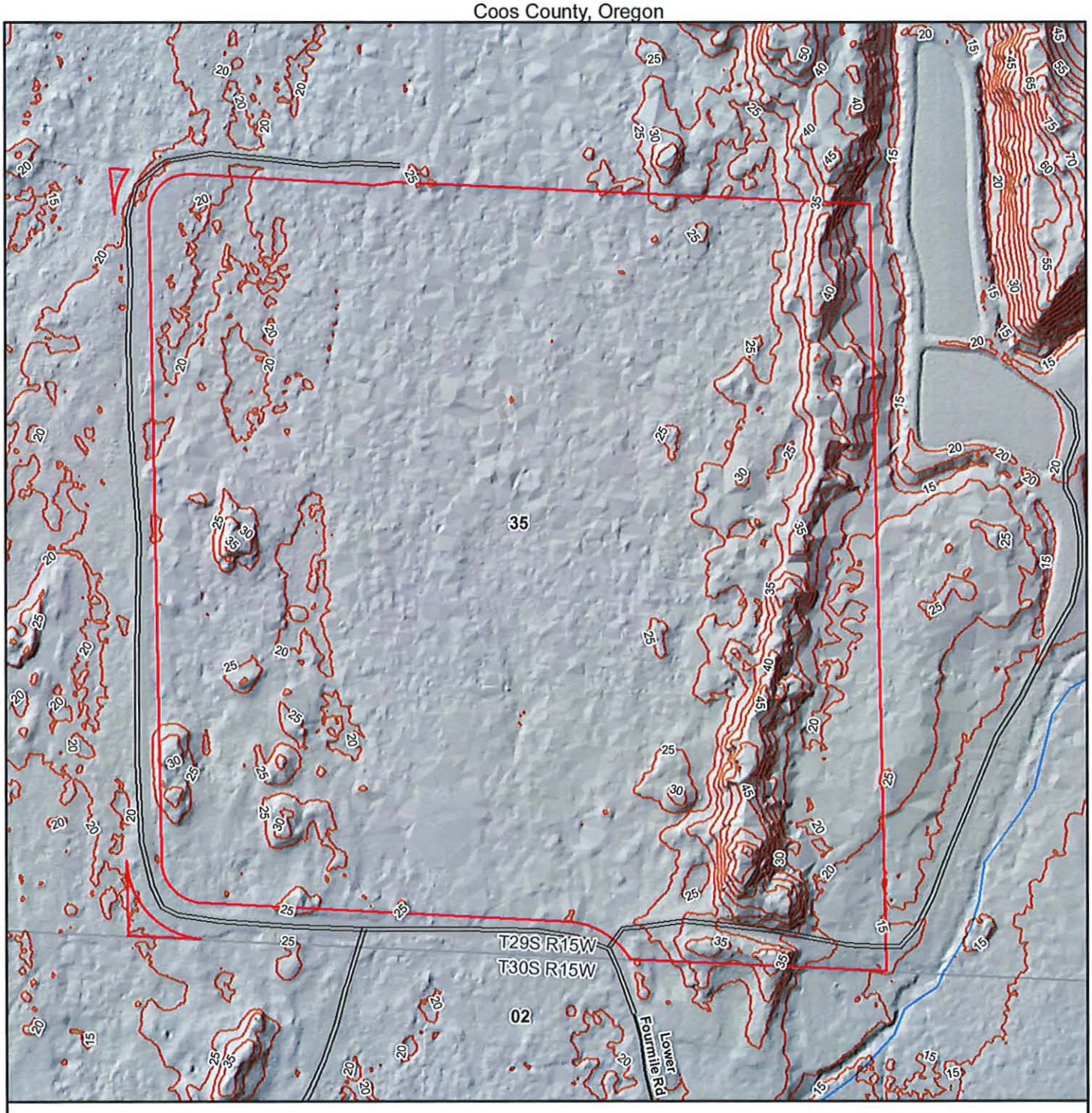
Attachment F

Farm Unlimited
P.O. Box 761
North Bend, OR 97459

Subject Property
Hillshade and Contour Map

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Paved
Rock
Medium, Fish
5 ft Contour Lines
Subject Property

N
1 " = 250 ft.
Created: 1/17/2022
by Barbara McIntosh

Contour Intervals = 5 ft. Contours and Hillshade derived from Lidar Bare Earth DEM

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Attachment G

BOC only:
Consent Agenda _____

Regular Agenda _____

AGENDA ITEM COVERSHEET

Agenda Item Title: Public Hearing on the Sale of County Forest Land

Department: Forestry/Land Agent **Requested Agenda Date:** 2/18/09

Contact Person: Bob Laport **Phone/Ext.:** 352

Background and description of need or problem: The purpose of this hearing will be to hear public comments on the sale of two parcels of County Forest land on Lower Fourmile Road, near the mouth of New River. Tax Acct. 12433.02 T29S, R15W, Section 35C TL1300 (approx. 38.17 ac.) and Tax Acct. 12433.00 T29S, R15W Section 35 TL100 (Approx 111.30 ac.). At a Lands Worksession held on 1-20-09 the Board of Commissioners directed that a hearing be set to consider the sale of these parcels at County Land Sale on 4-18-09. In accordance with ORS 275.330 B(2) the Board must make a finding that the sale or conveyance is in the public interest. As required under 275.330 B(3) notice of the hearing was published for 2 consecutive weeks. At the Lands Worksession, the Board discussed setting minimum prices of $800,000 on each parcel. In accordance with ORS 275.330 the proceeds from sale of these parcels would be held in the Forestry/Parks Trust Fund. If a serious offer of a trade for timberland were made before 4-18-09, the Board could exercise its discretion to remove either or both of the parcels from the sale list and enter into trade negotiations in accordance with ORS 275.335.

Funding Source: N/A

Requested Action: Receive and review public comments. If it is found to be in the public interest to sell these parcels, the Board should direct the Land Agent to place them on the land sale scheduled for 4-18-09 and set minimum prices.

Date 2/11/09 Signature of Dept. Head: _____

If this is a Human Resources issue, forward to the Treasurer who will forward it to Human Resources. For all other matters, forward the document to Counsel **no later than the Monday prior to the Agenda deadline.** Counsel will forward to Treasurer.

If this is a contract or grant:

- ☐ Is the contract or grant an original?
- ☐ Is the Contract/Grant Summary Form attached?
- ☐ Is the contract signed first by the vendor (except state/federal grants or contracts)?
- ☐ If insurance is required, is the insurance certificate attached?
- ☐ Is the Clerk's Coversheet attached or do you want it returned to you for filing?

Departments Affected:

COUNSEL:_____

_____

COOS COUNTY FORESTRY DEPARTMENT

250 N. Baxter Street, Coquille, Oregon 97423

(541) 396-3121 Ext.349 FAX (541) 396-3560 / TDD (800) 735-2900

Bob Laport, CF
Coos County Forester/Land Agent

Lance Morgan, Forestry Field Foreman
Kathy Hathaway, Timber Specialist

In the Matter of the Sale of County Forest Lands) NOTICE
) PUBLIC HEARING

TO: ALL INTERESTED PERSONS

Notice is hereby given that the Coos County Board of Commissioners will hold a public hearing on February 18, 2009 at 9:30 a.m. in the Commissioner's Courtroom, Courthouse, Coquille, Oregon.

The purpose of this hearing will be to hear public comments on the sale of County Forest land. The property cannot be sold unless the Board finds it is in the best interest of the public to do so. Proceeds from any sale will be used to maintain or improve existing County Forest or Park lands or for the future acquisition of lands to be set aside as County Forest or Park lands.

The County Forest lands are described as follows:

PARCEL "A":

The SE ¼ of the SW ¼ of Section 35, T29S, R15W, W.M. except dedicated public road, deed reference 81-4-1765.
[Account #12433.02, T29S, R15W, S35C, TL#1300; containing approximately 38.17 acres, as described in the Coos County deed records at #109-563]

PARCEL "B":

Government Lots 1 and 2 of Section 35, T29S, R15W, W.M.
[Account #12433.00, T29S, R15W, S35, TL#100; containing approximately 111.30 acres, as described in the Coos County deed records at #109-563]

This hearing is open to the public and all interested persons may appear and be heard.

Date: 1/22/09

County Forester
Bob Laport

PUBLISH: THE SENTINEL - January 28 and February 4, 2009.

Coos County is an Affirmative Action/Equal Opportunity Employer and complies with section 504 of the Rehabilitation Act of 1973

Coos County's Only Independent Newspaper

The Sentinel

February 4, 2009

coquillevalleysentinel@yahoo.com Phone (541) 396-3191 FAX

AFFIDAVIT of PUBLICATION

STATE OF OREGON
COUNTY OF COOS, SS:

I, Jean Ivey

being first duly sworn, depose and say that I am t publisher of The Sentinel, a newspaper of general circulation as defined by ORS 193.010 and 193.2(published at Coquille in the aforesaid county a state; and that the

LEGAL NOTICE, A printed copy of which is her annexed, was published in the entire issue of s newspaper for 2 successive and consecut weeks in the following issues:

January 28, 2009
February 4, 2009

Subscribed and sworn before me this

11 Day of 2 2009

OFFICIAL SEAL
DARLENE L. ANDREWS
NOTARY PUBLIC - OREGON
COMMISSION NO. 399085
MY COMMISSION EXPIRES JAN. 28, 2010

C E S

PUBLIC NOTICE

In the Matter of the Sale of County) NOTICE
Forest Lands) PUBLIC HEARING

TO: ALL INTERESTED PERSONS

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This hearing is open to the public and all interested persons may appear and be heard.

Date: January 28, 2009
County Forester
Bob Laport

CVS#012309 Publish 1/28 & 2/4/2009

Serving Coos County Since 1882

The Sentinel

The County Seat Newspaper

PHONE (541) 396-3191 FAX (541) 396-3624
61 E. First St., COQUILLE, OR 97423

LEGAL CONFIRMATION

You are receiving this FAX as a notification that we have received a request to publish in The Sentinel a LEGAL PUBLICATION.

DATE RECEIVED 1/23/09

BY FAX _____ E-MAIL X or HARDCOPY _____

FROM DEPARTMENT (ATTORNEY) Coos County Forestry Dept.

SENTINEL ACCOUNT # 010

PUBLISH DATE(S) 1/28 & 2/4/2009

ORDERED BY Kathy Hathaway

LEGAL PUBLICATION TITLE Sale of County Forest

PLEASE LOOK OVER THE ABOVE INFORMATION AND MAKE SURE THAT WHAT YOU REQUESTED IS CORRECT. THERE IS NO NEED TO RESPOND TO THIS FAX. KEEP A COPY FOR YOUR RECORDS AS CONFIRMATION THAT IT WAS RECEIVED AND PROCESSED FOR PUBLICATION. IF YOU HAVE QUESTIONS, PLEASE REFERENCE THE *"SENTINEL PUBLISHING CODE"* BELOW.

THIS PUBLICATION HAS BEEN ASSIGNED THE FOLLOWING SENTINEL PUBLISHING CODE

CVS# 012309

publish 1/28 & 2/4/09

Serving Coos County Since 1882

The Sentinel

The County Seat Newspaper

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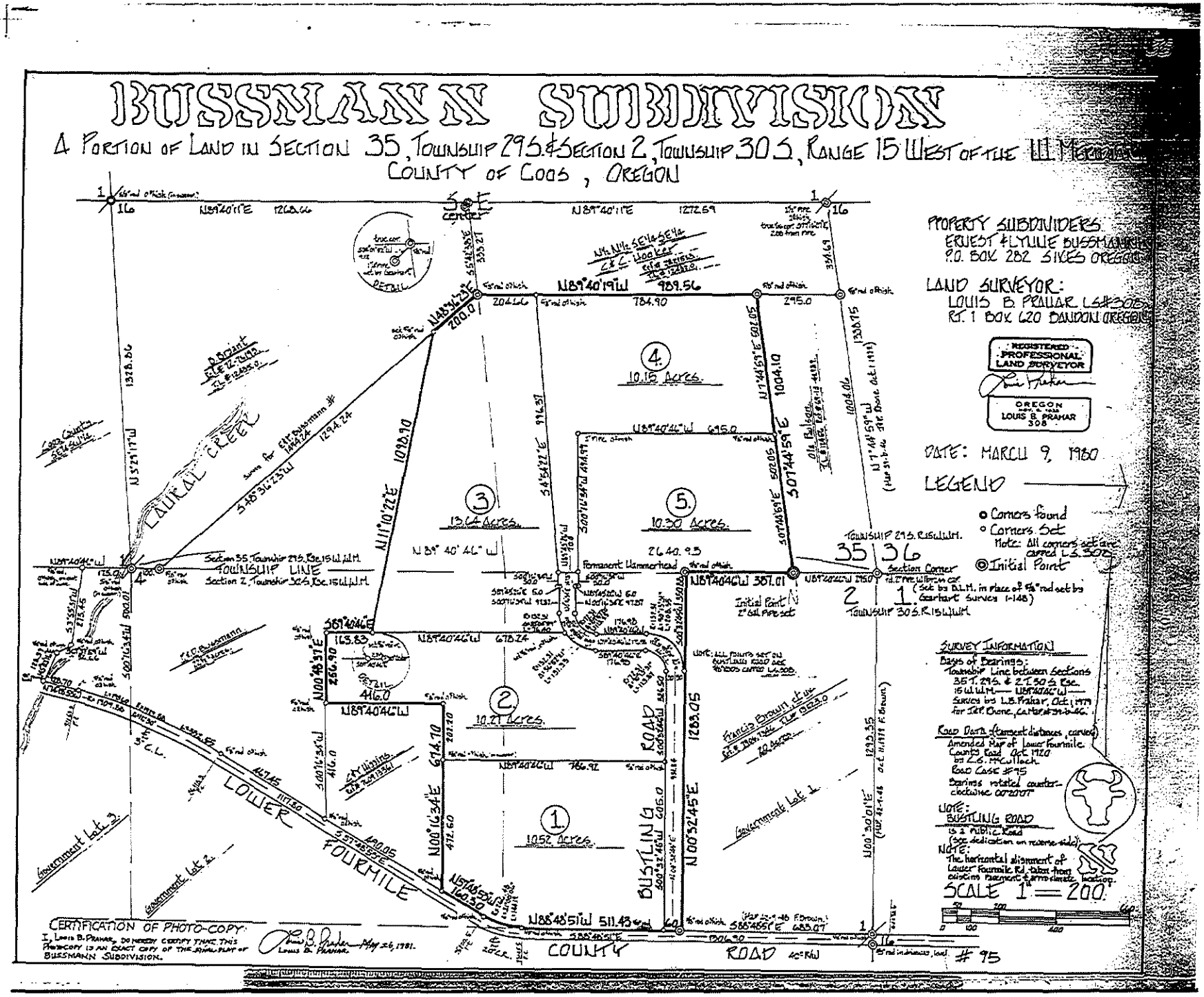
publish 1/28 & 2/4/09


BUSSMANN SUBDIVISION
A PORTION OF LAND IN SECTION 35, TOWNSHIP 29S. & SECTION 2, TOWNSHIP 30S., RANGE 15 WEST OF THE W. M.
COUNTY OF COOS, OREGON
PROPERTY SUBDIVIDERS:
ERNEST & LYNILE BUSSMANN
P.O. BOX 282 SIXES OREGON
LAND SURVEYOR:
LOUIS B. PRAHAR LS#308
RT. 1 BOX 620 DANDON OREGON
REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
LOUIS B. PRAHAR
308
DATE: MARCH 9, 1980
LEGEND
Corners found
Corners Set
Note: All corners set are carried L.S. 308
Initial Point
Section Corner
SURVEY INFORMATION
Basis of Bearings:
Township Line between Sections 35 T. 29 S. & 2 T. 30 S. R. 15 W. W.M. — N89°40'46"W — Survey by L.B. Prahar, Oct. 1979 for Ist. Bank, Gearhart Survey 1-148
Road Data (Horizontal distances, curves)
Amended Map of Lower Fourmile County Road Oct. 1920 by Z.G. McCulloch. Road Case #75
Bearings rotated counter-clockwise 00°20'07"
NOTE: BUSTLING ROAD is a PUBLIC Road (See dedication on reverse side)
NOTE: The horizontal alignment of Lower Fourmile Rd. taken from existing pavement & approximate location.
SCALE 1" = 200'
CERTIFICATION OF PHOTO-COPY:
I, Louis B. Prahar, do hereby certify that this Photocopy is an exact copy of the original plat of Bussmann Subdivision.
Louis B. Prahar May 26, 1981.
LOWER FOURMILE
BUSTLING ROAD
COUNTY ROAD 40' R/W
CAUREAL CREEK
TOWNSHIP LINE
Section 35 Township 29S. R.15W. W.M.
Section 2 Township 30S. R.15W. W.M.
TOWNSHIP 29S. R.15W.W.M.
TOWNSHIP 30S. R.15W.W.M.
1 10.52 Acres.
2 10.21 Acres.
3 13.64 Acres.
4 10.15 Acres.
5 10.30 Acres.
Permanent Hammerhead
Government Lot 3
Government Lot 2
Government Lot 1
Francis Brown et ux
Gearhart Survey 1-148
Gearhart Survey 1-148
Gearhart Survey 1-148

DEDICATION

Know all men by these presents that Ernest A. and Lynne Bussmann are the Vendees of the land described in the "Surveyor's Affidavit" hereon and do hereby Subdivide and Plat the same as shown, and do hereby dedicate to the public forever Bustling Road, and do hereby execute and offer for filing and record in the office of the Clerk of Coos County, Oregon, in testimony whereof we, Ernest A. and Lynne Bussmann, have caused these presents to be signed this 10th day of March, 1981.

Ernest A. Bussmann

Lynne Bussmann

Know all men by these presents that Thomas Wilbur Brown, Robert Hartman Brown, and Francis Wilbert Brown are the record title holders of the land described in the "Surveyor's Affidavit" and are also Vendors of said described properties and do authorize Ernest and Lynne Bussmann, Vendees, to subdivide and Plat the same as shown, and do authorize said Vendees to dedicate and offer for filing and record in the office of the Clerk of Coos County, Oregon, in testimony whereof we, Thomas Wilbur, Robert Hartmen, and Francis Wilbert Brown have caused these presents to be signed.

Thomas Wilbur Brown

State of Oregon
County of Coos

Thomas Wilbur Brown, Date March 17, 1981

This is to certify that on this 17th day of March, 1981 Before me appeared Thomas Wilbur Brown to me personally known and being sworn did say that the above testimony is his free and voluntary act; in testimony where I have hereon to set my seal this 17th day of March, 1981.

Notary Public for Oregon

My Commission expires 2-24-84

Robert Hartmen Brown

State of Oregon
County of Coos

Robert Hartmen Brown, Date March 17, 1981

This is to certify that on this 17th day of March, 1981, before me appeared Robert Hartmen Brown to me personally known and being sworn did say that the above testimony is his free and voluntary act in testimony where I have hereunto set my seal this 17th day of March, 1981.

Notary Public for Oregon

My Commission expires 2-24-84

Francis Wilbert Brown March 17, 1981

State of Oregon
County of Coos

Francis Wilbert Brown, Date

This is to certify that on this 16th day of March, 1981, before me appeared Francis Wilbert Brown to me personally known and being sworn did say that the above testimony is his free and voluntary act in testimony where I have hereunto set my seal this 16th day of March, 1981.

Notary Public for Oregon

My Commission Expires 5/28/84

State of Oregon
County of Coos

This is to certify that on this 10th day of March, 1981, before me appeared Ernest A. and Lynne Bussmann to me personally known and being sworn did say that the above testimony is their free and voluntary act in testimony where I have hereunto set my seal this 10th day of March, 1981

Notary Public for Oregon

My Commission Expires 7-30-82

CERTIFICATE OF THE COUNTY COURT

1. Commissioner
2. Commissioner
3. Commissioner

County Assessor

5. Planning Department

6. N/A
Roadmaster

7. Surveyor 27 May 81

7. Chairman, Planning Commission

BUSSMANN SUBDIVISION

SURVEYOR'S AFFIDAVIT

I Louis B Prahar, being duly sworn upon oath that I am a registered professional land surveyor, that I have correctly surveyed the following tract of land to wit: A parcel of land in the SE1/4 of Section 35, Township 29 South and Government Lots 1&2, Section 2, Township 30 South, Range 15 West of the Willamette Meridian, more particularly described as follows: Beginning at the Southeast Corner of said Section 35, thence proceeding N89°40'46"W along the Township Line between said Townships 29&30 a distance of 2950 feet to the true point of beginning; thence N1°44'59"W a distance of 1004.10 feet; thence N89°40'19"W a distance of 989.56 feet; thence S48°36'23"W, a distance of 200.0 feet; thence S11°16'22"W a distance of 1098.90 feet; thence N89°40'46"W, 163.83 feet; thence S00°48'31"W, a distance of 256.90 feet; thence S89°40'46"E, a distance of 416.0 feet; thence S00°16'34"W, a distance of 674.70 feet to a point on the North R/W line of Lower Fourmile County Road; thence S 57°48'55"E along said North line of said Co Rd, 160.30 feet to a point of curvature of a curve to the left (delta angle = 31°30'06" radius = 266.48 Ft); thence along said curve an arc distance of 144.19 feet; thence S85°45'51"E, a distance of 57.43 feet; thence N00°32'45"E, a distance of 1283.05 feet; thence S89°40'46"E a distance of 387.01 feet; here by returning to the point of beginning; also that I have marked with proper monuments the boundaries of parcels hereon shown; that the initial point is marked with a 2" iron pipe; that this map is drafted to scale, and the figures thereon are the dimensions intended.

Louis B. Prahar

LOUIS B PRAHAR P.L.S. #308

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
LOUIS B. PRAHAR
308

Subscribed and Sworn before me this 9th day of March, 1981

Notary Public for Oregon

My Commission expires 3/19/83

CERTIFICATE OF COUNTY CLERK, Counties of Coos, State of Oregon

I Mary Ann Wilson in and for the said County and state do hereby certify that the within Plat was recorded by me in the Coos County Records in Volume 12 Page 28 of the Coos County Plat Records this 8 day of June, 1981 at 11:45 AM

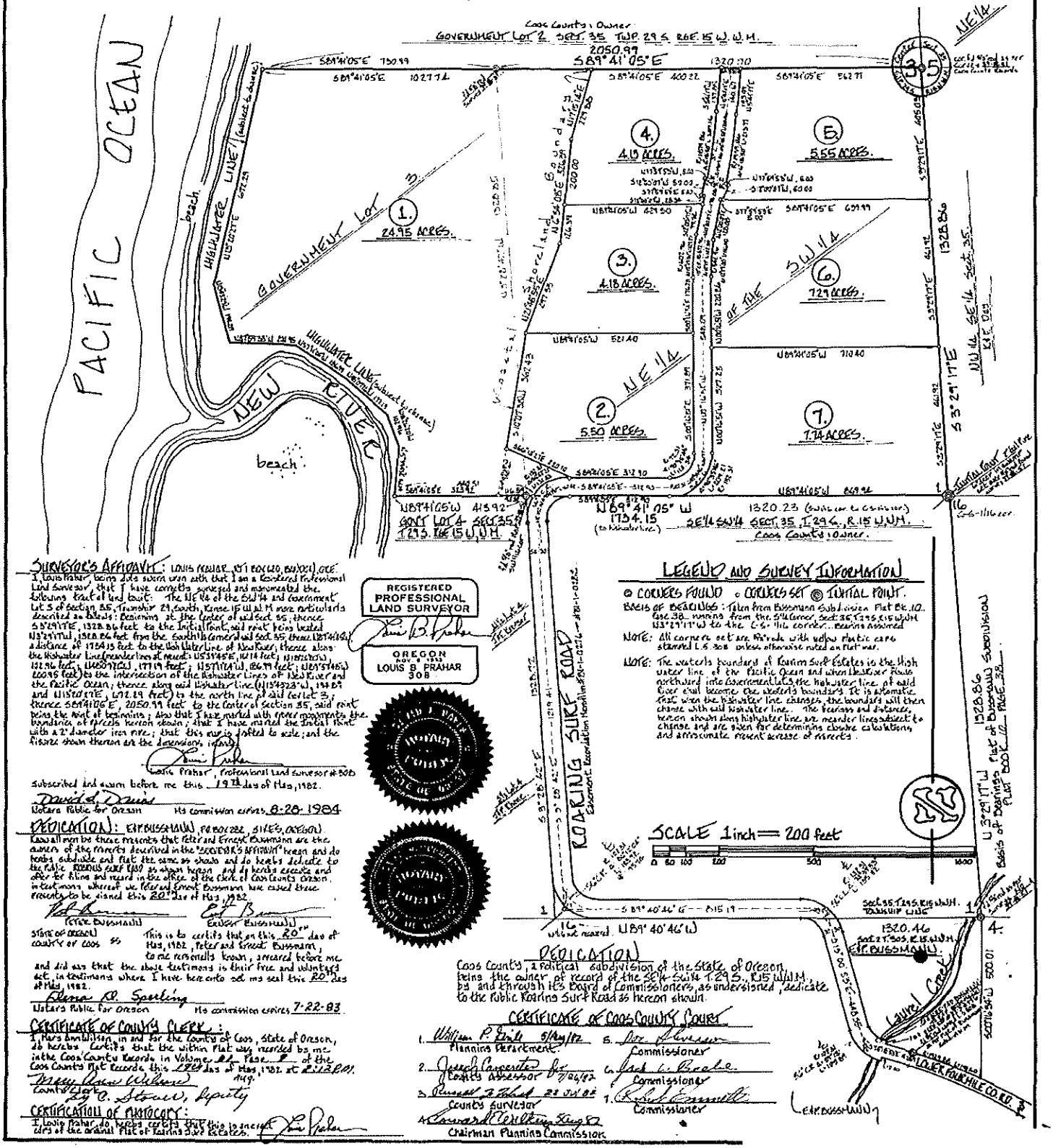
County Clerk by A. Bell, Deputy

CERTIFICATION OF PHOTO COPY:
I, LOUIS B. PRAHAR, DO HEREBY CERTIFY THAT THIS PHOTO COPY IS AN EXACT COPY OF THE FINAL PLAT OF BUSSMANN SUBDIVISION.

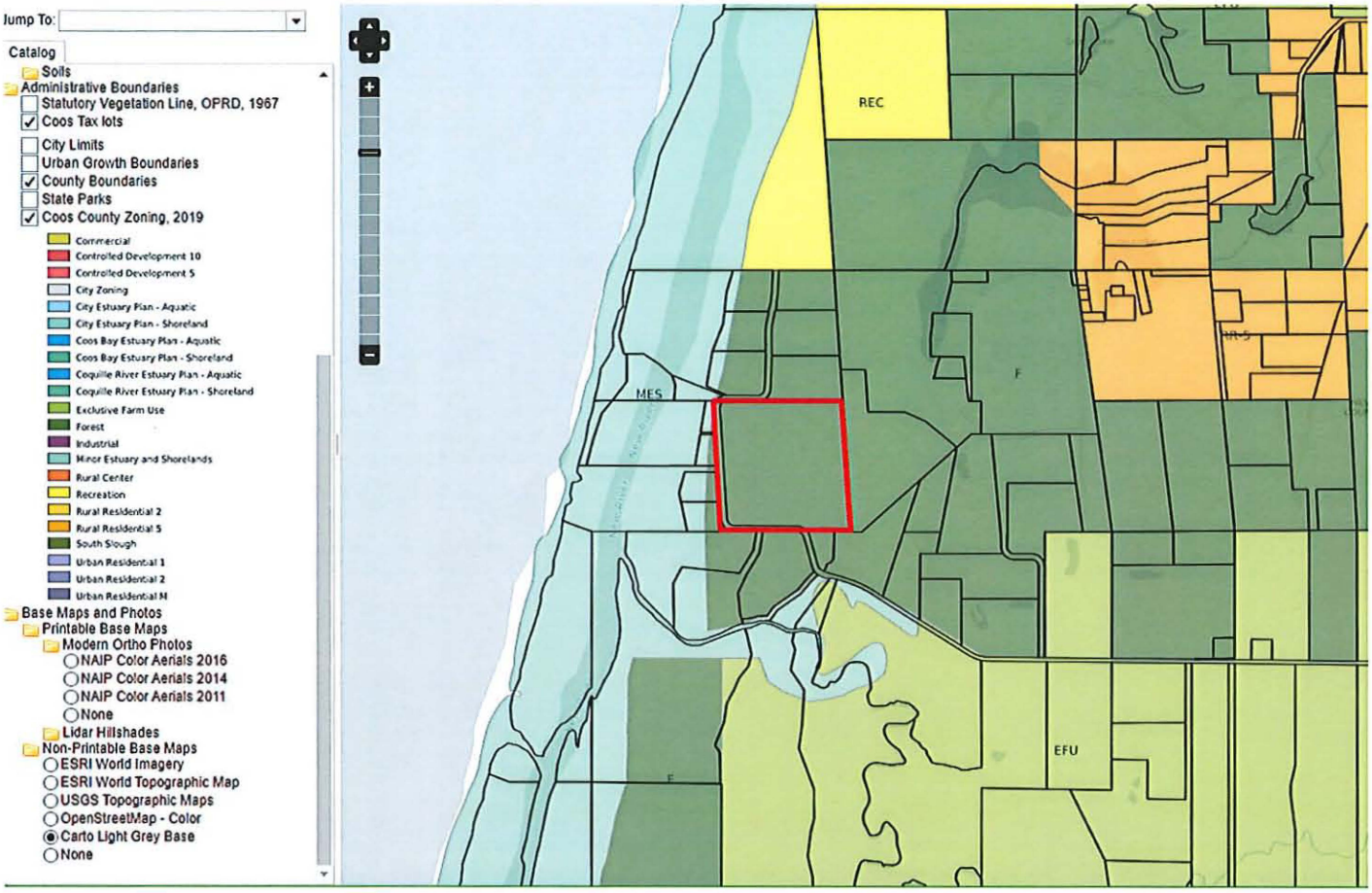
Louis B. Prahar May 26, 1981
LOUIS B. PRAHAR

Roaring Surf Estates

THE NE 1/4 OF THE SW 1/4 AND GOVERNMENT LOT 3 OF SECTION 35, TWP. 29 S., R. 15 W.W.M.
COUNTY OF COOS, STATE OF OREGON


PACIFIC OCEAN
NEW RIVER
beach
beach
MEAN HIGH TIDE LINE (Indirect by distance)
MEAN HIGH TIDE LINE (Indirect by distance)
GOVERNMENT LOT 3
NE 1/4 OF THE SW 1/4
NE 1/4
SE 1/4 SW 1/4
Coos County Owner
GOVERNMENT LOT 2 SECT. 35 TWP. 29 S. RGE. 15 W. W. M.
2050.99
S89°41'05"E
1320.30
1320.23 (Basis of Bearings)
1754.15 (to Meander line)
SE1/4 SW1/4 SECT. 35, T. 29 S., R. 15 W.W.M.
Coos County Owner.
1. 2.95 ACRES.
2. 5.50 ACRES.
3. 4.18 ACRES.
4. 4.15 ACRES.
5. 5.55 ACRES.
6. 7.29 ACRES.
7. 7.74 ACRES.
ROARING SURF ROAD
Easement Description Herein in Book M-10-0226
SCALE 1 inch = 200 feet
0 80 100 200 500 1000
Sect. 35 T29S R15 W.W.M. TOWNSHIP LINE
1320.46 Sect 2 T30S, R15 W.W.M. E.F. BUSSMANN
Basis of Bearings Plat of Bussmann Subdivision Plat Book 10 Page 32
LOWER FOUR MILE CO. RD.
Laurel Creek
S89°40'46"E 815.19
N89°40'46"W
S89°41'05"E 1320.30
S89°41'05"E 1027.72
S89°41'05"E 400.22
S89°41'05"E 562.71
S89°41'05"E 750.99
N89°41'05"W 415.92
N89°41'05"W 521.40
N89°41'05"W 710.40
N89°41'05"W 869.92
S89°41'05"E 312.10
S89°41'05"E 312.93
S89°41'05"E 609.99
S0°18'55"W 1328.86
S3°29'17"E 1328.86
N3°29'17"W 1328.86
N0°18'55"E 1328.86
N0°18'55"E 500.01
S0°18'55"W 500.01
N89°41'05"W 1328.86
S89°41'05"E 1328.86
S89°41'05"E 1320.30
S89°41'05"E 1320.30
S89°41'05"E 1320.30

Coos County Zoning Map



Subject Property

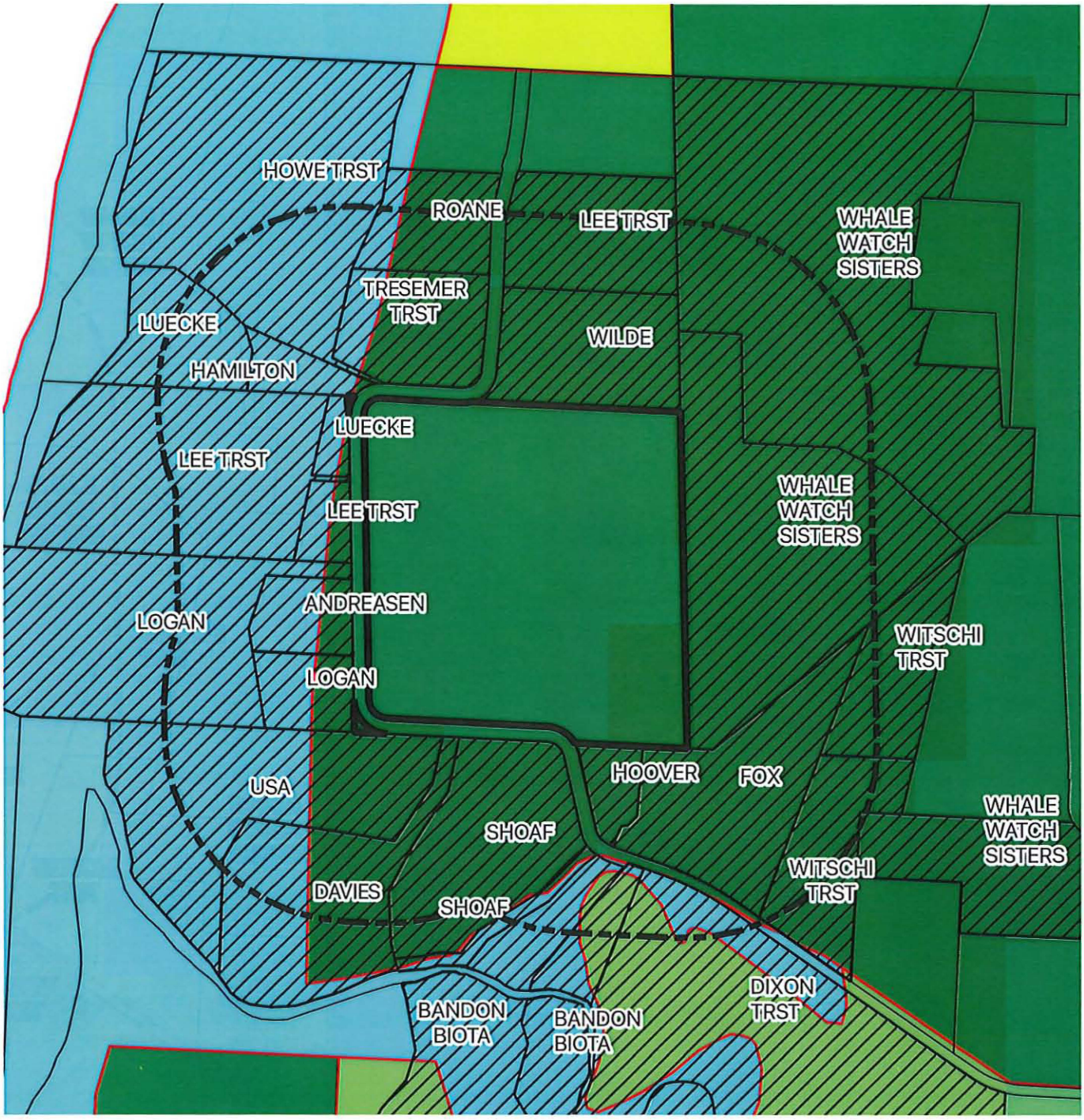
DISCLAIMER The spatial information hosted at this website was derived from a variety of sources. Care was taken in the creation of these themes, but they are provided "as is". The state of Oregon, or any of the data providers cannot accept any responsibility for errors, omissions, or positional accuracy in the digital data or underlying records. There are no warranties, expressed or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying any of these products. However, notification of any errors would be appreciated. The data are clearly not intended to include the authoritative location of property boundaries, the precise shape or contour of the earth or the precise location of fixed works of humans.

N

Printed 02/11/2022

Attachment K

Coos County Forest Department
Township 29S Range 15W Section 35C Tax Lot 1300



0 500 1,000 ft

750ft Buffer
Subject Property
Adjacent Properties (750 ft)

Coos County Zone District
Exclusive Farm Use
Forest
Minor Estuary and Shorelands
Recreation

This product is for land use planning purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Data Sources: Coos County

Attachment L

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Coos County, Oregon

Attachment M
August 5, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

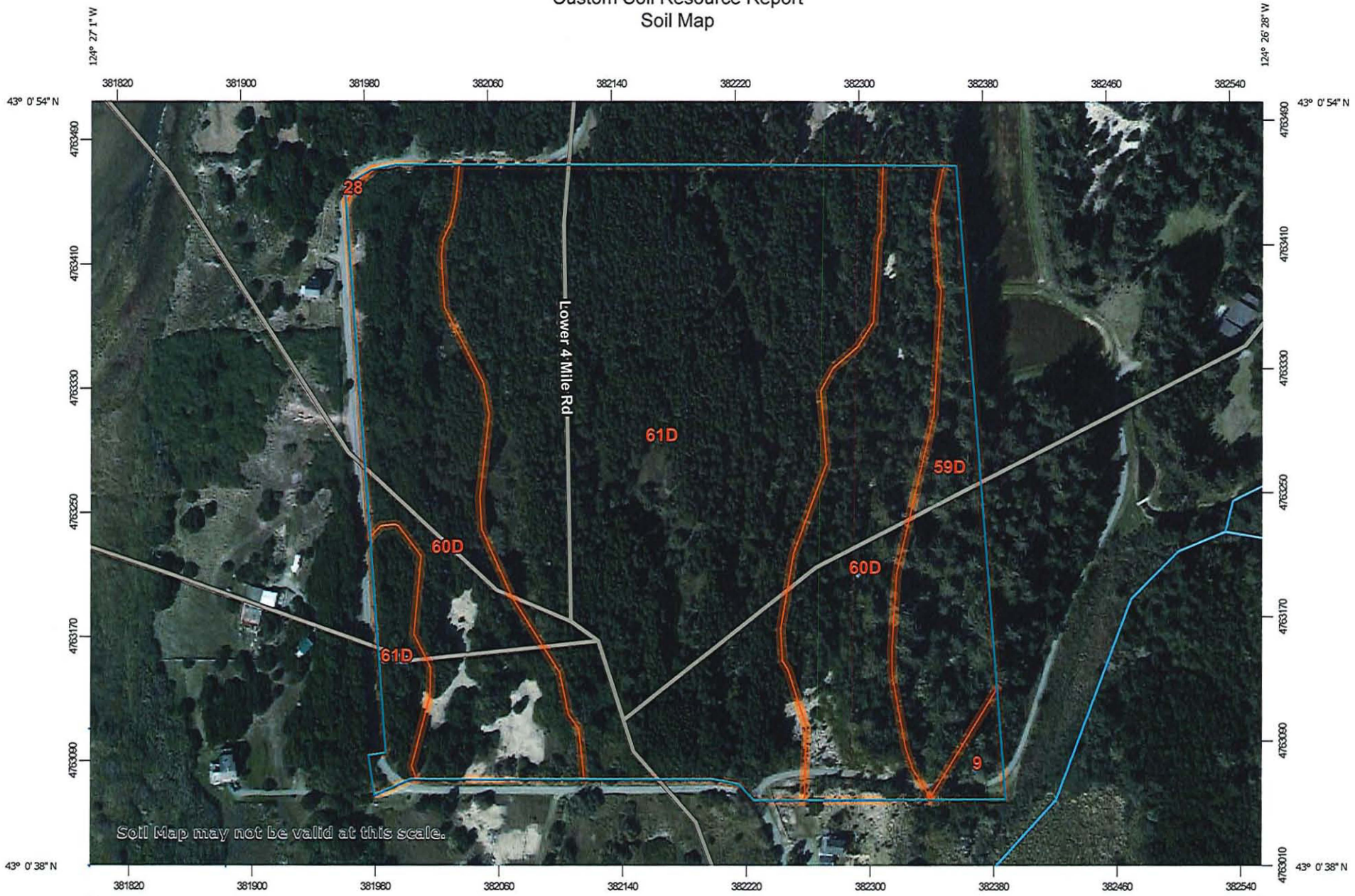
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,470 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.4	1.1%
28	Heceta fine sand	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	22.2	56.2%
Totals for Area of Interest		**39.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Coos County, Oregon

9—Chetco silty clay loam

Map Unit Setting

National map unit symbol: 21rh
Elevation: 0 to 40 feet
Mean annual precipitation: 50 to 80 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chetco and similar soils: 75 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chetco

Setting

Landform: Deltas, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: silty clay loam
H2 - 10 to 24 inches: silty clay
H3 - 24 to 60 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Forage suitability group: Very Poorly Drained (G004AY019OR)
Other vegetative classification: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

Minor Components

Coquille

Percent of map unit: 9 percent
Landform: Flood plains

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

Langlois

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Very Poorly Drained (G004AY019OR)
Hydric soil rating: Yes

28—Heceta fine sand

Map Unit Setting

National map unit symbol: 21n8
Elevation: 0 to 80 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Heceta and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heceta

Setting

Landform: Deflation basins on dunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

H1 - 0 to 4 inches: fine sand
H2 - 4 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Poorly Drained (G004AY018OR)
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

59D—Waldport fine sand, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: 21q8
Elevation: 0 to 120 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Waldport and similar soils: 75 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Waldport

Setting

Landform: Dunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 7 inches: fine sand
H2 - 7 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Heceta

Percent of map unit: 9 percent
Landform: Deflation basins on dunes
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

60D—Waldport-Dune land complex, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: 21qd
Elevation: 0 to 80 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 180 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Waldport and similar soils: 60 percent
Dune land: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Waldport

Setting

Landform: Dunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 4 inches: fine sand
H2 - 4 to 60 inches: fine sand

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Dune Land

Setting

Landform: Dunes on marine terraces
Parent material: Eolian sands

Typical profile

C - 0 to 60 inches: fine sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Heceta

Percent of map unit: 10 percent
Landform: Deflation basins on dunes
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

61D—Waldport-Heceta fine sands, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: 21qf
Elevation: 0 to 80 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Waldport and similar soils: 50 percent
Heceta and similar soils: 30 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Waldport

Setting

Landform: Dunes

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

H1 - 0 to 7 inches: fine sand
H2 - 7 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Heceta

Setting

Landform: Interdunes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

H1 - 0 to 4 inches: fine sand
H2 - 4 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Poorly Drained (G004AY018OR)
Other vegetative classification: Poorly Drained (G004AY018OR)
Hydric soil rating: Yes

Minor Components

Yaquina

Percent of map unit: 7 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Somewhat Poorly Drained (G004AY017OR)
Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

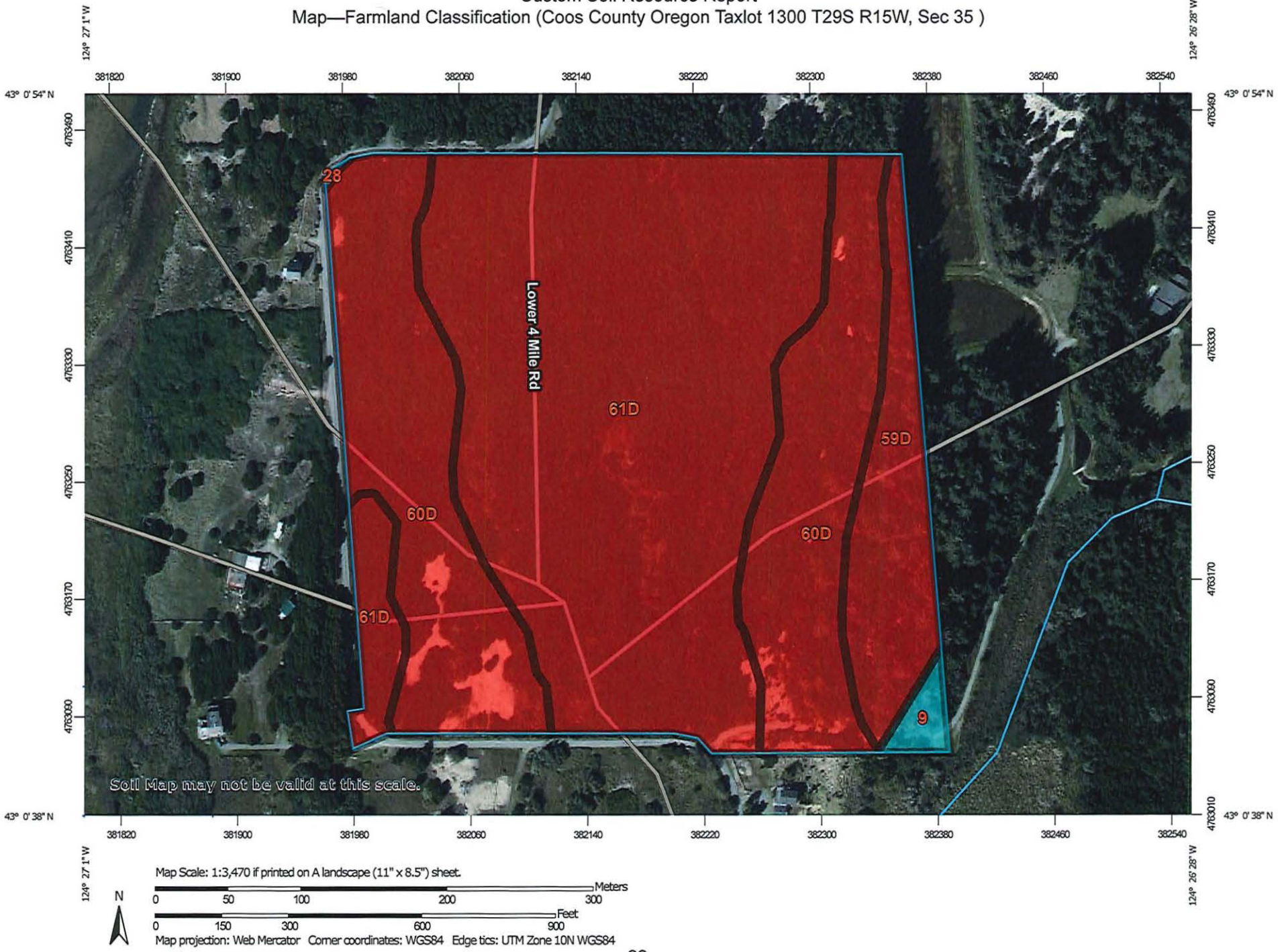
Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report

Map—Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

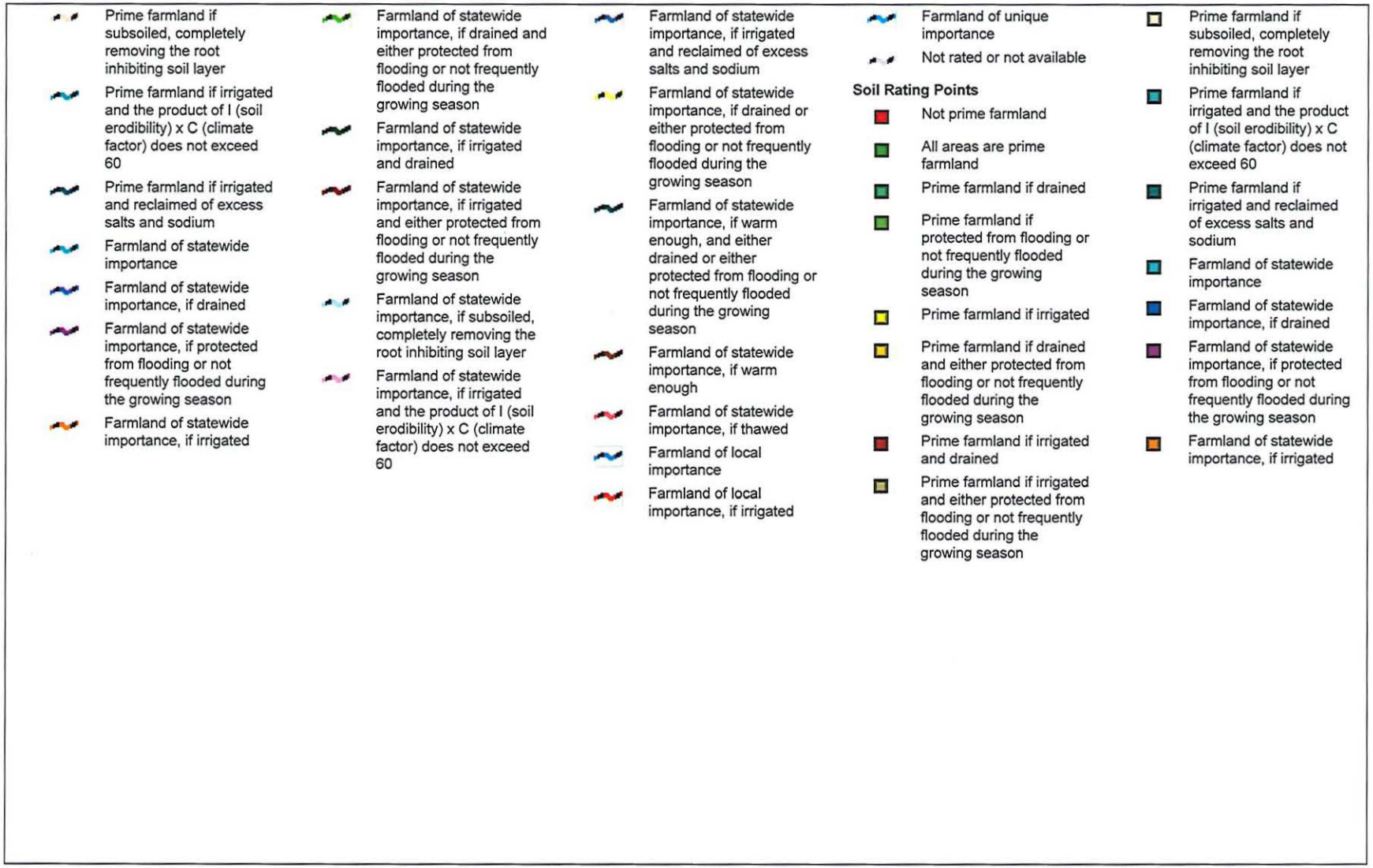
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	Farmland of statewide importance	0.4	1.1%
28	Heceta fine sand	Farmland of statewide importance	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	Not prime farmland	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	Not prime farmland	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	Not prime farmland	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Farmland Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding thematic map. Therefore, the "aggregation method" for any attribute of a map unit is referred to as "No Aggregation Necessary".

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

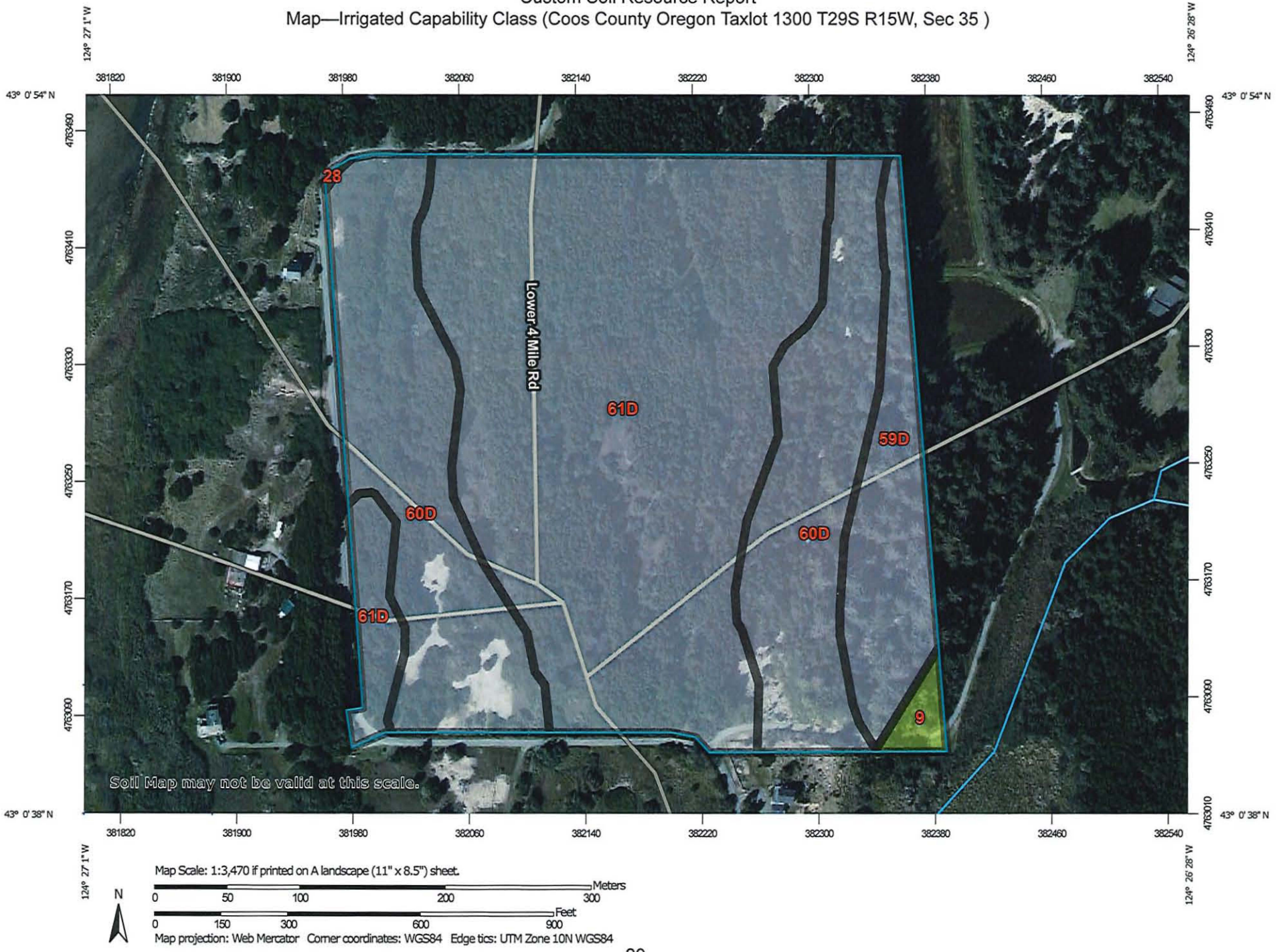
Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report

Map—Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	4	0.4	1.1%
28	Heceta fine sand	4	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Irrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

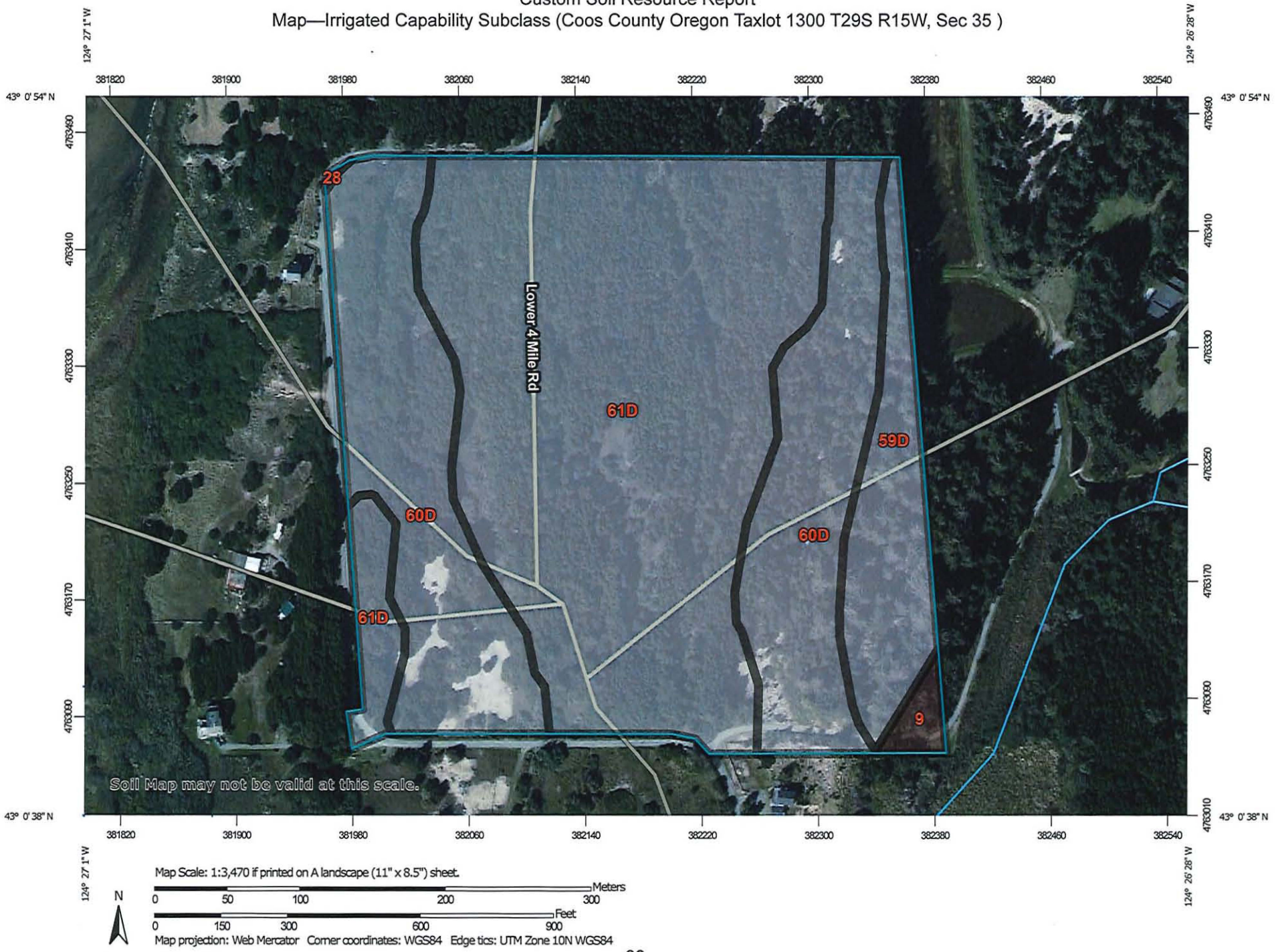
In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability subclasses are soil groups within one capability class. They are designated by adding a small letter, "e," "w," "s," or "c," to the class numeral, for example, 2e. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); "s" shows that the soil is limited mainly because it is shallow, droughty, or stony; and "c," used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by "w," "s," or "c" because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Custom Soil Resource Report

Map—Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Lines
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Points
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

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Table—Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	w	0.4	1.1%
28	Heceta fine sand	w	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Irrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

National Commodity Crop Productivity Index is a method of arraying the soils of the United States for non-irrigated commodity crop production based on their inherent soil properties. This version features a separate index for soybeans. In the past, soybeans and corn were considered together. The rating a soil is assigned is the highest one of four basic crop group indices, which are based on the climate where the crop is typically grown. Cooler climates are represented by winter wheat, moderate climates are represented by corn and soybeans, and warmer climates are represented by cotton. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_050734.pdf)

The interpretation is applicable to both heavily populated and sparsely populated areas. Ratings are for soils in their present condition. The present land use is not considered in the ratings.

Ratings are based on properties and qualities to the depth normally observed during soil mapping (approximately 6 feet). Soil, site, and climate properties that influence the growth of crops are major considerations. Soil productivity is influenced by many soil properties. An ideal soil will store adequate amounts of water to nurture the crop between rains. This soil will have a near-neutral pH, will store nutrients, and lack toxic materials. The soil will have no barriers, either physical or chemical, to root growth. Water and gas transmission through the soil will be sufficient to maintain both water and oxygen at sufficient levels in the root zone. The soil will not be saturated with water during the growing season to the point that root growth is inhibited. The soil will not be subject to excessive flooding or ponding during the growing season. Slope is an important consideration because it affects erosion by water, runoff, and the operation of equipment. The climate must provide adequate water and heat to allow the desired crop to mature. A soil that differs from the ideal in any of these features will have lower inherent productivity for a particular crop. The further a soil differs from ideality in any one or all of the factors that determine inherent productivity, the lower its inherent productivity will be.

The ratings are both verbal and numerical. Rating class terms indicate the estimated productivity which is determined by all of the soil, site, and climatic features that affect crop productivity. "High inherent productivity" indicates that the soil, site, and climate have features that are very favorable for crop production. High yields and low risk of crop failure can be expected if a high level of management is

employed. "Moderately high inherent productivity" indicates that the soil has features that are generally quite favorable for crop production. Good yields and moderately low risk of crop failure can be expected. "Moderate inherent productivity" indicates that the soil has features that are generally favorable for crop production. Good yields and moderate risk of crop failure can be expected. "Moderately low inherent productivity" indicates that the soil has features that are generally not favorable for crop production. Low yields and moderately high risk of crop failure can be expected. "Low inherent productivity" indicates that the soil has one or more features that are unfavorable for crop production. Low yields and high risk of crop failure can be expected.

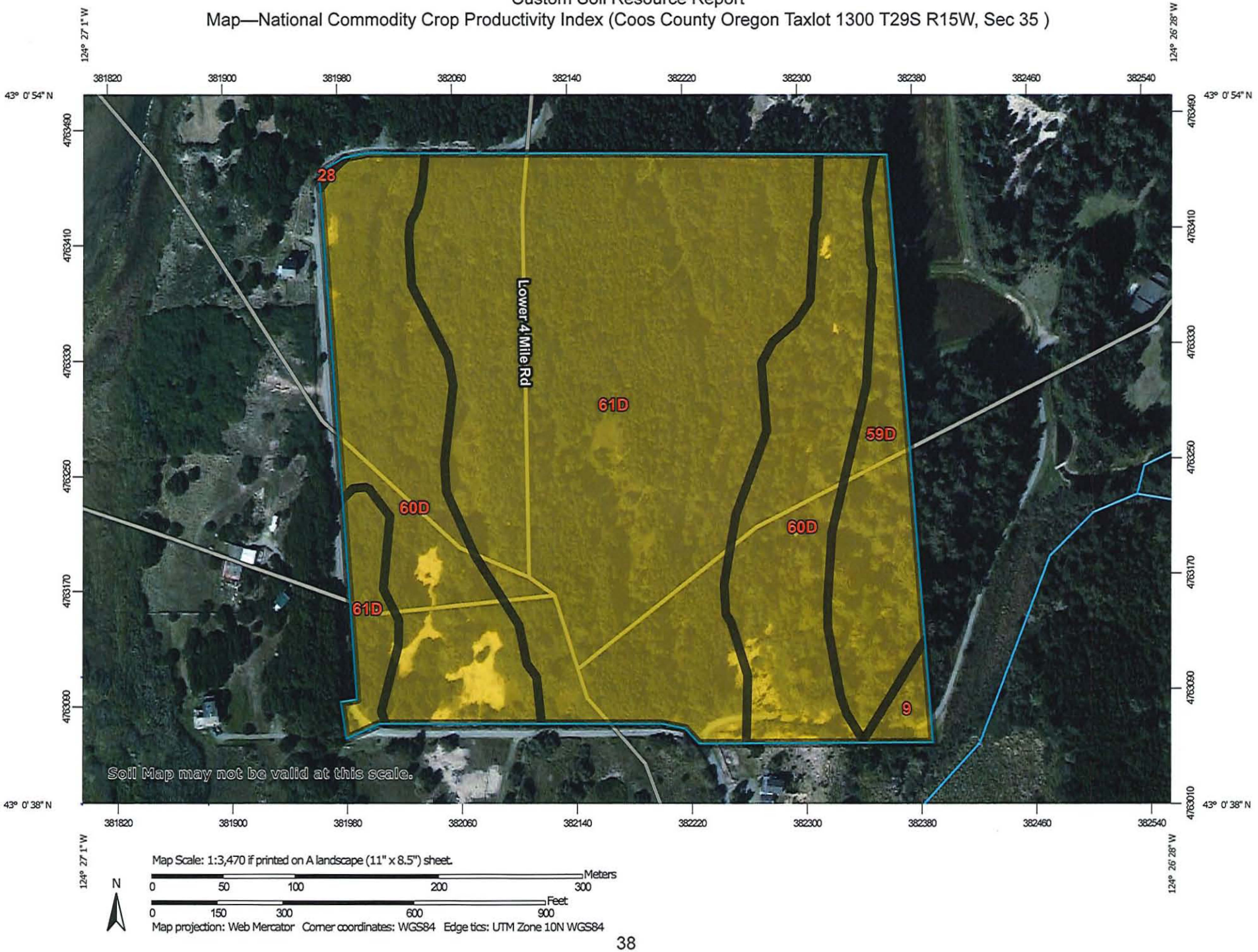
Numerical ratings indicate the overall productivity of the soil. The ratings are shown in decimal fractions ranging from 1.00 to 0.01. They indicate gradations between the point at which the combination of soil, site, and climate features has the greatest positive impact on inherent productivity (1.00) and the point at which the soil features are very unfavorable (0.01).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report

Map—National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Low inherent productivity
- Moderately low inherent productivity
- Moderate inherent productivity
- Moderately high inherent productivity
- High inherent productivity
- Not rated or not available

Soil Rating Lines

- Low inherent productivity
- Moderately low inherent productivity
- Moderate inherent productivity
- Moderately high inherent productivity
- High inherent productivity
- Not rated or not available

Soil Rating Points

- Low inherent productivity
- Moderately low inherent productivity
- Moderate inherent productivity
- Moderately high inherent productivity
- High inherent productivity
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.322			0.4	1.1%
28	Heceta fine sand	0.188			0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	0.284			3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	0.209			13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	0.249			22.2	56.2%
Totals for Area of Interest					**39.6**	**100.0%**

Rating	Acres in AOI	Percent of AOI
0.249	22.2	56.2%
0.209	13.3	33.5%
0.284	3.6	9.2%
0.322	0.4	1.1%
0.188	0.0	0.0%
Totals for Area of Interest	**39.6**	**100.0%**

Rating Options—National Commodity Crop Productivity Index (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

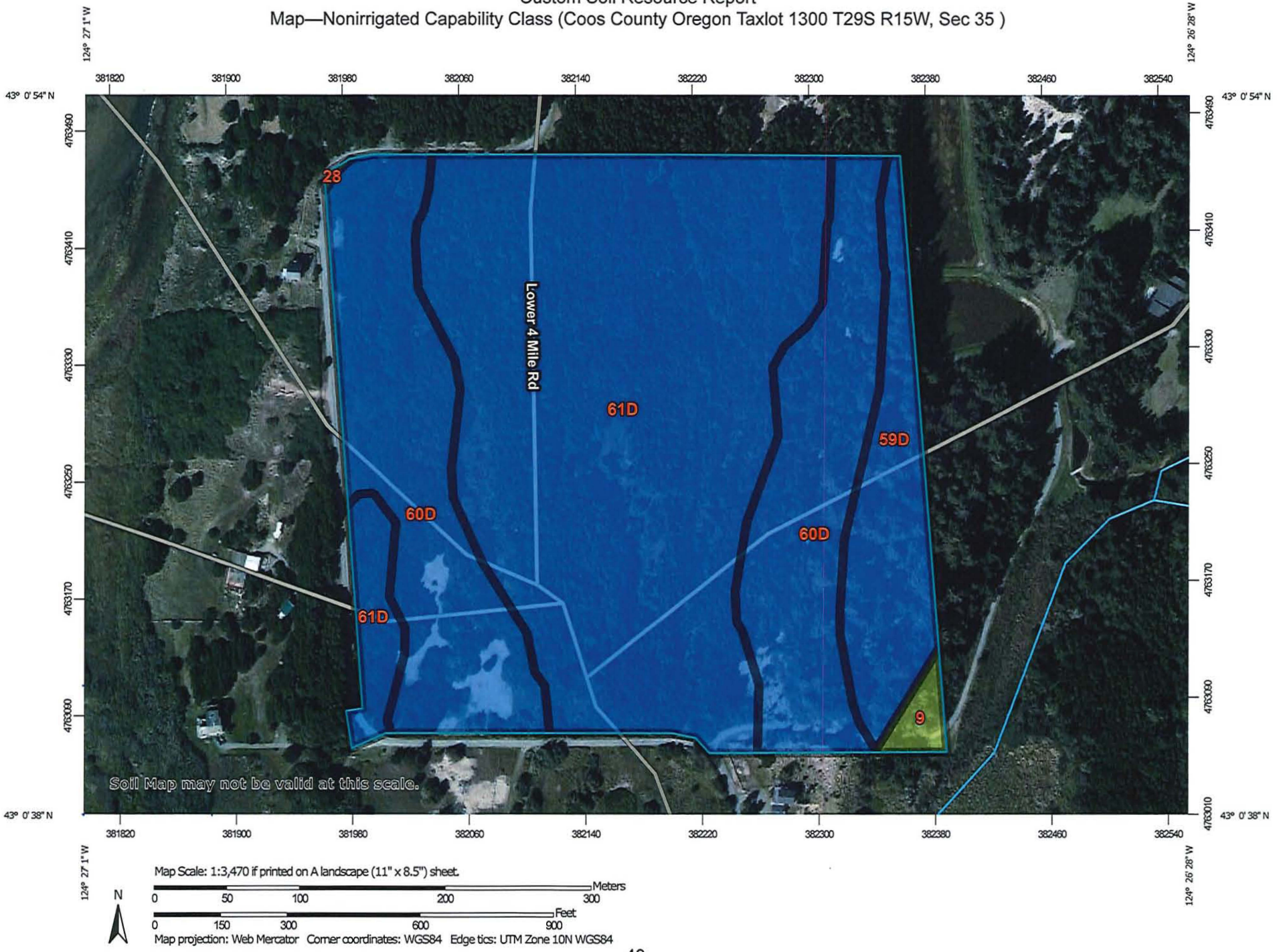
Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report

Map—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	4	0.4	1.1%
28	Heceta fine sand	4	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	7	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	7	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	7	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

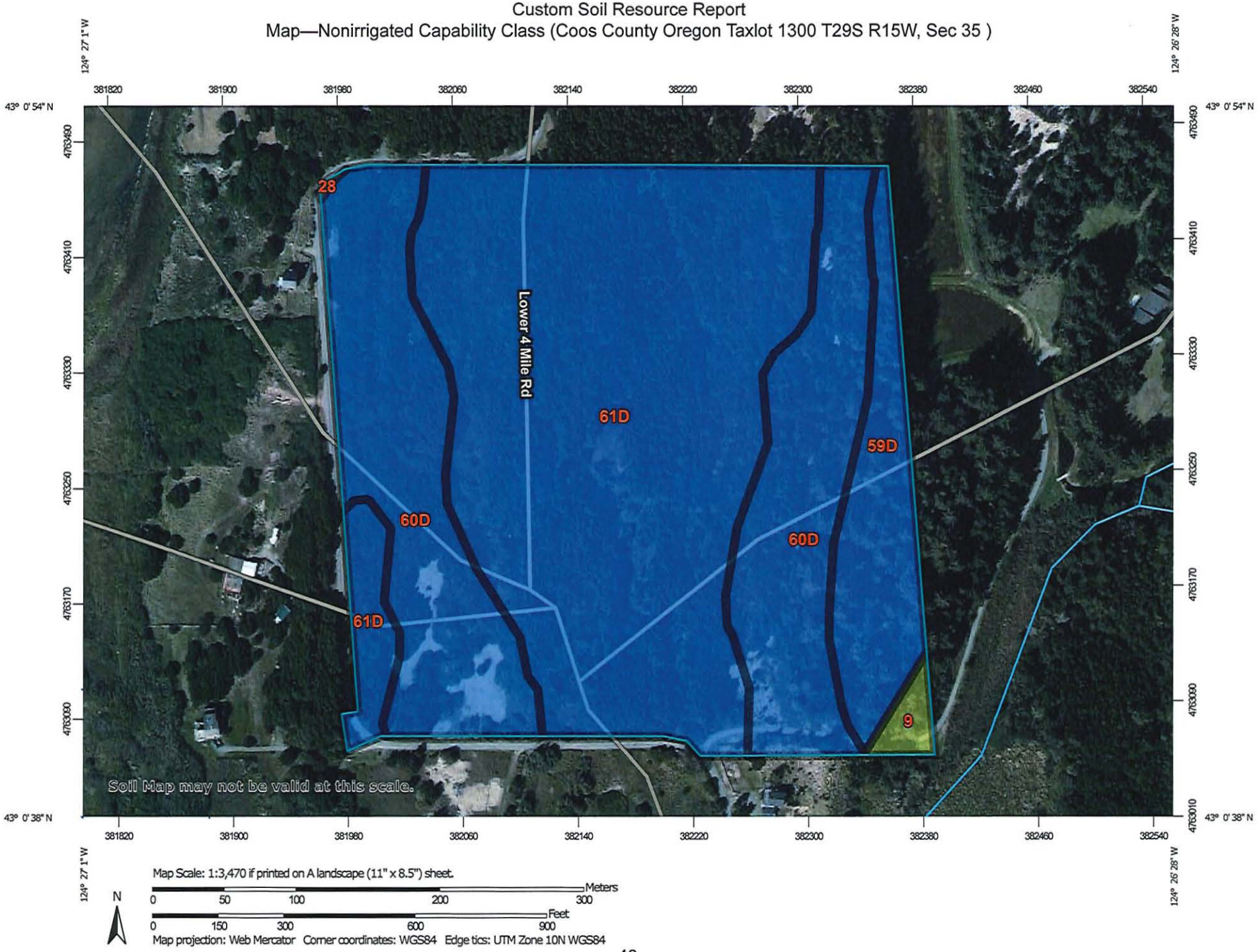
Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report
Map—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	4	0.4	1.1%
28	Heceta fine sand	4	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	7	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	7	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	7	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Nonirrigated Capability Class (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

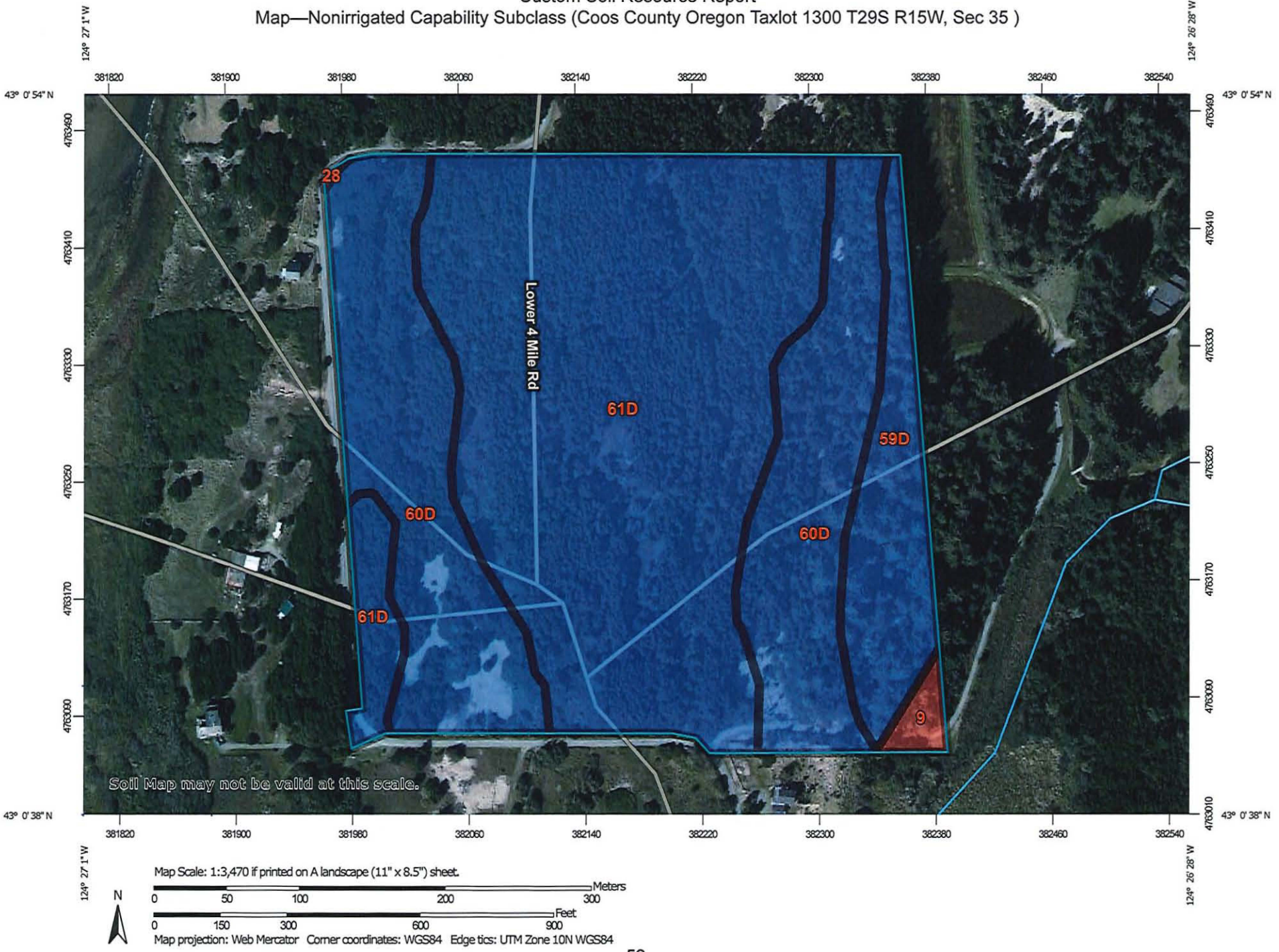
Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability subclasses are soil groups within one capability class. They are designated by adding a small letter, "e," "w," "s," or "c," to the class numeral, for example, 2e. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); "s" shows that the soil is limited mainly because it is shallow, droughty, or stony; and "c," used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by "w," "s," or "c" because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Custom Soil Resource Report
Map—Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Lines
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Soil Rating Points
- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	w	0.4	1.1%
28	Heceta fine sand	w	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	e	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	e	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	e	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Nonirrigated Capability Subclass (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Vegetative Productivity

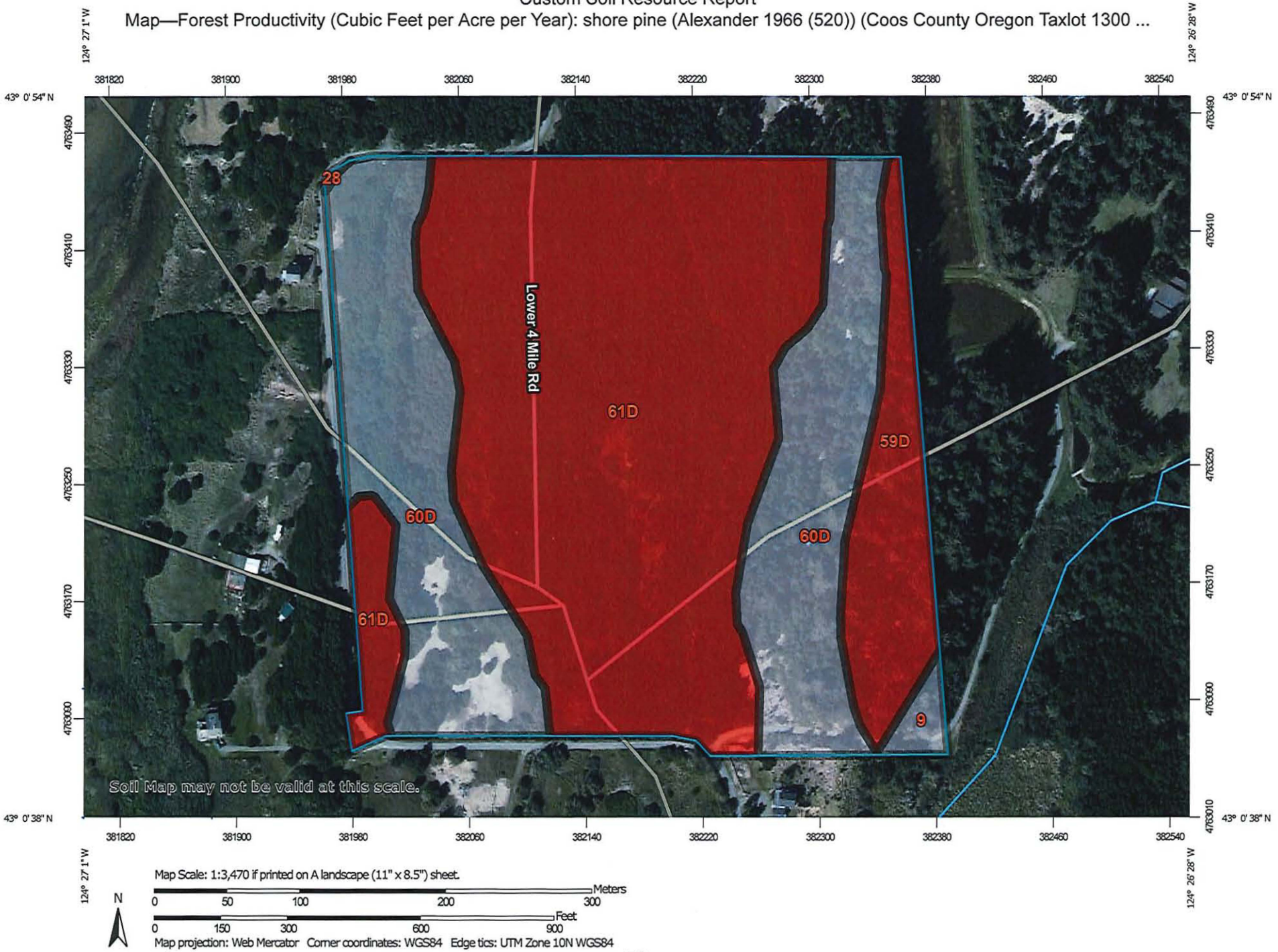
Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Forest productivity is the volume of wood fiber that is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this attribute, only the representative value is used.

Map—Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 ...



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 86.00

Not rated or not available

Soil Rating Lines

= 86.00

Not rated or not available

Soil Rating Points

= 86.00

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam		0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	86.00	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	86.00	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Forest Productivity (Cubic Feet per Acre per Year): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Tree: shore pine

Site Index Base: Alexander 1966 (520)

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned

in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

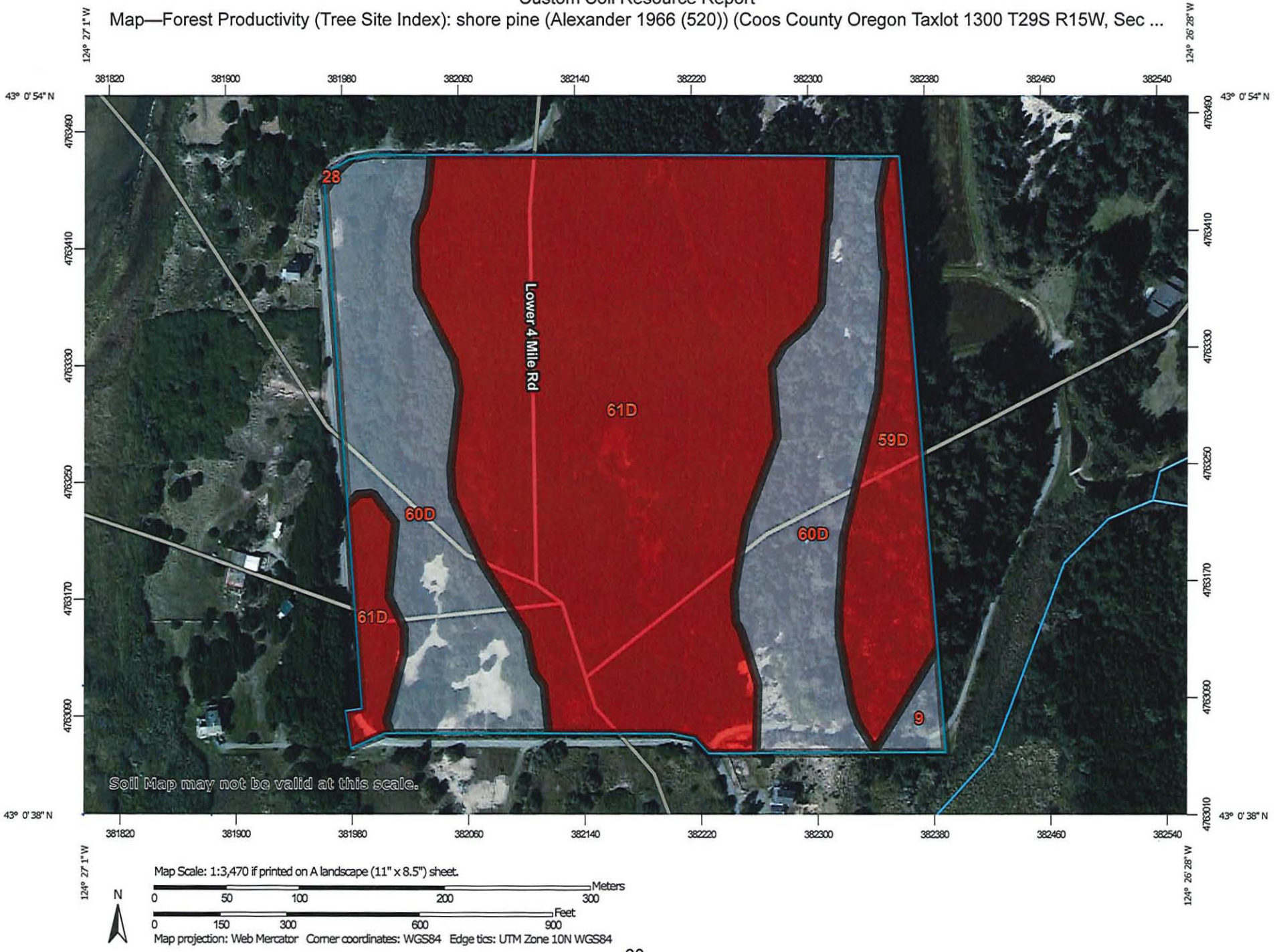
This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The "site index" is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this attribute, only the representative value is used.

Map—Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec ...



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 92

Not rated or not available

Soil Rating Lines

= 92

Not rated or not available

Soil Rating Points

= 92

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating (feet)	Acres in AOI	Percent of AOI
9	Chetco silty clay loam		0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	92	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	92	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Forest Productivity (Tree Site Index): shore pine (Alexander 1966 (520)) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Units of Measure: feet

Tree: shore pine

Site Index Base: Alexander 1966 (520)

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-

break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

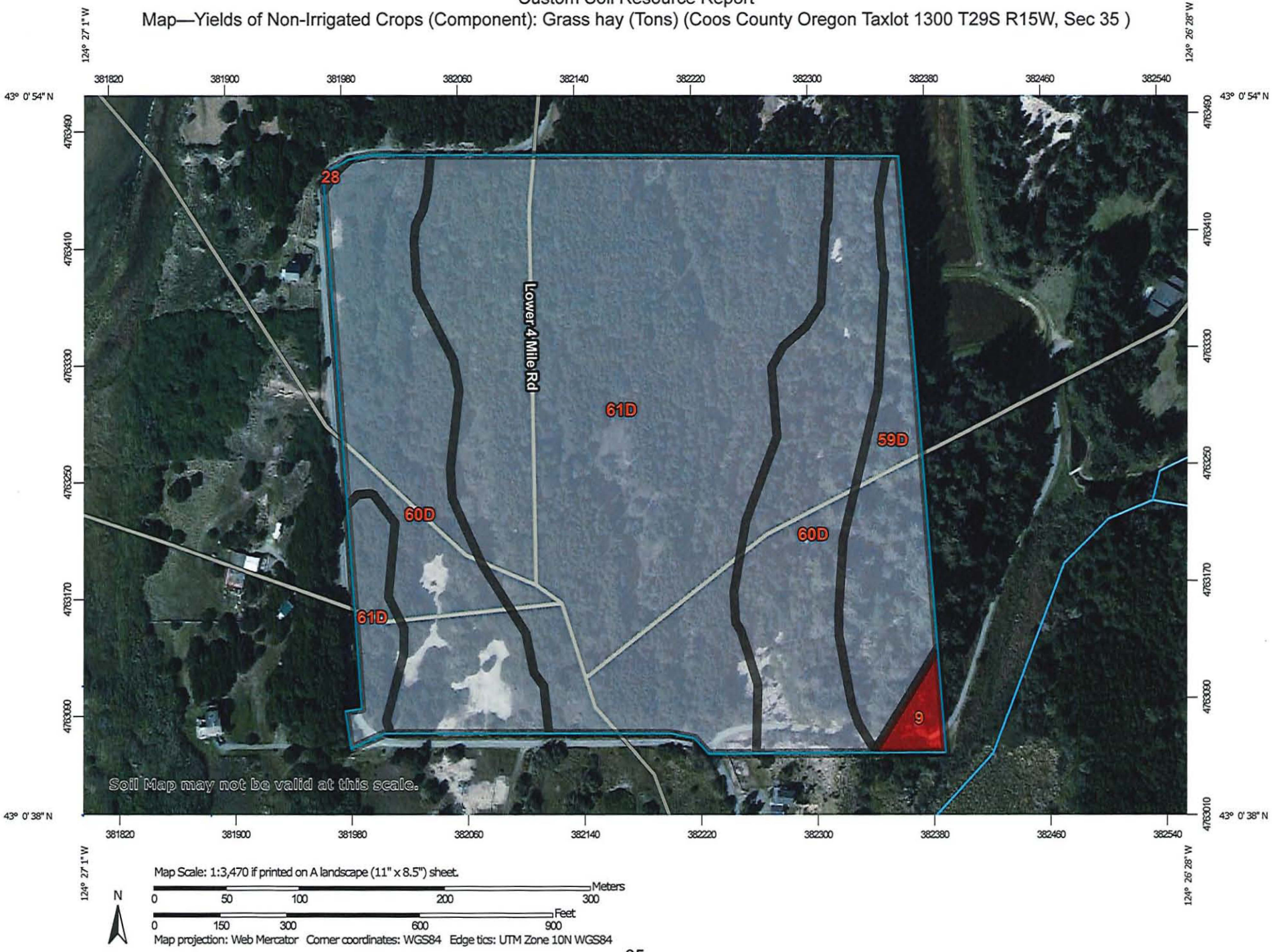
The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of

crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 2.35

Not rated or not available

Soil Rating Lines

= 2.35

Not rated or not available

Soil Rating Points

= 2.35

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	2.35	0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Grass hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Grass hay

Yield Units: Tons

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

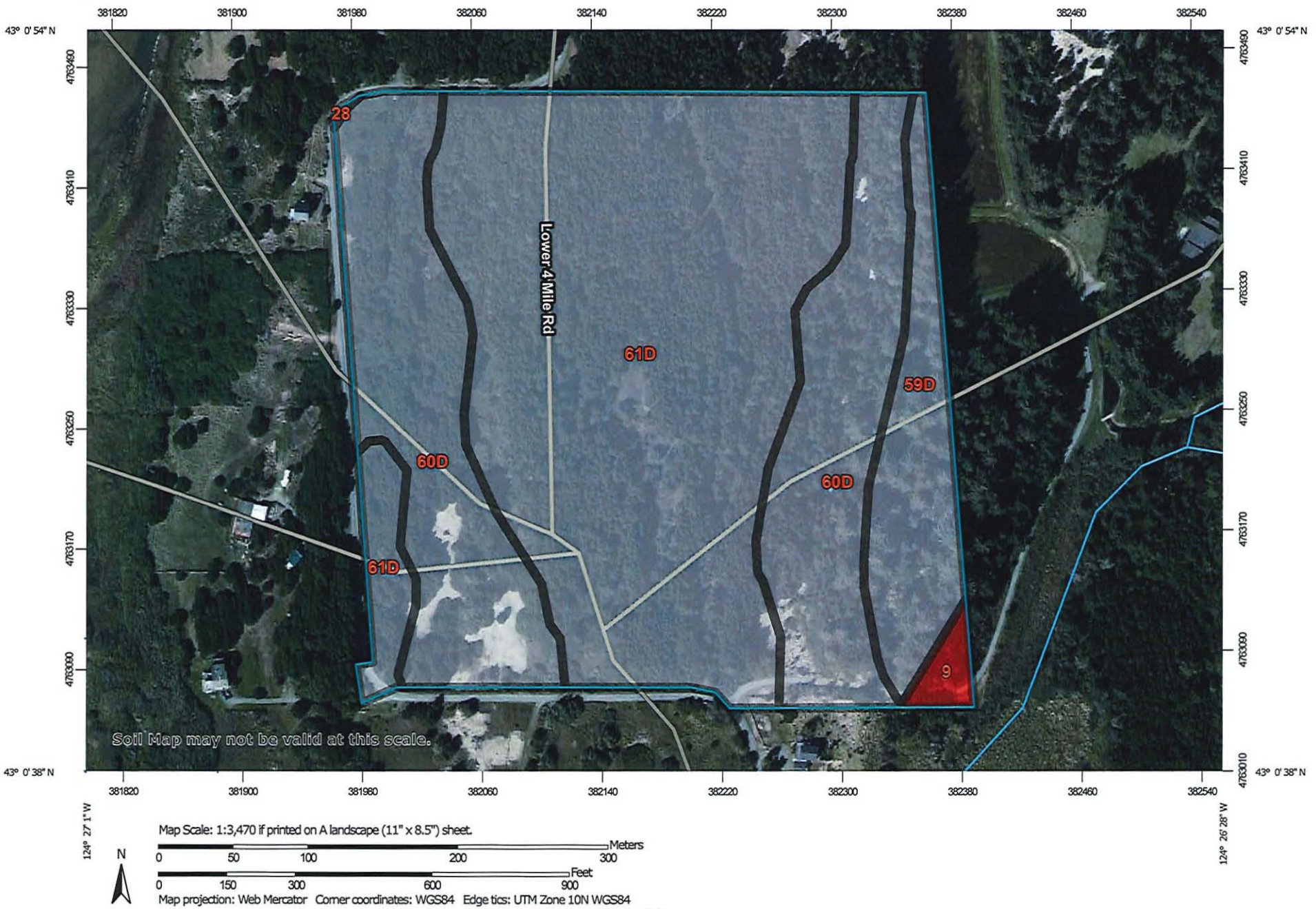
The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 0.52

Not rated or not available

Soil Rating Lines

= 0.52

Not rated or not available

Soil Rating Points

= 0.52

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.52	0.4	1.1%
28	Heceta fine sand		0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes		3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes		13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes		22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Grass-legume hay

Yield Units: Tons

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

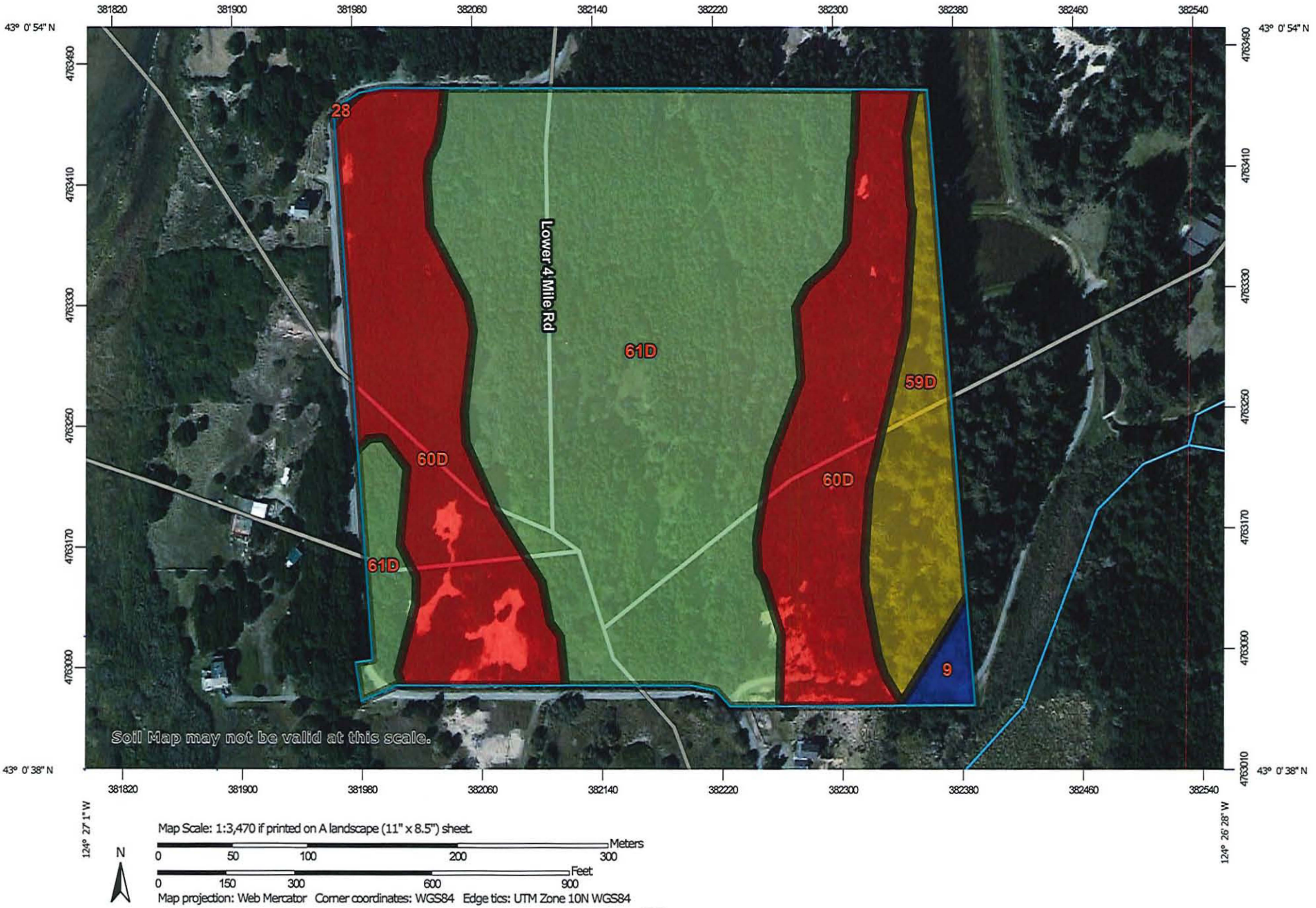
The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Lines
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Points
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

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Table—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	2.51	0.4	1.1%
28	Heceta fine sand	2.00	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	0.21	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	0.20	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	0.93	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Pasture

Yield Units: AUM

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

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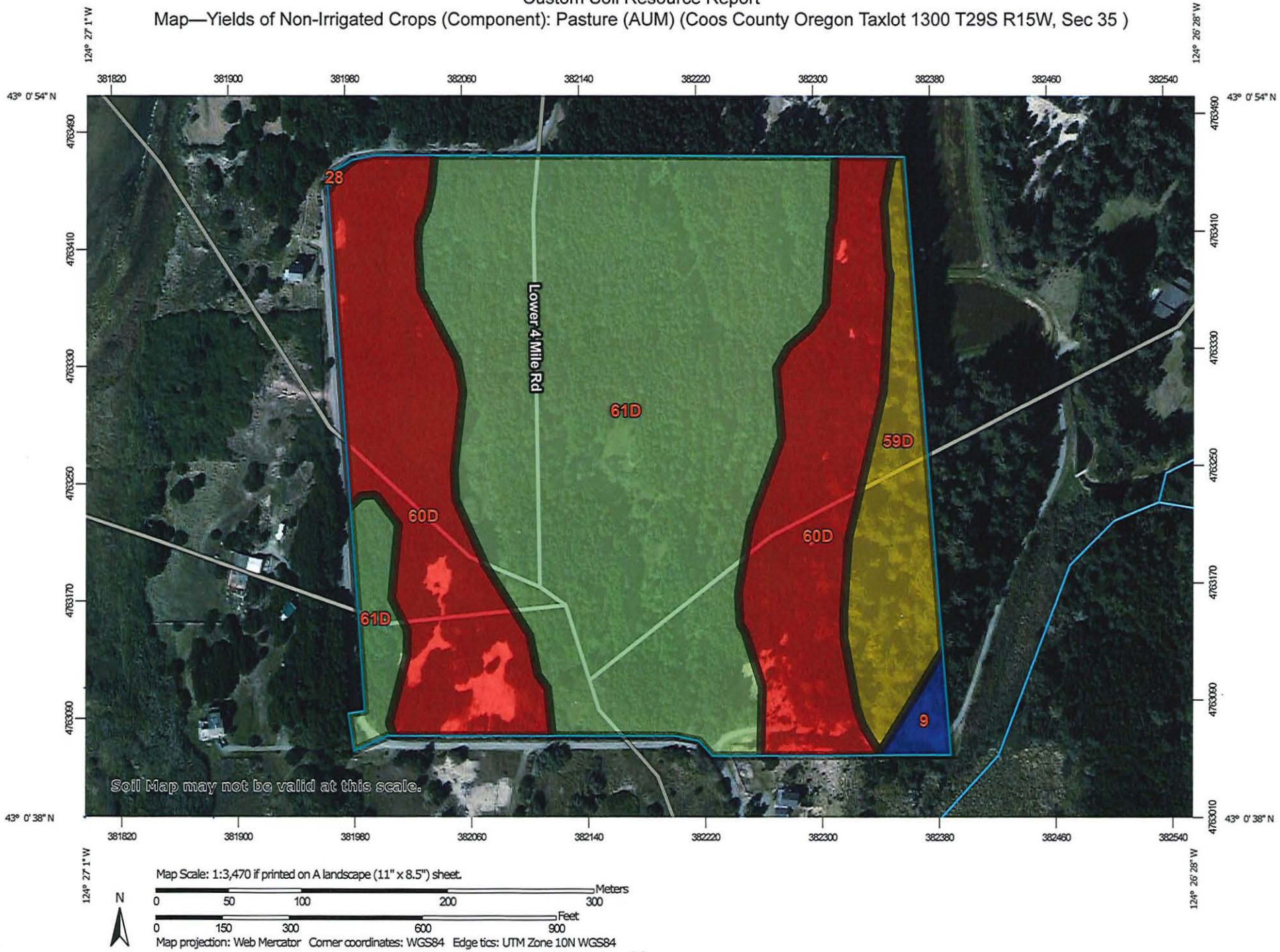
The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Lines
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Soil Rating Points
- <= 0.20
- > 0.20 and <= 0.21
- > 0.21 and <= 0.93
- > 0.93 and <= 2.00
- > 2.00 and <= 2.51
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Coos County, Oregon
Survey Area Data: Version 15, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2019—Oct 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	2.51	0.4	1.1%
28	Heceta fine sand	2.00	0.0	0.0%
59D	Waldport fine sand, 0 to 30 percent slopes	0.21	3.6	9.2%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	0.20	13.3	33.5%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	0.93	22.2	56.2%
Totals for Area of Interest			**39.6**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Component): Pasture (AUM) (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Crop: Pasture

Yield Units: AUM

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: Yes

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Land Capability Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion.

Report—Land Capability Classification (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Land Capability Classification–Coos County, Oregon				
Map unit symbol and name	Pct. of map unit	Component name	Land Capability Subclass	
			Nonirrigated	Irrigated
9—Chetco silty clay loam				
	75	Chetco	4w	4w
	9	Coquille	4w	4w
	8	Langlois	4w	4w
28—Heceta fine sand				
	80	Heceta	4w	4w
59D—Waldport fine sand, 0 to 30 percent slopes				
	75	Waldport	7e	—
	9	Heceta	4w	4w

Land Capability Classification–Coos County, Oregon				
Map unit symbol and name	Pct. of map unit	Component name	Land Capability Subclass	
			Nonirrigated	Irrigated
60D—Waldport-Dune land complex, 12 to 30 percent slopes				
	60	Waldport	7e	—
	30	Dune land	8	—
	10	Heceta	4w	4w
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes				
	50	Waldport	7e	—
	30	Heceta	4w	4w
	7	Yaquina	4w	—

Vegetative Productivity

This folder contains a collection of tabular reports that present vegetative productivity data. The reports (tables) include all selected map units and components for each map unit. Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Forestland Productivity with Site Index Base (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

This table is designed to assist forestland owners or managers plan the use of soils for wood crops. It provides the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume growth rate number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. *Common trees* are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *Base Age* is the age of trees in years on which the site index is based. "TA" indicates total age. "BH" indicates breast height age. "N/A" indicates that base age is not applicable.

The *Site Index Curve Number* is listed in the National Register of Site Index Curves. It identifies the site index curve used to determine the site index.

The *Volume Growth Rate* is the maximum wood volume growth rate likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	**Common trees**	**Site Index**	**Base Age**	**Site Index Curve Number**	**Volume Growth Rate (CMAI)**
		ft	*yrs*		*cu ft/ac/yr*
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

Forestland Productivity with Site Index Base (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

This table is designed to assist forestland owners or managers plan the use of soils for wood crops. It provides the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume growth rate number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. *Common trees* are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

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The *Site Index Curve Number* is listed in the National Register of Site Index Curves. It identifies the site index curve used to determine the site index.

The *Volume Growth Rate* is the maximum wood volume growth rate likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	**Common trees**	**Site Index**	**Base Age**	**Site Index Curve Number**	**Volume Growth Rate (CMAI)**
		ft	*yrs*		*cu ft/ac/yr*
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

Forestland Productivity (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

This table can help forestland owners or managers plan the use of soils for wood crops. It shows the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Report—Forestland Productivity (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Forestland Productivity–Coos County, Oregon				
Map unit symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site Index	Volume of wood fiber	
			Cu ft/ac/yr	
9—Chetco silty clay loam				
Chetco	—	—	—	—
Coquille	—	—	—	—
Langlois	—	—	—	—
28—Heceta fine sand				
Heceta	—	—	—	—

Forestland Productivity–Coos County, Oregon				
Map unit symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site Index	Volume of wood fiber	
			Cu ft/ac/yr	
59D—Waldport fine sand, 0 to 30 percent slopes				
Waldport	Shore pine	92	86.00	Shore pine, Sitka spruce
	Sitka spruce	—	—	
	Western hemlock	—	—	
Heceta	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes				
Waldport	—	—	—	—
Dune land	—	—	—	—
Heceta	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes				
Waldport	Shore pine	92	86.00	Shore pine, Sitka spruce
	Sitka spruce	—	—	
	Western hemlock	—	—	
Heceta	—	—	—	—
Yaquina	Shore pine	—	—	Sitka spruce, Western hemlock
	Sitka spruce	85	100.00	

Irrigated and Nonirrigated Yields by Map Unit Component (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The average yields per acre that can be expected of the principal crops under a high level of management are shown in this table. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

If yields of irrigated crops are given, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

Reference:
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

Irrigated and Nonirrigated Yields by Map Unit Component–Coos County, Oregon										
Map symbol and soil name	Land capability		Cranberries		Grass hay		Grass-legume hay		Pasture	
	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated
			Tons		*Tons*		*Tons*		*AUM*	
9—Chetco silty clay loam										
Chetco	4w	4w	—	—	3.50	2.00	—	—	6.0	1.5
Coquille	4w	4w	—	—	3.50	2.00	—	—	10.0	6.0
Langlois	4w	4w	—	—	10.00	6.00	—	6.00	12.0	8.0
28—Heceta fine sand										
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
59D—Waldport fine sand, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Dune land	—	8	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
Yaquina	—	4w	—	—	—	—	—	—	—	3.0

Irrigated Yields by Map Unit Component (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The average yields per acre that can be expected of the principal crops under a high level of management are shown in this table. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

If yields of irrigated crops are given, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

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- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

Reference:
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

Report—Irrigated Yields by Map Unit Component (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

Irrigated Yields by Map Unit Component–Coos County, Oregon					
Map symbol and soil name	Land capability	Cranberries	Grass hay	Grass-legume hay	Pasture
		Tons	*Tons*	*Tons*	*AUM*
9—Chetco silty clay loam					
Chetco	4w	—	3.50	—	6.0
Coquille	4w	—	3.50	—	10.0
Langlois	4w	—	10.00	—	12.0
28—Heceta fine sand					
Heceta	4w	5.00	—	—	4.0
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	—	—	—	—	—
Heceta	4w	5.00	—	—	4.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	4w	5.00	—	—	4.0
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	—	—	—	—	—
Heceta	4w	5.00	—	—	4.0
Yaquina	—	—	—	—	—

Nonirrigated Yields by Map Unit Component (Coos County Oregon Taxlot 1300 T29S R15W, Sec 35)

The average yields per acre that can be expected of the principal crops under a high level of management are shown in this table. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

If yields of irrigated crops are given, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

The land capability classification of map units in the survey area is shown in this table. This classification shows, in a general way, the suitability of soils for most kinds of field crops (United States Department of Agriculture, Soil Conservation Service, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
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- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

Reference:
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Map symbol and soil name	**Land capability**	**Cranberries**	**Grass hay**	**Grass-legume hay**	**Pasture**
		Tons	*Tons*	*Tons*	*AUM*
9—Chetco silty clay loam					
Chetco	4w	—	2.00	—	1.5
Coquille	4w	—	2.00	—	6.0
Langlois	4w	—	6.00	6.00	8.0
28—Heceta fine sand					
Heceta	4w	—	—	—	2.0
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	7e	—	—	—	—
Heceta	4w	—	—	—	2.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	7e	—	—	—	—
Dune land	8	—	—	—	—
Heceta	4w	—	—	—	2.0

Nonirrigated Yields by Map Unit Component–Coos County, Oregon					
Map symbol and soil name	**Land capability**	**Cranberries**	**Grass hay**	**Grass-legume hay**	**Pasture**
		Tons	*Tons*	*Tons*	*AUM*
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	7e	—	—	—	—
Heceta	4w	—	—	—	2.0
Yaquina	4w	—	—	—	3.0

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the following National Soil Survey Handbook link: "National Soil Survey Handbook."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

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Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology)

from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained.* These classes are defined in the "Soil Survey Manual."

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left

behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2
Low: 0.2 to 0.4
Moderately low: 0.4 to 0.75
Moderate: 0.75 to 1.25
Moderately high: 1.25 to 1.75
High: 1.75 to 2.5
Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can

occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or "washed out" from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and

promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where "Rock outcrop" is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which "severely eroded," "very severely eroded," or "gullied" is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1
Moderate: 13-30:1
Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated
Prismatic: Vertically elongated and having flat tops
Columnar: Vertically elongated and having rounded tops
Angular blocky: Having faces that intersect at sharp angles (planes)
Subangular blocky: Having subrounded and planar faces (no sharp angles)
Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand
Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field

generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

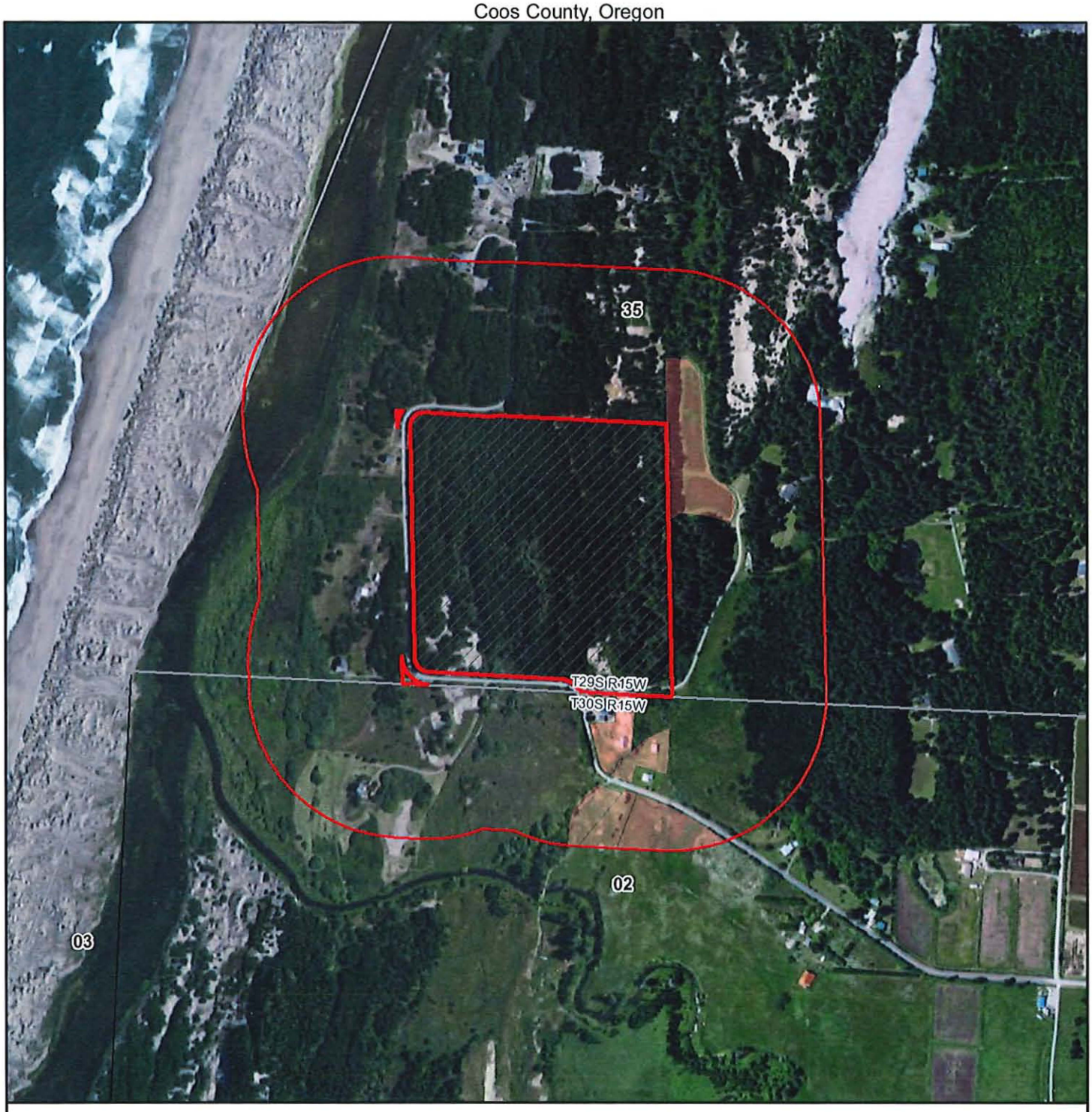
The uprooting and tipping over of trees by the wind.

Farm Unlimited
P.O. Box 761
North Bend, OR 97459

Subject Property
Visual Analysis of Land Use

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Subject Property
750' Buffer Polygon - 133 acres
Observed Farm/Forest Land Use
within 750' of subject property - 9.5 acres
(Approximately 7% of Buffer Area)

N
1 " = 703 ft.
Created: 2/7/2022
by Barbara McIntosh

Parcel data derived from Coos County Assessors
Parcel dataset dated April 2021
Ortholmagery: 2020 NAIP

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Attachment N

NRCS Excerpt

Permeability of this Bullards soil is moderate. Available water capacity is about 4.0 to 5.5 inches. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is severe.

This unit is used mainly for timber production and wildlife habitat. It is also used for recreation.

This unit is suited to the production of Douglas fir. Among the other species that grow on this unit are Sitka spruce, western hemlock, western redcedar, shore pine, and red alder. The understory vegetation is mainly evergreen huckleberry, creambush oceanspray, salal, Pacific rhododendron, cascara, and western swordfern.

On the basis of a 100-year site. curve, the mean site index for Douglas fir is 132. At the culmination of the mean annual increment (CMAI), the production of 60-year-old Douglas fir trees 1.5 inches in diameter or more at breast height is 133 cubic feet per acre per year. On the basis of a 50-year site curve, the mean site index for Douglas fir is 105. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this unit are steepness of slope, the hazard of erosion, the hazard of windthrow, and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. Highlead or other logging systems that fully or partially suspend logs damage the soil less and generally are less costly than tractor systems.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Cut and fill areas are subject to erosion unless treated. Seeding, mulching, benching, and compacting the soil can reduce erosion. Logging roads require suitable surfacing for year-round use. Rock for road construction is not readily available in this unit. Steep yarding paths, skid trails, and firebreaks are subject to rilling and gullying unless they are provided with adequate water bars or are protected by plant cover, or both.

Windthrow is a hazard when the soil is wet and winds are strong. When openings are made in the canopy, invading brushy plants can delay natural reforestation. Undesirable plants reduce natural or artificial reforestation unless intensive site preparation and maintenance are provided. Reforestation can be accomplished by planting Douglas fir, Sitka spruce, and western hemlock seedlings.

If this unit is used for recreational development, the main limitations are slope and the hazard of erosion. Slope limits the use of areas of this unit mainly to a few paths and trails, which should extend across the slope.

The risk of erosion is increased if the soil is left exposed during site development. Revegetating disturbed areas around construction sites as soon as feasible helps to control erosion.

This map unit is in capability subclass VIe.

9-Chetco silty clay loam. This deep, very poorly drained soil is on flood plains and deltas. It formed in alluvium. Slope is 0 to 3 percent. The native vegetation is mainly conifers, shrubs, forbs, and hardwoods. Elevation is 0 to 40 feet. The average annual precipitation is 60 to 80 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown silty clay loam 10 inches thick. The subsoil is mottled, dark gray silty clay 14 inches thick. The substratum to a depth of 60 inches or more is mottled, dark gray clay.

Included in this unit are small areas of Coquille and Nestucca soils. Also included are small areas of Langlois soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Chetco soil is very slow. Available water capacity is about 5.0 to 8.5 inches. Effective rooting depth is 60 inches or more for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is very slow, and the hazard of water erosion is slight. This soil is subject to frequent periods of flooding during prolonged periods of rainfall. Channeling and deposition are common along streambanks. The water table fluctuates between the surface and a depth of 18 inches in October to May.

This unit is used mainly for hay and pasture and wildlife habitat.

The, vegetation in areas not cultivated is mainly Sitka spruce, western redcedar, western hemlock, and red alder. The understory vegetation is mainly western swordfern, evergreen huckleberry, slough sedge, soft rush, and skunkcabbage.

If this unit is used for hay and pasture, the main limitations are the susceptibility of the surface layer to compaction, wetness, droughtiness in summer, the hazard of flooding, and, for the curing of hay, high humidity. Grazing when the soil is moist results in compaction of the surface layer and poor tilth. Compaction limits the movement of air and water in the soil and restricts the growth of roots; it can seriously reduce the productivity of the soil. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

Drainage and irrigation are needed for maximum

Attachment O

production of crops. Water on or near the surface can be removed by use of open ditches and tide gates. Supplemental irrigation is needed in summer.

Wetness and flooding restrict grazing in winter. Protection from flooding during the growing season can be provided only by the use of extensive dikes. The choice of plants is limited to those that withstand periodic inundation. High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay. To improve the quality of grass for hay, increase the stocking rate in spring. Excess forage in spring can be used as silage.

Fertilizer is needed to ensure optimum growth of grasses. Grasses respond to nitrogen. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Rotation grazing increases the production of forage and helps to control weeds. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth.

This map unit is in capability subclass IVw.

10A-Chismore silt loam, 0 to 3 percent slopes. This deep, moderately well drained soil is on terraces and fans. It formed in alluvium. The native vegetation is mainly conifers, shrubs, forbs, and hardwoods. Elevation is 100 to 380 feet. The average annual precipitation is 60 to 80 inches, the average annual air temperature is 50 to 53 degrees F, and the average frost-free period is 180 to 220 days.

Typically, the surface layer is very dark grayish brown silt loam 14 inches thick. The upper 6 inches of the subsoil is mottled, dark brown silt loam, and the lower 40 inches or more is mottled, brown, dark yellowish brown, and yellowish brown silty clay loam.

Included in this unit are small areas of Dement soils and Chismore soils that have slopes of more than 3 percent. Also included are small areas of poorly drained soils and well drained soils that have a yellowish brown silty clay loam subsoil. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Chismore soil is slow. Available water capacity is about 3.5 to 7.5 inches. Effective rooting depth is 60 inches or more for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. The water table is at a depth of 12 to 36 inches from November to March. Runoff is slow, and the hazard of water erosion is slight.

Most areas of this unit are used for hay and pasture. A few areas are used for homesite development.

The vegetation in areas not cultivated is mainly Douglas fir, western hemlock, western redcedar, red alder, and Oregon myrtle. The understory vegetation is mainly evergreen huckleberry, Pacific rhododendron, salmonberry, and western swordfern.

If this unit is used for hay and pasture, the main limitations are the susceptibility of the surface layer to compaction, droughtiness in summer, and, for the curing of hay, high humidity. Grazing when the soil is moist results in compaction of the surface layer and poor tilth. Soil compaction limits the movement of air and water in the soil and restricts the growth of roots. Compaction can seriously reduce the productivity of the soil. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

Supplemental irrigation is needed for maximum production. Sprinkler irrigation is a suitable method of applying water. Use of this method permits the even, controlled application of water. Water should be applied in amounts sufficient to wet the root zone but small enough to minimize the leaching of plant nutrients. Applications of water should be adjusted to the available water capacity, the water intake rate, and the crop needs.

High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay. To maintain the quality of grass for hay, increase the stocking rate in spring. Excess forage in spring can be used as silage.

Fertilizer is needed to ensure optimum growth of grasses and legumes. Grasses respond to nitrogen, and legumes respond to sulfur and phosphorus. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth.

If this unit is used for homesite development, the main limitations are the slow permeability of the soil and wetness. Septic tank absorption fields may not function properly during rainy periods. The limitation of slow permeability can be overcome by increasing the size of the septic tank absorption field. Using interceptor ditches that divert subsurface water improves the operation of septic tank absorption fields. Drains are needed around footings if dwellings with basements are constructed on this unit. In summer, supplemental irrigation is needed for lawn grasses and vegetable gardens.

This map unit is in capability subclass IIIw.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. Only the soils suited to crops and pasture are listed]

Soil name and map symbol	Pasture		Grass hay		Grass-legume hay		Cranberries	
	N	I	N	I	N	I	N	I
	AUM*	AUM*	Tons	Tons	Tons	Tons	Tons	Tons
1B, 1C---------- Bandon	3.0	10	---	---	---	---	---	8
1D---------- Bandon	3.0	---	---	---	---	---	---	---
2C---------- Bandon-Blacklock	---	---	---	---	---	---	---	8
5A, 5B---------- Blacklock	---	---	---	---	---	---	---	8
8B, 8C---------- Bullards	4.0	10	---	---	2.0	4.0	---	8
8D---------- Bullards	4.0	---	---	---	---	---	---	---
9---------- Chetco	1.5	6	2	3.5	---	---	---	---
10A, 10B---------- Chismore	6.0	12	---	---	2.5	4.5	---	---
10C---------- Chismore	6.0	---	---	---	---	---	---	---
11---------- Clatsop	1.5	---	---	---	---	---	---	---
12---------- Coquille	6.0	10	2	3.5	---	---	---	---
13C---------- Dement	7.0	---	---	---	---	---	---	---
13D---------- Dement	6.0	---	---	---	---	---	---	---
13E---------- Dement	5.0	---	---	---	---	---	---	---
17B---------- Ellertson	8.0	15	---	---	---	4.5	---	---
18E---------- Etelka	2.0	---	---	---	---	---	---	---
20D---------- Etelka-Rinearson-Orford	3.0	---	---	---	---	---	---	---
20E---------- Etelka-Rinearson-Orford	2.0	---	---	---	---	---	---	---

Forest Productivity/Suitability Report

Coos County Forestry Department

Township 29 South, Range 15 West, Section 35C
Tax Lot 1300

Client:
Coos County Forestry Department
250 N. Baxter
Coquille, OR 97423

Consultant:
Farm Unlimited
PO Box 761
North Bend, OR 97459
www.farm-unlimited.com

February 22, 2022

Attachment P

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EXHIBIT 1 – ODF Land Use Planning Notes Number 3 Methodology and Assessment
EXHIBIT 2 – Pictures
EXHIBIT 3 – Subject Property Hillshade and Contour Map
EXHIBIT 4 – NRCS Soils Type Map with Forest Productivity Ratings
EXHIBIT 5 – Excerpt from Alexander Site Index Table for Lodgepole Pine
EXHIBIT 6 – Oregon Department of Revenue Forestland Productivity Class Map

1. Subject Property:

The subject property is located in Township 29 South, Range 15 West, Section 35C, Tax Lot 1300, Coos County, Oregon, Willamette Meridian. The property is owned by Coos County, a political subdivision of the State of Oregon.

2. Scope of Report:

This report was commissioned to determine the suitability of the subject property for the production of commercial timber species as set forth in Oregon Department of Forestry, Land Use Planning Notes Number 3, April 1998 (Updated for Clarity April 2010) and OAR 660, Division 6, Goal 4 (Forest Lands).

3. Definitions:

a. Commercial (OAR 629-600-0100(12)): of or pertaining to the exchange or buying and selling of commodities or services. This includes any activity undertaken with the intent of generating income or profit; any activity in which a landowner, operator or timber owner receives payment from a purchaser of forest products; any activity in which an operator or timber owner receives payment or barter from a landowner for services that require notification under OAR 629-605-0140; or any activity in which the landowner, operator, or timber owner barters or exchanges forest products for goods or services. This does not include firewood cutting or timber milling for personal use.

b. Commercial Forest Uses: Forest uses that are considered commercial.

c. Commercial Tree Species (OAR 660-006-0005(2)): Trees recognized for commercial production under rules adopted by the State Board of Forestry pursuant to ORS 527.715.

d. Diameter Breast Height (DBH) (OAR 660-600-005(17)): Diameter of a tree inclusive of bark measured four and one-half feet above the ground on the uphill side of the tree.

e. Forest Lands: (OAR 660-006-0005(7)) Those lands acknowledged as forest lands, or, in the case of plan amendment, forestlands shall include:

    i. Lands that are suitable for commercial forest uses, including adjacent or nearby lands which are necessary to permit forest operations or practices.

    ii. Other forestlands that maintain soil, air, water, and fish and wildlife resources.

f. Forest Operation (ORS 527.620(8)): Any commercial activity relating to the growing or harvesting of any forest tree species as defined in ORS 527.620(6).

g. Forest Productivity: The capability of a tract to produce wood fiber.

h. Forest Tree Species (ORS 527.620(6)): Any tree species capable of producing logs, fiber, or other wood materials suitable for the production of lumber, sheeting, pulp, firewood or other commercial forest products except Christmas trees as defined in ORS 571.505 on land used solely for the production of Christmas trees.

i. Measures of Forest Productivity: Forest Productivity can be measured using two methods: Site Index and Cubic Feet per Acre per Year. Both values are provided by USDA Natural Resource Conservation Service (NRCS) for each soil type in the county soil survey. Additionally, site index can be measured directly by taking the height of the tree and determining the age of the tree by using an increment borer.

   i. Site Index: This value represents the height of a tree at the reference year (usually age 50 or 100) based on a species-specific growth rate. The higher the productivity of the site, the taller a tree will grow in a fixed period of time. Trees can be measured at any age and their height can be compared to the expected height for that age and then correlated with the height at the reference year.

   ii. Cubic Feet per Acre per Year (CuFt/Ac/Yr): The average annual increase in cubic foot volume of wood fiber per acre for fully stocked stands at the culmination of mean annual increment as reported by the NRCS soil survey. The higher the productivity of the site, the higher the "cubic feet per acre per year" value.

j. Non-commercial Tree Species: A species that is not saleable for manufacture into a commercially viable forest product.

4. Methodology:

Farm Unlimited used the Oregon Department of Forestry (ODF) Land Use Planning Notes Number 3 (Attachment Q) as a basis to collect data. Eric Farm and James Hill visited the site on January 19, 2022, to familiarize ourselves with the tract and take forest productivity measurements. Because Attachment Q did not fit the unique circumstances found on the subject property, we have provided additional findings and conclusions to support our opinion. Additional details required by Attachment Q can be found in *Exhibit 1*.

5. Findings:

a. Entire tract is fully stocked with shore pine, a species with no commercial uses. An increment borer and laser were used to determine the age and height of the trees. They were found to be 32-46 years old and 25-50 feet tall. *See Exhibit 2 - Picture 1 & 2*

b. Five Sitka spruce trees are found growing along the east side of the property. These trees are highly defective with very large limbs. The Sitka spruce were estimated to be 45 inches DBH and approximately 75 feet tall. Their DBH exceeded the ability of our increment borer and therefore we were unable to determine the age of the Sitka spruce trees found along the east side of the property. Due to their large size and high defect, these trees have no commercial use or value. *See Exhibit 2 - Picture 3*

c. The soil found on this tract was composed of a thin organic/duff layer consisting of pine needles approximately one inch deep which transitioned to beach sand. There was no top soil found on the site. *See Exhibit 2 - Picture 4*

d. Gorse, an invasive and noxious weed, was growing across the entire tract as the understory brush component. The gorse was approximately 10 feet tall and made any access on the tract difficult. *See Exhibit 2 - Picture 5*

e. Standing water in the form of seasonal ponds and wetlands can be found on this tract. Willows are growing in around the standing water on the property. *See Exhibit 2 - Picture 6*

f. Slough sedge is also found abundantly on this tract indicating a high water table year round. *See Exhibit 2 - Picture 7*

g. Sand dunes with American beach grass cover portions of this tract. *See Exhibit 2 - Picture 8*

h. The adjacent undeveloped parcels are primarily fields of gorse and slough sedge. *See Exhibit 1 – Pictures 9 & 10*

i. The elevation of this tract varies from 20 to 50 feet above sea level. *See Exhibit 3*

j. This tract is located less than ¼ mile from the Pacific Ocean and timber on the tract receives intense wind and salt spray year-round.

k. The NRCS soil survey lists five soil types found on the subject property. Type 28 composes 0.0 acres and 0.0% of the tract. We have dismissed this soil type as non-material for this report. *See Exhibit 4*

l. The NRCS soil survey assigns no site index or CuFt/Ac/Yr value to two soil types on this tract. *See Exhibit 4*

m. The NRCS soil survey does assign a site index value to remaining two soil types based on the Alexander 100-year Lodgepole Pine Site Index Table. *See Exhibit 4*

n. Alexander's lodgepole pine site index paper (Page 1, Paragraph 1) indicate that the published site index table is "applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and Eastern Washington and Oregon". Western Oregon is specifically excluded as an applicable region to use the Alexander site index table. *See Exhibit 5*

o. Trees on this site have reached their full height potential given the constraints of the soil and environmental factors present on the site. Given their current height range of 25-50 feet tall, at 35-50 years old, the measured site index for this tract will be no more than 50 assuming a base 50-year site index table. And since the height will not increase over time, the site index would still be 50 if we used a base 100-year site index table such as the one Alexander developed for lodgepole pine.

p. No site index table for shore pine has been published that is applicable to Western Oregon.

q. The measured tree heights and ages did not vary materially across the subject property.

r. No local sawmills, veneer mills, or wood chip manufacturer will accept shore pine. Additionally, mills will not pay for a load with shore pine included and may reject the load entirely and not accept/unload a truck that arrives at the mill with shore pine included on the load. It is not foreseeable that any mill will accept delivery of shore pine in the future.

s. Shore pine meets the definition of a Non-commercial Tree Species.

t. There are no visible commercial forest uses on adjacent tax lots based on both field observations and orthophotograph interpretation.

u. The Oregon Forest Practices Act has a rule for "Acceptable Species for Reforestation" (OAR 629-610-0050(1)) which states, "The State Forester shall determine if tree species are acceptable for artificial reforestation, natural reforestation, and as residual seedling, sapling and pole, or larger tree stocking based on all of the following criteria:

   i. (a) The species must be ecologically suited to the planting site;

   ii. (b) The species must be capable of producing logs, fiber, or other wood products suitable in size and quality for the production of lumber, sheeting, pulp or other commercial forest products; and

   iii. (c) The species must be marketable in the foreseeable future.

6. Conclusions:
   a. Shore pine and five of very defective Sitka spruce appear to be the only tree species capable of growing on the tract due to the wind and extremely poor soil conditions.

   b. Shore pine meets the definition of a Non-commercial Tree Species.

   c. Shore pine is not an "Acceptable Species for Reforestation" in Oregon.

   d. The salt spray and intense wind coming from the Pacific Ocean preclude the growing of any commercial tree species on the subject property. Any efforts to grow any other tree species will either fail or result in timber that is so defective that it will not be of commercial quality.

   e. With no topsoil and only a thin duff layer that transitions to deep beach sand, trees on this site are extremely susceptible to windthrow.

   f. Swiss Needle Cast, a tree fungus/pathogen, tends to infect Douglas-fir trees within 10 miles of the Pacific Ocean. This site would be highly susceptible to Swiss Needle Cast infection if reforestation with Douglas-fir was attempted.

   g. Recreation and use by big game are significantly restricted due to the gorse understory.

   h. The standing water and high water table on this site will not allow the production of commercial timber species.

i. The Alexander Lodgepole Pine Site Index Table is inappropriate to use for shore pine growing within ½ mile of the Pacific Ocean. Site specific conditions (wind, salt spray, poor soils) will limit the growth of these trees to such an extent that they will not follow the normal growth rate/pattern for lodgepole pine found elsewhere in the Western United States.

j. Alexander specifically excluded western Oregon as an applicable use of his lodgepole pine site index table.

k. The absence of a forest productivity value for three of the soil types found on this tract indicate that the NRCS concludes that these beach/dunes soils are not suitable for the production of timber, commercial or otherwise.

l. The soil characteristics between types 59D, 60D and 61D are only differentiated by an H1 thickness of 4 inches or 7 inches, both of which are shown as fine sand. It is my professional opinion that no soil on this tract is suitable for the production of commercial timber species and therefore this tract is not suitable for commercial forest uses.

m. The Oregon Department of Revenue did not classify this 40 acre tract in its Forestland Class Code Assessment for tax assessment purposes. Additionally, the adjacent 40 acre tracts to the west and north of the subject property also did not receive a DOR forestland class code. The tract to the east received an "FG" forestland class code, the lowest productivity class code for forested lands. *See Exhibit 6*

n. Forest lands are given a special assessment and tax status by the State of Oregon to recognize their larger contribution to the economy. The subject property will never produce a commercial tree species and timber production from it will never contribute to the state's economy.

o. Per *Wetherall v. Douglas County*, 54 Or LUBA 678 (2007) and *Heckler v. Lane County*, 52 Or LUBA 91 (2006), the measured/empirical site forest productivity can take precedence over the NRCS value if the listed values do not accurately represent the subject property. For this subject property, our measured site index is zero for any commercial tree species.

p. Per *Doob v. Josephine County*, 48 Or LUBA 227 (2004) and *Palmer v. Lane County*, 44 Or LUBA 334 (2003), the presence of trees does not necessarily qualify a tract as forestland. Although there are trees present across the site, none are commercial tree species. Furthermore, due to the sandy soil and lack of topsoil, no commercial tree species can be grown on the subject property.

q. Use of the subject property as a commercial forest would likely conflict with the adjacent residential tax lots. If the timber on the tract was harvested, it would be virtually impossible to achieve successful reforestation, and until the ground cover could be reestablished, blowing sand would likely spread onto adjacent residential tax lots. Commercial forestry would also be hindered by the proximity of adjacent residences. Current forest practice rules do not allow aerial spray applications within 300 feet of an inhabited dwelling. Dust abatement will be required for any commercial haul of forest products on the gravel portion of the Fourmile Road. This treatment is very expensive especially for a tree species with no commercial value.

7. Opinion:

It's my opinion as a professional consulting forester that the subject property is unsuitable for commercial forest uses. It is not currently stocked with a commercial tree species, and it is doubtful that a commercial tree species could ever be successfully regenerated on this property. Additionally, no site index table has been published for shore pine in western Oregon; therefore, a site index and "cubic foot per acre per year" determination could not be made for the subject property.

8. Professional Experience:

Eric Farm, PE, ACF

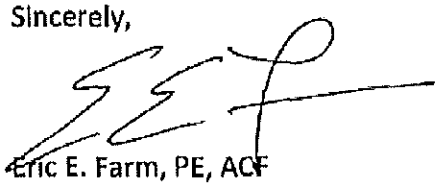
- Bachelor's Degree in Forest Engineering from University of Washington
- Six years of experience as a professional consulting forester in SW Oregon
- 18 years of forestry experience in SW Oregon
- Full Member of the Association of Consulting Foresters (ACF)
- Member of Society of American Foresters (SAF)
- Member of Council on Forest Engineering (COFE)
- Licensed Professional Engineer in the State of Oregon
- Biennial continuing education requirements for ACF and Engineering License

James Hill

- Bachelor's Degree in Forest Operations Management from Oregon State University
- 10 years of experience as a professional consulting forester in SW Oregon
- 10 years of experience as a cruising timber and determining site index across Oregon

If you have any questions about this report, please contact me at (458) 230-0537.

Sincerely,



Eric E. Farm, PE, ACF
President

ODF Land Use Planning Notes Number 3 Methodology and Assessment

Step 1: Using Established Data Sources

- NRCS soil survey – *See Excerpt from Custom Soil Report compiled by Shoji Planning LLC, Pages 86-92*
- Oregon DOR Western Oregon site class maps – *See Exhibit 6*
- USDA-Forest Service plant association guides – None found for subject property
- Other existing data sources – None found
- Alternate methods to develop site productivity based on direct tree measurements – None found
- Alternate methods based on direct tree measurements – None found
- Site-specific soil surveys – Did not commission site-specific soil survey

Step 2: Alternate Methodologies

- The subject property is fully stocked with shore pine. Shore pine is not one of the six listed species with published site index tables.
- No site index table has been published for shore pine.
- The NRCS soil survey shows a value for forest productivity based on the Alexander lodgepole pine site index table. This site index table is not applicable to western Oregon per the author's note. *See Exhibit 5*
- Eric Farm is a professional forester and registered as a full member of the Association of Consulting Foresters.

Step 3: Sufficient Number of Trees On-Site?

- Adequate numbers of dominant and codominant shore pine are found on the property.
- A sample of 30 trees were selected as the "site index clump".
- Species and heights were recorded for all 30 trees. The average height was 34 feet.
- A sub-sample of 6 trees was measured for age. The average age was 40 years old.
- Nearly all trees in the sample showed signs of significant defect due to wind and poor soil conditions.
- No trees over 50 years old were available to sample in or around the sample plot location.

Step 4: Approved Site Index Tables

- No site index table has been published for shore pine.
- The Alexander lodgepole pine site index table are not applicable for use in western Oregon as noted by the author. *See Exhibit 5*
- If you did use the Alexander lodgepole pine site index table and the USDA NRCS Technical Note 2 (revised 2008), a site index value of 34 at 100 years is below the lowest value listed for "cubic feet per acre per year" forest productivity.

Step 5: Other Methods for Other Species

- No site index table has been published for shore pine or lodgepole pine found on the coastal headlands.
- Oregon DOR did not classify this parcel with a forestland code as part of its forestland program.

Step 6: Last Option: Soil Analysis

- Sufficient trees are found on-site, but the only species that can be successfully regenerated on the site is shore pine, a non-commercial tree species with no published site index table.
- A soil analysis was not conducted as part of this report. It is my opinion as a professional consulting forester that a soil survey is unwarranted due to the observed sand and pine needle duff that represents the soil across the subject property.

Step 7: County Review of Professional Reports

- The process as defined by the ODF Land Use Planning Notes Number 3, along with the findings from our full Forest Suitability/Productivity Report, support my professional opinion that this site is not suitable for the production of commercial tree species and commercial forest uses.

Data Form for Forestland Site Productivity Determination using Site Index

Date Prepared: January 19, 2022 County: Coos

Landowner Name: Coos County

Land use case file number (if available): Unknown

Location
Township: 29 South Range: 15 West Section: 35C Lot Number: 1300

Name of Forester preparing report: Eric Farm, PE, ACF and James Hill

Forester's background (work experience, education, training, certifications, etc.): See Professional Experience section of report.

Methods and equipment used in data collection:
Age and height measurements were taken on 30 dominant and co-dominant trees that were representative of the subject property. Age was measured using an increment borer and height was measured using a laser rangefinder. Since the shore pine on this tract was fairly uniform, samples for age were taken on six trees and found to be representative. Further age verification was not necessary.

Soil Type(s) and percentages on tract in question:
Map Unit 9: Chetco silty clay loam – 1.1%
Map Unit 28: Heceta fine sand – 0.0%
Map Unit 59D: Waldport fine sand – 9.2%
Map Unit 60D: Waldport-Dune land complex – 33.5%
Map Unit 61D: Waldport-Heceta fine sands – 56.2%

Tree species on tract in question: Tract is fully stocked with shore pine except where standing water and open sand are found. Four Sitka spruce trees were found along the ridge on the eastern boundary of the property.

Number of Dominate or Co-Dominate Trees/Species Sampled: 30 shore pine

Average Height: 34 feet Average Age: 40 years old

Average Site Index: Not Rated Site Productivity: Not Rated

Notes/Comments: Shore pine is not a commercial species and does not have a site index table. The Alexander (1966) site index table for lodgepole pine is inappropriate for use in western Oregon as indicated by the author. Process for determining Forestland Site Productivity is documented and attached to this data form.

Data Collection Form:

Tree ID	Tree Species	Height (ft.)	Age (yrs.)
1	shore pine	33	
2	shore pine	28	
3	shore pine	31	
4	shore pine	29	
5	shore pine	25	
6	shore pine	25	32
7	shore pine	25	35
8	shore pine	25	41
9	shore pine	33	
10	shore pine	34	41
11	shore pine	33	
12	shore pine	33	
13	shore pine	34	44
14	shore pine	37	46
15	shore pine	42	
16	shore pine	36	
17	shore pine	37	
18	shore pine	41	
19	shore pine	40	
20	shore pine	36	
21	shore pine	38	
22	shore pine	34	
23	shore pine	30	
24	shore pine	33	
25	shore pine	31	
26	shore pine	37	
27	shore pine	35	
28	shore pine	32	
29	shore pine	38	
30	shore pine	42	
	Average	34	40

Picture 1: Shore pine

Picture 2: Shore pine

Picture 3: Sitka Spruce

Exhibit 2

Picture 4: Depth of Organic Layer

Picture 5: Gorse

Exhibit 2

Picture 1: Pond

Picture 7: Slough Sedge

Picture 8: Dunes & Beach Grass

Exhibit 2

Picture 9: Adjacent Property

Picture 10: Adjacent Property

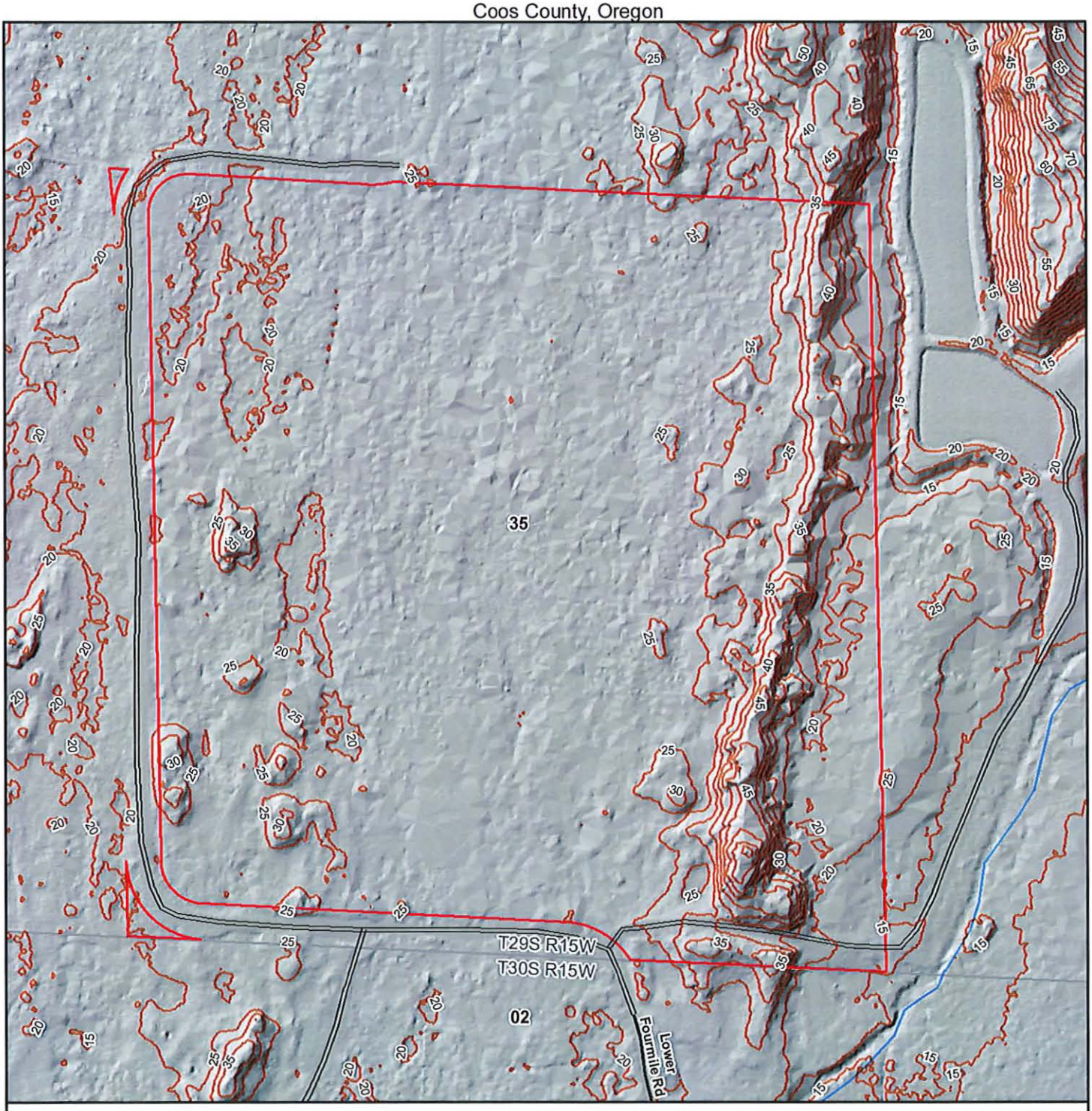
Farm Unlimited
P.O. Box 761
North Bend, OR 97459

Subject Property
Hillshade and Contour Map

Exhibit 3

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Paved
Rock
Medium, Fish
5 ft Contour Lines
Subject Property

N
1 " = 250 ft.
Created: 1/17/2022
by Barbara McIntosh

Contour Intervals = 5 ft. Contours and Hillshade derived from Lidar Bare Earth DEM

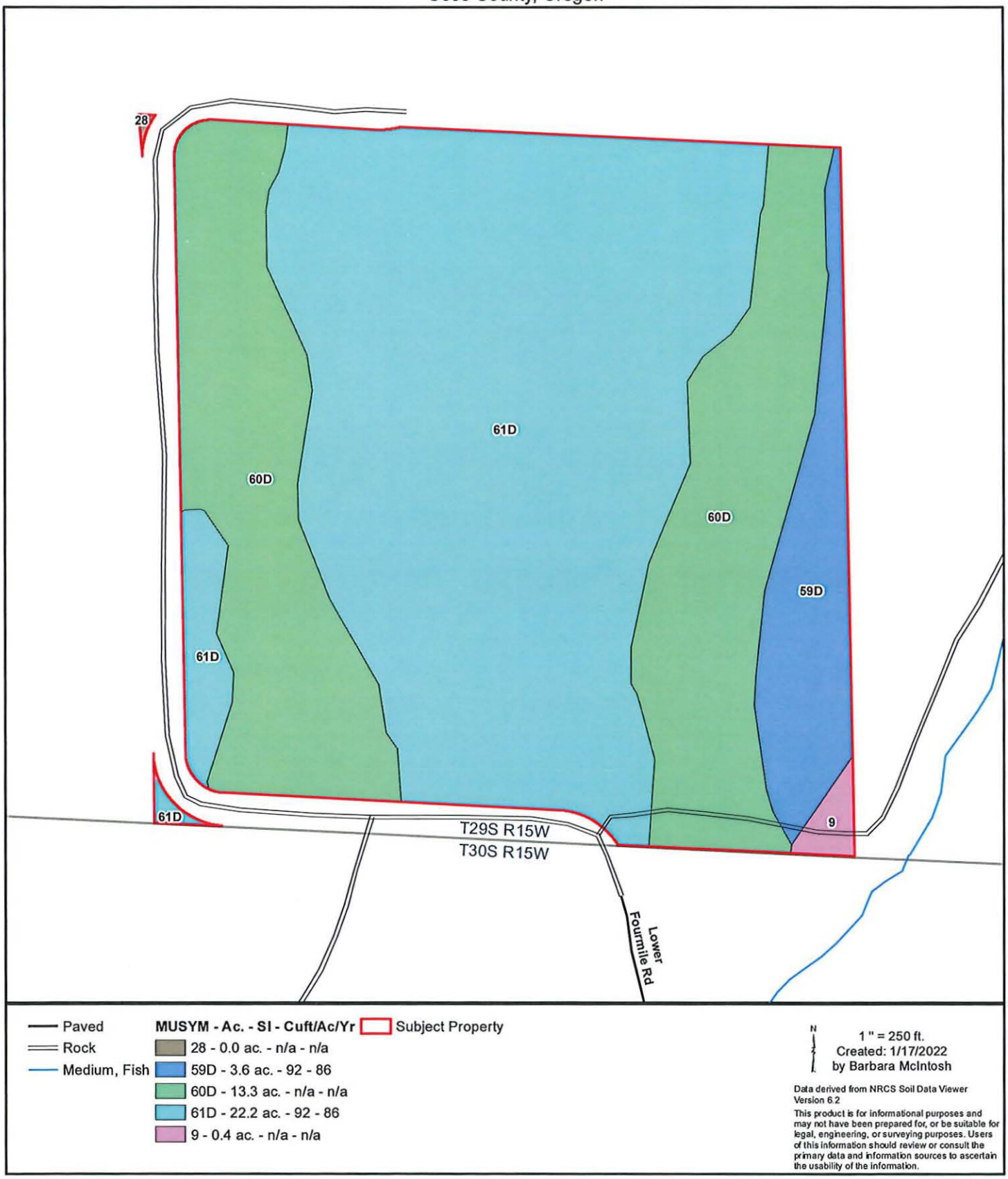
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Farm Unlimited
P.O. Box 761
North Bend, OR 97459

Subject Property
NRCS Soils Type Map with
Forest Productivity Ratings

Exhibit 4

Tax Lot 1300; T 29S, R 15W, Sec. 35C
Coos County, Oregon



Site Indexes for Lodgepole Pine, with Corrections for Stand Density: Instructions for Field Use

by

Robert R. Alexander

Lodgepole pine (Pinus contorta Dougl.) commonly grows in overly dense stands, and crowding restricts the rate of height growth. Site index must, therefore, be adjusted for stand density. Figures 1 and 2, and tables 1 through 7 have been prepared for field use in estimating site index for lodgepole pine. They are applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and eastern Washington and Oregon.[2] Information necessary to understand field application of the site index curves and instructions for their use are presented in this paper. Methodology used to develop the site index curves will be presented in a subsequent paper.

Stand density is expressed as Crown Competition Factor (CCF).[3] CCF compares growing space available to a tree with the space represented by a vertical projection of the average crown area of an open-grown tree of the same stem diameter (Maximum Crown Area, MCA). Because space occupied by a single tree is not easily determined, the comparison is made on a stand basis. CCF may be obtained from the numbers and diameters of trees in a stand, or it may be estimated from measurements of basal area and average diameter.

Site index is expressed as the average height of dominant trees in pure, even-aged stands at age 100 years. For stands where the CCF is 125 or less, height growth is unaffected by density. For stands where the CCF is greater than 125, height growth is reduced as density increases, and the reduction in height growth at any level of CCF above 125 becomes greater as site quality improves.

Site index can be estimated from tables 1 through 5 for all combinations of height, age, and density indicated in the Rocky Mountain and Intermountain regions, providing the average height of the trees selected for site determination is equal to or exceeds the height of the site index 30 class but does not exceed the height of the site index 100 class at the age sampled. Figure 1 can be used if the CCF is 125 or less. In the Pacific Northwest region, site index can be estimated reliably only if the "site trees" are 50 or more years old.

Field Application of Site Index Curves

Step 1.--Determine average height and age of the stand. Select four or more dominant trees (site trees) and measure heights and ages in the conventional manner.[4] Average total age may be approximated from age at breast height by adding 9 years to the average age at breast height (fig. 1 and all tables are based on total age).

[2] *This paper is based on a cooperative study planned and undertaken jointly by the Rocky Mountain, Intermountain, and Pacific Northwest Forest and Range Experiment Stations. David Tackle (INT) and Walter G. Dahms (PNW) collected the field data in their respective areas.*

[3] *Krajicek, John E., Brinkman, Kenneth A., and Gingrich, Samuel F. Crown competition factor, a measure of density. Forest Sci. 7: 35-42. 1961.*

[4] *Chapman, Herman H. and Meyer, Walter H. Forest mensuration, Chap. 15, "The measurement of heights in standing trees," pp. 149-212 and Chap. 23, "The age of standing trees," pp. 318-323. New York: McGraw-Hill Book Co. 1949.*

Farm Unlimited

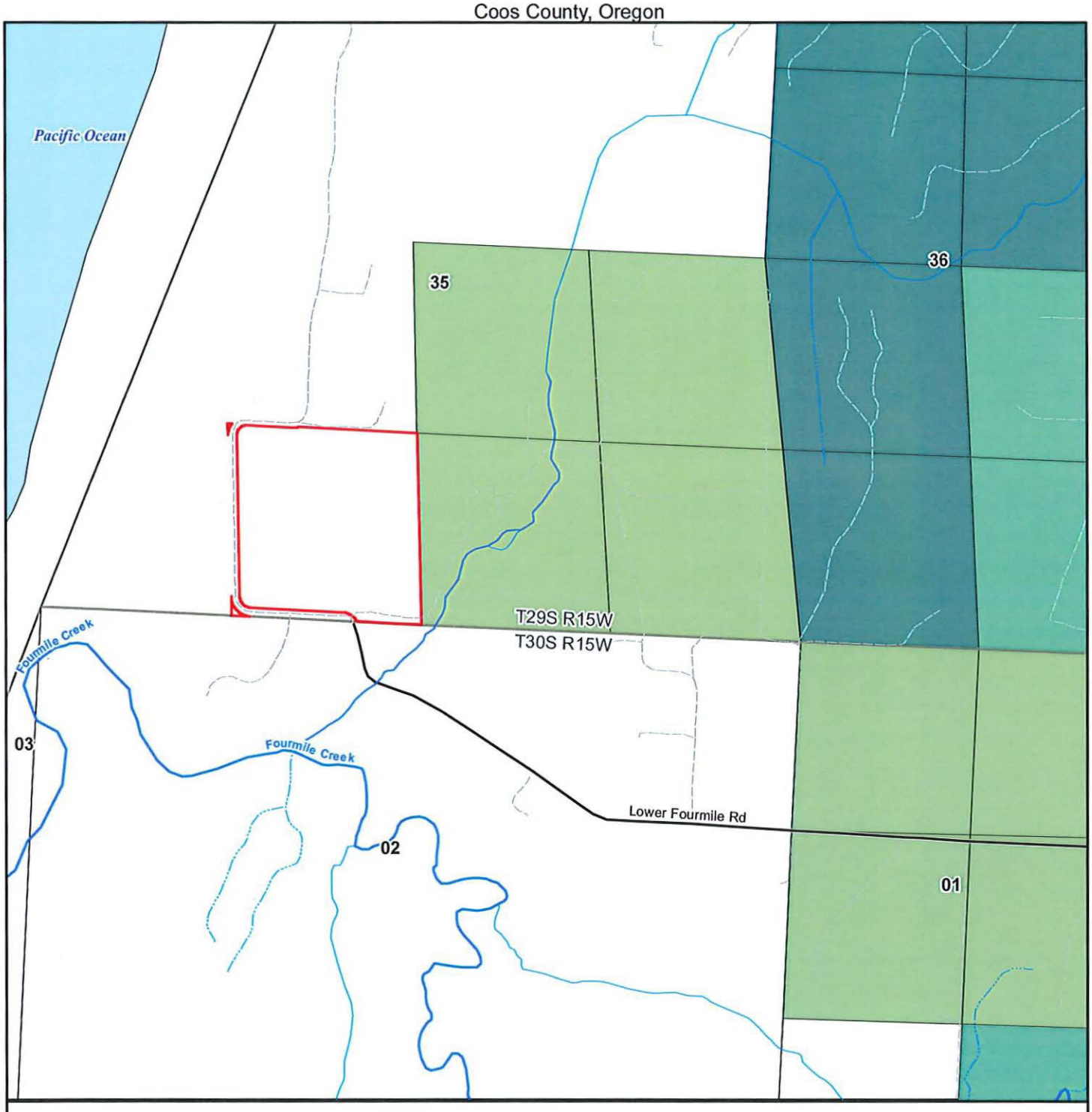
P.O. Box 761
North Bend, OR 97459

Subject Property
Oregon Department of Revenue
Forestland Productivity Class Map

Exhibit 6

Tax Lot 1300; T 29S, R 15W, Sec. 35C

Coos County, Oregon



Forest Productivity Class information derived from the Oregon Department of Revenue Forestland Productivity Class for Western Oregon dataset.

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

LAND USE PLANNING NOTES

Number 3 April 1998
Updated for Clarity April 2010

"STEWARDSHIP IN FORESTRY"

PURPOSE: These technical notes have been developed by the Oregon Department of Forestry (ODF) to help landowners and local governments when they must use an alternative to the USDA Natural Resource Conservation Service (NRCS) Soil Survey or other established data sources to determine the productivity of forestland. Under Oregon Administrative Rules (OAR) 660-006-0005, where sources of data referenced in the rule are not available or are shown to be inaccurate, an alternative method for determining productivity that provides equivalent data may be used. These notes describe the methodologies that the Department of Forestry approves, provides information necessary to use the methodologies and gives direction to counties in evaluating forest productivity reports. Background information is also included to answer commonly-asked questions about forest productivity rating systems. These technical notes and the related tables can be found on the Oregon Department of Forestry's website at:
http://egov.oregon.gov/ODF/STATE_FORESTS/FRP/RP_Home.shtml#Land_Use_Planning.

Please note the Department of Forestry does not measure forest site productivity for landowners. The Department's involvement is focused on establishing a list of approved data sources and methodologies other than those cited in the administrative rule. The Department of Forestry will not issue findings on whether these data sources or alternate methodologies have been employed correctly or if the resulting forest site productivity determinations are accurate. The Department of Forestry is not responsible for verifying field measurements.

Included on page 9 of this guide is a flowchart, which provides a visual aid for counties to step through the process of determining site productivity. Each box in the flowchart is labeled with a number that corresponds to the step and section providing guidance on that topic in these Land Use Planning Notes.

OAR 660-006-0005 (3) Site Productivity Sources are adequate to determine cubic foot/acre/year productivity. 1

Step 1: Using Established Data Sources

Forest landowners who would like to demonstrate its forestland productivity or who question the productivity of their property - whether they wish to have it rezoned for development, want approval for template dwellings, or for another reason - must use established data sources to provide information on soils

The Department of Forestry has concluded that to avoid potential confusion and inconsistent productivity determinations it is important for the department to establish a hierarchy of preferences for the site productivity data listed in OAR 660-006-0005 (2) and (3). In order of preference, the department's hierarchy is as follows:

A. Natural Resource Conservation Service soil surveys[1]
B. Oregon Department of Revenue Western Oregon site class maps
C. USDA Forest Service plant association guides
D. Other existing data sources determined by the State Forester to be of equal or better quality to Items A, B, and C
E. Alternate methods to develop site productivity data based on direct tree measurements and calculations using applicable Douglas-fir, western hemlock, or ponderosa pine site tables, with priority given to the species among these three that dominates the area being evaluated
F. Alternate methods based on direct tree measurements and calculations using other native forest tree species site tables
G. Site-specific soil surveys.

When NRCS soil survey information is available, it should always be considered first when making forest land site productivity determinations. Where the county determines that NRCS or other established data sources approved by the State Forester are available and accurate for determining site productivity at the scale of the tract of interest, the county planning department must make its decision using these data.

If data from an approved established data source (A, B, or C above) do not exist or is shown through site-specific documentation to be inaccurate for determining site productivity at the scale of the tract of interest, only then should other information determined to be of comparable quality by the State Forester (D above) be consulted. These will normally include published data on forest soils or tree measurements. To date, other published forest soils information that has been determined to be of comparative quality includes, but is not limited to, the following:

- August 1997 *Lane County Soil Ratings for Forestry and Agriculture* produced by the Lane County Council of Governments.
- February 8, 1990, *Forest Lands Soils Ratings* – Revisions produced by the Oregon Department of Forestry for the Oregon Department of Land Conservation and Development (applicable to Benton, Lane, Linn, Marion, Polk, and Yamhill Counties except in Lane County where superseded by the August 1997 *Lane County Soils Ratings for Forestry and Agriculture*).
- January , 27, 1989 forest soils rating submitted to the Oregon Department of Land Conservation and Development by the Oregon Department of Forestry (applicable to Benton, Clackamas, Clatsop, Columbia, Hood River, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Tillamook, Washington, and Yamhill Counties except where superseded by the February 8, 1990 *Forest Lands*

[1] Web Soil Survey: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/ – last accessed April 29, 2010. Also see Published Soil Surveys for Oregon available online at: http://soils.usda.gov/survey/printed_surveys/state.asp?state=Oregon&abbr=OR -- last accessed April 30, 2010.

Soils Ratings and in Lane County where superseded by the August 1997 *Lane County Soils Ratings for Forestry and Agriculture*)

These documents can be found on the Oregon Department of Forestry's website at: http://egov.oregon.gov/ODF/STATE_FORESTS/FRP/RP_Home.shtml#Land_Use_Planning and may be updated over time as new information becomes available.

Additional information may be assessed and approved by the State Forester on a case by case basis for comparability of quality.

Applicant may use approved ODF methodology for determining Site Index. 2

Step 2: Alternate Methodologies

Where the published site productivity data described above in Step 1 are not available, or when the county determines that it is inaccurate for determining site productivity at the scale of the tract of interest, the alternate methods for determining site productivity described below may be used. [Note: Existence of data listed in Step 1 does not prohibit a landowner from retaining a professional forester or professional soils classifier to measure the productivity of the land if they believe the published data are inaccurate. In such cases, the county must determine which data source it will use in making its decision.]

Alternate methodologies used to measure site productivity must be consistent with the provisions of this Land Use Planning Note and must be considered in the following order:

a. Alternate methods based on direct tree measurements and calculations using applicable Douglas-fir, western hemlock, or ponderosa pine site tables. The tables may also be used for grand fir, Sitka spruce, and Jeffrey pine, as indicated in Step #4 and Attachment A.
b. If none of these six species are present, the next step is to consider using site tables for other tree species.
c. If no adequate trees are present to measure for site productivity, the last available method is to conduct site-specific soil surveys without direct tree measurements.

Where tree measurements are undertaken, a professional forester who is either registered as a full member in good standing with the Association of Consulting Foresters of America or Certified by the Society of American Foresters should be retained by the landowner to take tree measurements and prepare a report.

Consistent and credible site productivity determinations are an important facet of the land use planning process. Attempts to consider a variety of methods simultaneously in hope of arriving at a "preferred" site productivity determination are to be avoided.

The Department of Forestry does not measure sites for landowners. The alternate methodology the Department of Forestry approves to determine the productivity of an area is described in a Weyerhaeuser research paper, by King[2]. Additional information may be found in the *Field instructions for forest surveys in Washington, Oregon, and Northern California. USDA Forest Service, PNW Range and Experiment Station*. These papers describe how to select site-trees and calculate site index.

Sufficient # of trees on-site to determine Site Index? 3

Step #3: Sufficient Number of Trees On-Site?

Site index is based on measurements of breast-height tree age and total height. A sufficient number of measured trees generally consists of 25 dominant and co-dominant trees all of the same species, if possible. This number is adequate to determine forestland productivity as calculated by site index if soil type, species, and aspect of the ground are consistent throughout the sample area. Additional trees will be needed to represent different soil types, species, and aspect if these exist on the tract in question.

Trees of different species may be selected as long as they use the same site index table (See Step #4). Site index should not vary by more than 20 or 30 points between site trees (as indicated on each site table), unless the difference can be explained by actual site variation.

If the tract has been harvested in the recent past, most or all of the dominant trees in the stand may have been removed. Residual suppressed trees are not acceptable trees for site index measurement. If insufficient dominant trees exist on the tract to determine site index, site trees should be selected for evaluation from adjacent or nearby un-harvested properties with the same aspect, elevation and soil type. In some cases, historical records of past harvests, timber yields, and aerial photos may contribute valuable background information for productivity assessments.

A professional forester (as described in Step #2) should determine whether or not adequate numbers of dominant and co-dominant trees exist on site or in the vicinity to perform the analysis. If the forester issues a written statement that inadequate numbers of qualifying trees exist, the applicant may proceed to Step #6 – a soils analysis.

Method for Selecting Site Trees

1. On the property locate an approximately circular area that encompasses 25 trees (the "site index clump") and that is representative of the site being sampled. Where there is a choice, favor well-stocked areas over sparse areas. Of these

[2]King, James E. 1966. Site index curves for Douglas-fir in the Pacific Northwest. Weyerhaeuser Forestry Paper No. 8. Weyerhaeuser Forestry Research Center, Centralia, WA.

25 trees, select five that are dominant; co-dominants may be included if five dominants are not available.

2. If a 25-tree clump is not available, a smaller clump may be used. The site tree sub-sample should still be limited to the 20 percent of the trees in the clump that are dominate or co-dominate **unless** this yields fewer than three site trees. Example: For a 15-tree clump, three site trees would be needed - the minimum sample size allowed.

3. If no suitable site trees are available from the property, select dominant trees from the most similar nearby area with the same general aspect, elevation, and soil type. Note the location of the site trees in your report.

4. Site trees should be evenly distributed across the plot area.

5. Any site tree with a clear history of suppression should be rejected, and the next largest tree selected if it is suitable. However, a suppressed tree may be selected over a shorter, suppression-free tree of the same age.

6. Site trees selected should show no signs of top-out, such as crooks or forks, **unless** these trees are taller than normally-formed trees of the same Diameter at Breast Height.

7. Trees should be measured at Breast Height for age.

8. Trees under 50 years old are undesirable if older trees are available. For ponderosa pine, trees 60 to 120 years old are most desirable.

Definitions:

Age – The age of the tree at Breast Height determined by boring a tree revealing a core piece with notable rings that are counted. Each ring represents a year of age.

Breast Height – A height 4.5 feet from the ground on the uphill side of the tree.

Co-dominant -- Trees with crowns forming the general level of crown cover of the stand.

DBH – The diameter at breast height or 4.5 feet from the ground on the uphill side of the tree.

Dominant – Trees with crowns extending above the general level of the stand. These are the larger than average trees on the property.

Increment Core – This is a core piece of the tree that is removed where rings can be counted to determine age.

Suppressed -- A tree that has been suppressed will have closely-spaced annual growth rings on all or part of its increment core.

Use approved Site Index Tables for DF, WH, & PP. 4

Step #4: Approved Site Index Tables

There are three approved site index tables for Douglas-fir, western hemlock, and ponderosa pine. (Tables A, B, and C in Attachment A). These tables may also be used for grand fir, Sitka spruce, and Jeffrey pine, respectively.

How to use site tables:
The attached site index tables are "upper limit tables." This means that when a tree height indicates a site index that falls between two site indices, the higher one should be used. Example: A site tree is Douglas-fir, breast height age is 75 years old and total height is 115 feet tall. King's 50-year Douglas-fir site index table indicates that a tree with a total height of 115 feet and breast height age of 75 falls between site index 90 and 95; site index is therefore 95.

A, *King's 50-year Douglas-fir table*[3]. Use for Douglas-fir and grand fir.

B. *Barnes' 100-year western hemlock table*[4]. Use for western hemlock and Sitka spruce.

C. *Meyer's 100-year ponderosa pine table*[5]. Use for ponderosa pine and Jeffrey pine. Use this table for stands that are predominantly ponderosa pine, or when pine site trees are all that are available, except in the Willamette Valley[6]. A credible site index or yield table for ponderosa pine applicable in the Willamette Valley has not been found to exist at this point in time. Until a credible Willamette Valley ponderosa pine site table becomes available and is acknowledged in a revised Department of Forestry Land Use Planning Note, the Department of Forestry's position is that it is inappropriate to use ponderosa pine to determine site productivity under OAR 660-006-0005(2) and (3). Thus, the applicant's remaining option for pine stands in the Willamette Valley would be to conduct a soils analysis following OAR 603-080-0040 (3).

The average height and the average age of the site trees can be used with the tables in Attachment A to determine site index. Tracts [as defined in OAR 660-006-0005 (3)] large enough to contain changes in productivity (e.g., multiple soil types or changes in

---

[3] King, James E. 1966. Site index curves for Douglas-fir in the Pacific Northwest. For. Pap. 8. Centralia, WA: Weyerhaeuser Company, Forestry Research Center. 49 p.

[4] Barnes, George H. 1962. Yield of even-aged stands of western hemlock. USDA, Forest Service. Pacific Northwest Forest and Range Experiment Station Technical Bulletin 1273.

[5] Meyer, Walter H. 1961. Yield of even-aged stands of ponderosa pine. USDA Technical Bulletin 630. (revised 1961).

[6] Willamette Valley is defined as: Clackamas, Linn, Marion, Multnomah, Polk, Washington and Yamhill Counties and that portion of Benton and Lane Counties lying east of the summit of the Coast Range.

aspect) will require mapping the different areas of productivity, making separate calculations for the productivity of each area, and weighted averaging of the productivity across the tract.

Nonstockable Areas:

Nonstockable areas can be caused by the presence of standing or running water, a high water table, saturated soils, rock or shallow soil over rock, severe soil compaction, or mass soil movement. Nonstockable areas should be mapped and deducted from the total productivity of the tract on a percentage of area basis. Appropriate and adequate site-specific documentation is needed to justify these deductions, which in some cases may require the expertise of a professional forester or a professional soils classifier.

Determining Cubic Foot Productivity:

The tables in Attachment B are derived from a US Department of Agriculture[7] publication. They use species-specific site index information as determined from on-site measurements and the site index tables to reference a set of cubic foot productivity tables. To use a species table, find the calculated site index of the property in the left-hand column and obtain the cubic foot per acre per year from the column on the right with the corresponding reference to the site table used.

Documentation:
The consultant should document site index table(s) used, tree selection, and productivity assessment. Site index values are to be correlated with cubic foot per acre per year productivity ratings. A sample data form for forestland site productivity determination using site index is provided at the end of this Technical Note.

ODF may approve other methods or Site Index Tables for other species. 5

Step #5: Other Methods for Other Species

The Department of Forestry may approve other tree measurement methods or site index tables to determine productivity for other tree species. The methods listed in this paper can be used in combination with other published site index and yield tables if the site is not suited to one of the species listed in this paper. However, the use of other tables or the use of other species to determine site index must be approved in writing by the Department of Forestry on a case-by-case basis.

To request approval of other methods not listed in Step #4, contact the Forest Policy Analyst in the Forest Resources Planning Program for the Department of Forestry at 503-945-7411. The Department of Forestry will notify the county in writing of its

[7]USDA. 1986. Culmination of mean annual increment for commercial forest trees of Oregon. Technical Note No. 2. USDA, Soil Conservation Service, Portland, OR. (Note: the SCS - Soil Conservation Service is now the NRCS - Natural Resource Conservation Service)

recommendation that the method be used or not used. If the method is approved for use, a professional forester (as described in Step #2) should document the method used, tree selection and productivity assessment. If the method is not approved for use, or an acceptable alternative proposed, a soils analysis as described in Step #6 below is the remaining option.

Soil Survey is last option; follow OAR 603-080-0040 (3). 6

Step #6: Last Option: Soil Analysis

Where there are an insufficient number of trees on-site or nearby to conduct tree measurements, or where an alternate method for an unlisted tree species has not been approved, a site-specific soil analysis is the last option for determining site productivity. In this case, a professional soils classifier certified by the Soil Science Society of America should be used and the soils reporting provisions of OAR 603-080-0040 must be followed.[8] The Department of Forestry does not have the expertise to evaluate site-specific soil survey information.

County makes decision based on documentation provided and follows all other regulations. 7

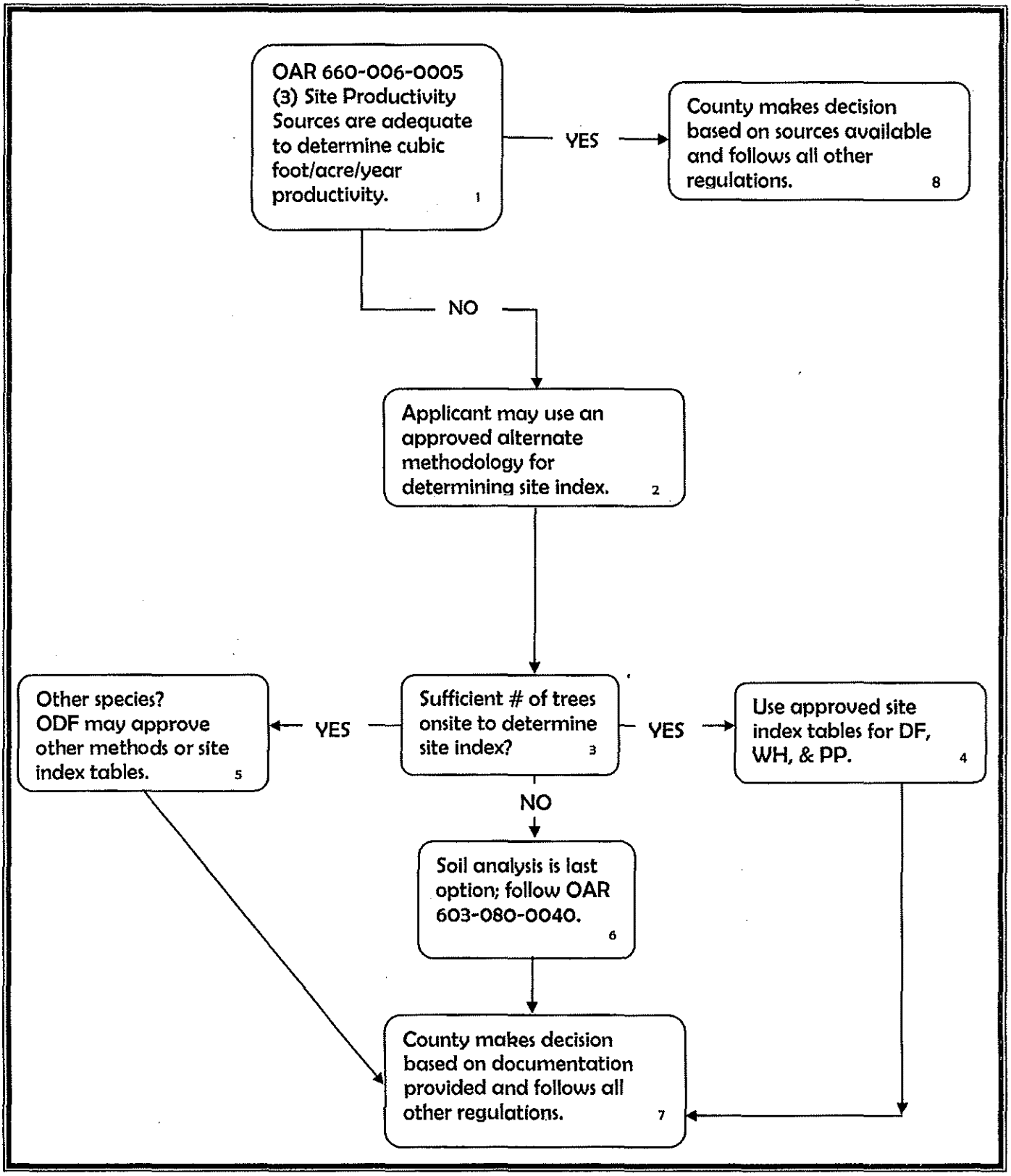
Step #7: County Review of Professional Reports

Professional assessments of forestland productivity must be submitted to the county planning department in report form for its review. Soils reports shall meet the standards for submittal that are set forth in OAR 603 Division 80. The burden of proof is on the applicant and the consultant to demonstrate that information in the submitted report is more accurate than that available in established data sources. The county staff may request the assistance of the State Forester in evaluating whether approved methodologies were used in a consulting forester's report.

The following flowchart will enable planners to determine whether the appropriate forestland productivity data has been gathered.

[8] If a determination is also being regarding whether the tract in question qualifies as agricultural land, the provisions of 2010 House Bill 3647 apply.

A Flow Chart for Determining Forestland Site Productivity



APPENDIX

Background and Additional Information:

Table 1. CUBIC FOOT PRODUCTIVITY CLASSES

CLASS	POTENTIAL YIELD-MEAN ANNUAL INCREMENT
1	225 or more cu.ft./ac./yr.
2	165 to 224 cu.ft./ac./yr.
3	120 to 164 cu.ft./ac./yr.
4	85 to 119 cu.ft./ac./yr.
5	50 to 84 cu.ft./ac./yr.
6	20 to 49 cu.ft./ac./yr.

The Department of Forestry advises using the USDA Cubic Foot Productivity Class[9] system, as opposed to other systems of measure, when making land use planning decisions because it measures the relative productivity of the soil, is not dependent upon the condition of the forest or the species of trees currently growing on the site, and is more consistent than other measures. The cubic foot productivity class system reveals the average growth rate of timber over the life of the stand measured at the peak of that average growth rate. Table 1 above shows the potential timber yields of productivity classes 1 - 6 in cubic feet per acre per year (cu.ft./ac./yr.).

Other measures that might be used to compare productivity, such as site class or site index, are not consistent between species. Site class is commonly used on the west side to describe the productivity of Douglas-fir forests, but not other species. Site index measures productivity as a function of age and is calculated as tree height divided by tree age at a base age of 100 or 50. Since on the same area, in the same length of time, different species grow to different heights, site index is not consistent between species. For example, two species with the same site index will yield different cubic foot ratings, as seen in Table 2 below.

Table 2. RATING SYSTEM COMPARISONS[10]
All Species

Site Index Table	Site Indices	Cubic foot comparisons
Douglas-fir (50 yr King Site Index)	100	136
Douglas-fir (100 yr McArdle Site Index)	100	84
Western Hemlock (100 yr Barnes Site Index)	100	142
Ponderosa Pine (100 yr Meyer Site Index)	100	102
White Fir (100 yr Schumacher Site Index)	100	218
Engelmann Spruce (100 yr Alexander Site Index)	100	109

[9] Field instructions for forest surveys in Washington, Oregon, and Northern California. USDA Forest Service, PNW Range and Experiment Station.
[10] Based on: USDA Soil Conservation Service. 1986. Culmination of Mean Annual Increment for Commercial Forest Trees of Oregon. Technical Note No.2 Forestry Revised June 1986. Portland Oregon.

Another advantage of using cubic foot productivity class is that the ratings are available for most forestland without professional assistance. The published soil surveys contain ratings that can be used by county planners or private landowners to evaluate productivity and using the information does not require visiting the site or taking measurements.

Cubic foot site productivity determinations assume fully stocked stands. In this context, "stockable area" means the proportion of an area that can be physically stocked with trees. Rock outcrops, impervious soils, or high water tables are examples of factors that may result in less than 100 percent of the site being stockable.[11] Upon request by a county government, the Department of Forestry will evaluate factors used in calculating reductions in site productivity from fully stocked stand levels.

[11] For more information, consult the USDA Forest Service, Pacific Northwest Research Station *Field instructions for forest surveys in Washington, Oregon, and Northern California* where consideration of stockable area factors are addressed.

Sample Data Form for Forestland Site Productivity Determination using Site Index

Date Prepared:_____ County:_____

Landowner Name: _____

Land use case file number (if available):_____

Location
Township:_____ Range:_____ Section(s):_____ Lot Number:_____

Name of Forester preparing report:_____

Forester's background (work experience, education, training, certifications, etc.):

_____
_____
_____
_____

Methods and equipment used in data collection:

_____
_____
_____
_____

Soil Type(s) and percentages on tract in question:_____

Tree species on tract in question:_____

Number of Dominate or Co-Dominate Trees/Species Sampled: (ex. 5 Douglas-fir, 10 Western Hemlock)

_____
_____

Average Height:_____ Average Age:_____

Average Site Index:_____ Site Productivity cubic feet/ac./yr:_____
(Use appropriate approved Site Index table in Attachment A) (Use Attachment B)

Notes/Comments:_____
_____
_____
_____

- Attach map of property with marked locations of where the trees sampled are located. Map needs to be at appropriate scale for ease of viewing property and understanding where the trees are located.
- Attach site index tables used.
- Attach other documentation and evidence needed to justify methods and conclusions.

Data Collection Form: * Make copies if more than 30 trees sampled.

Tree ID	Tree Species	Height (ft.)	Age (yrs.)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
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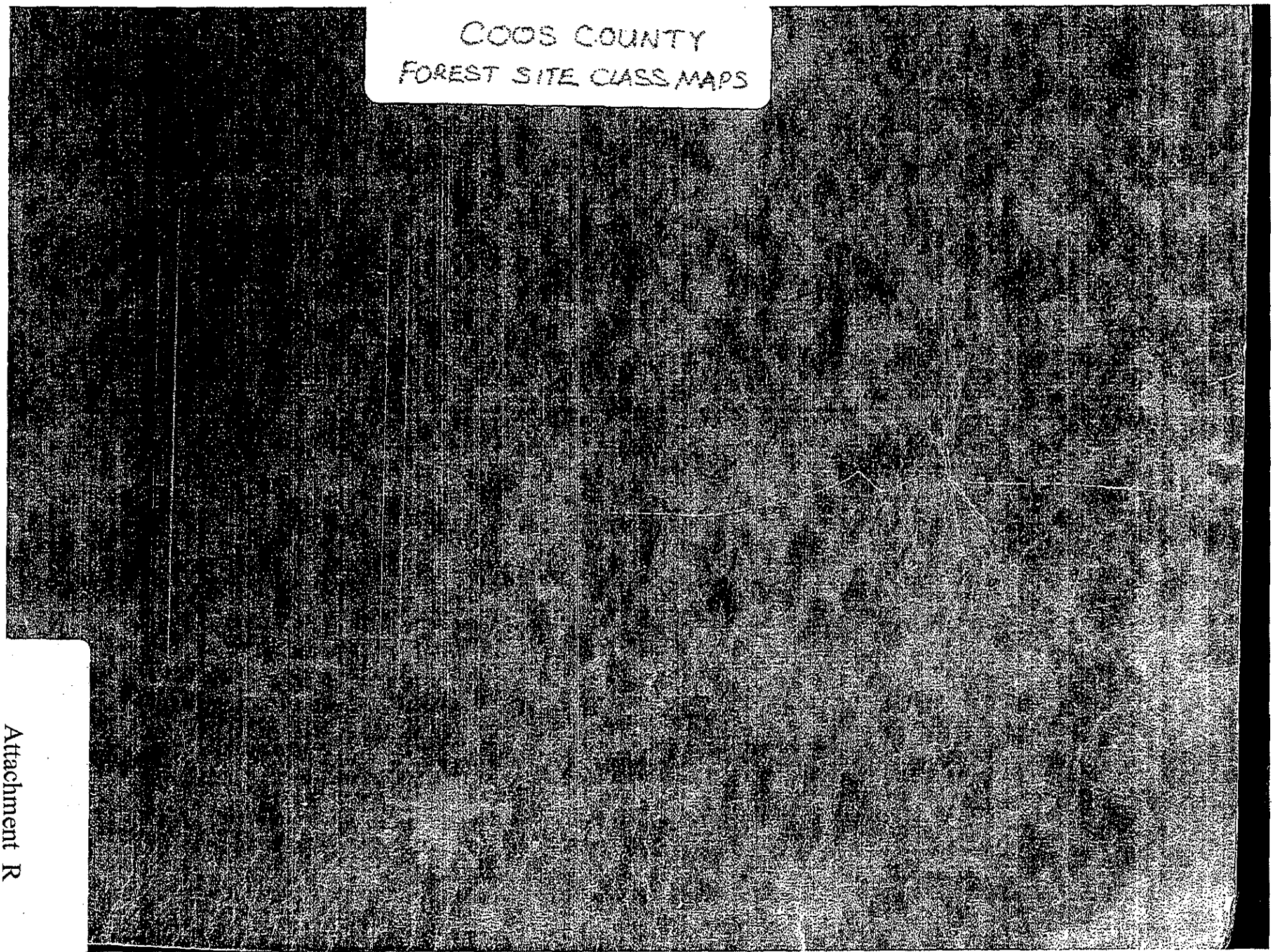
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

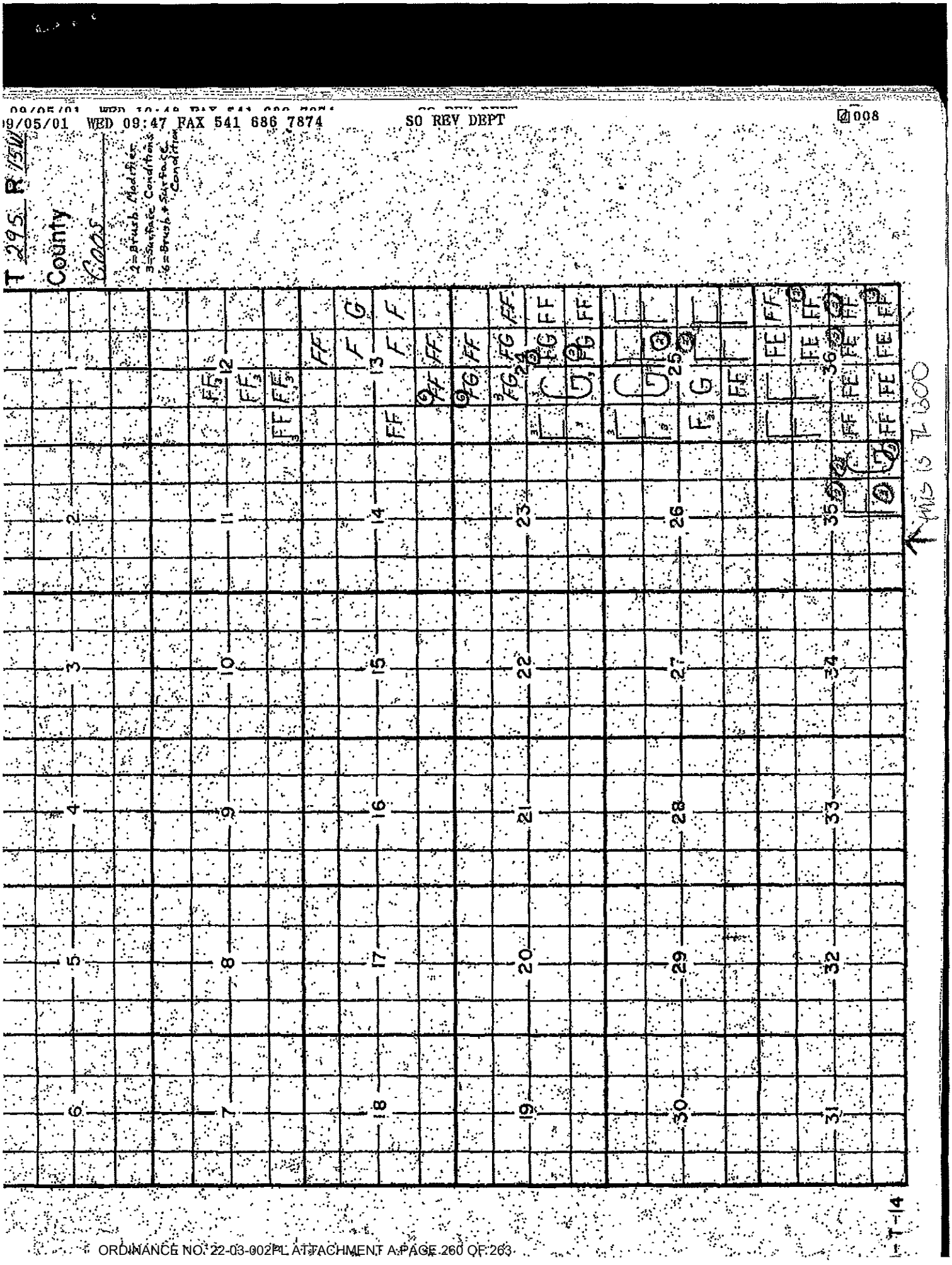
Sum: _____

Average: _____



Attachment R

each map is broken down by grids - info assigned by DOR per county


T 29S R 15W
County
Coos
2=Brush Modifier
3=Surface Conditions
6=Brush & Surface Conditions
THIS IS T 14.00
T-14

Coos County Assessor's Office

Coos County Assessor's Office
250 N. Baxter St.
Coquille, OR 97423

Mary Jane Starks
Farm/Forest Appraiser
541-396-7910
Email: mjstarks@co.coos.or.us

WE'RE ON THE WEB!
http://www.co.coos.or.us

How important are land or site classes?

They determine the value that your land is assessed at for property taxes. They determine how special assessments are applied to your property.

The SWCD Soil Book is available at no charge from Coos Soil & Water Conservation District office in Coquille.

Contact them at:

Coos Soil & Water Conservation District

382 N Central

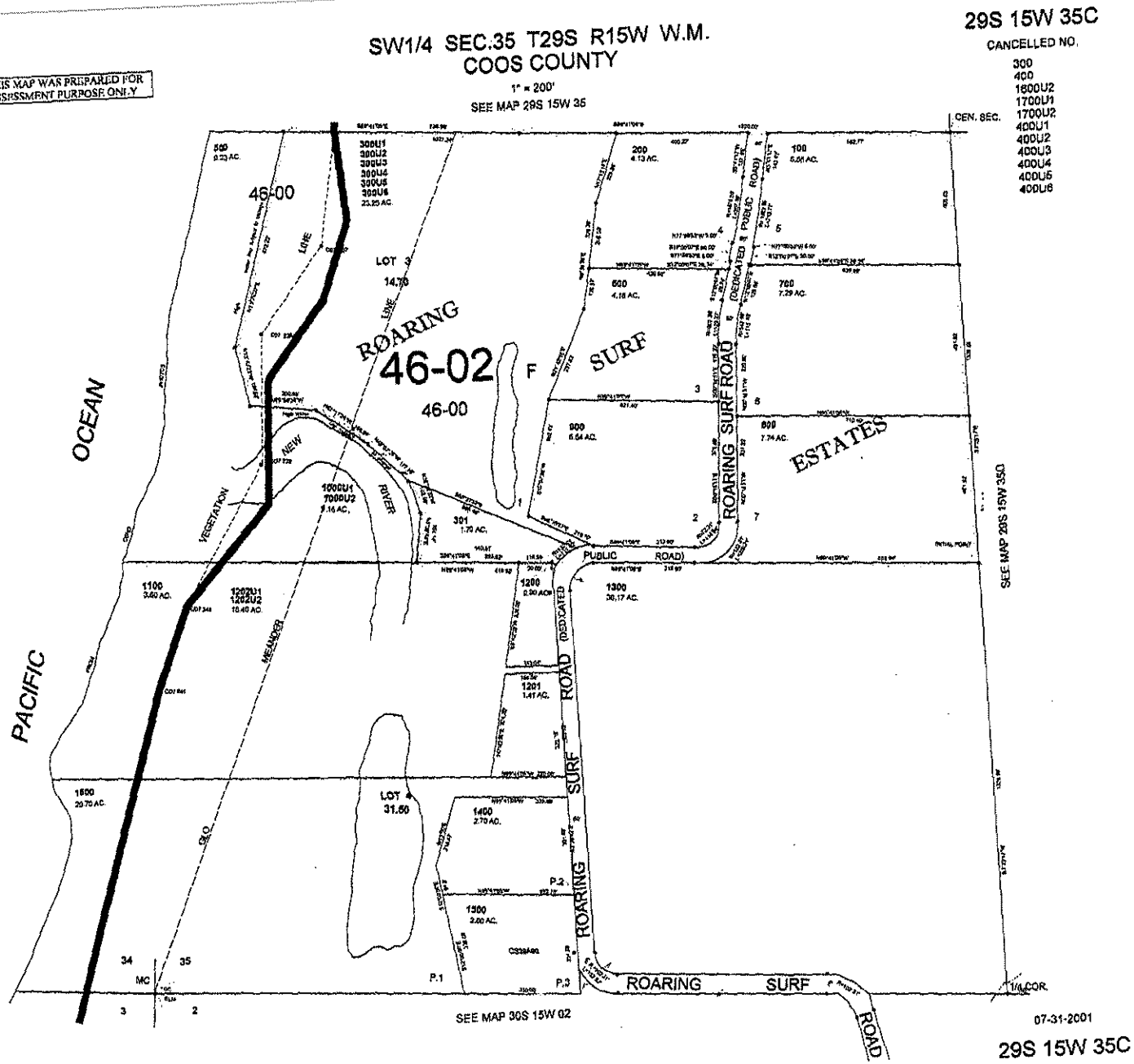
Coquille, OR 97423

(541) 396-6879

Forestland Classifications

FORESTLAND CLASSIFICATIONS	
Land Class	**Site Class**
FA	I+, I, I-
FB	II, II+
FC	II-, III+
FD	III
FE	III-, IV+
FF	IV, IV-
FG	V
FX	Below Site V

Based on Bulletin #201 tables dated 1930 and James King 50 year index tables dated 1966, topographical features, vegetation, and soil types.


SW1/4 SEC.35 T29S R15W W.M.
COOS COUNTY
1" = 200'
SEE MAP 29S 15W 35
29S 15W 35C
CANCELLED NO.
300
400
1600U2
1700U1
1700U2
400U1
400U2
400U3
400U4
400U5
400U6
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY
OCEAN
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ROARING
46-02
46-00
LOT 3
14.70
LINE
NEW
VEGETATION
RIVER
MEANDER
O.H.W.
ROARING SURF ROAD (DEDICATED PUBLIC ROAD)
ROARING SURF ESTATES
PUBLIC ROAD
ROAD (DEDICATED)
SURF
ROARING
LOT 31.60
SEE MAP 29S 15W 35D
SEE MAP 30S 15W 02
ROARING SURF ROAD
1/4 COR.
07-31-2001
29S 15W 35C

Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas:

	Township	Range	Section	Area
Bald Eagle Nests	23S	13W	23	Tenmile
	23S	11W	05	Big Creek
	23S	12W	21	Willow Point
	24S	12W	04	Palouse
	24S	13W	36	Mettman
	25S	11W	29	Bessy Creek
	25S	11W	33	Dellwood
	25S	11W	22	Rachel Creek
	25S	11W	32	Morgan Ridge
	26S	14W	14	South Slough
	27S	13W	09	
	28S	10W	09	Brewster Gorge
	31S	12W	16	Baker Creek
	29S	14W	31	Twomile Creek
	28S	14W	11	Randolph
Great Blue Heron Colonies	24S	13W	27 SW ¼	
	25S	14W	24 SE ¼	
	23S	13W	26	Saunders Lake
	24S	13W	23	North Bay
	25S	11W	15	Weyerhaeuser
	25S	12W	31 NW ¼	Catching Slough
	25S	14W	24	North Spit
	26S	14W	11	South Slough
	25S	13W	24	
	26S	14W	14 NE ¼,SE ¼	
	27S	14W	35 SE ½, NW ¼	Sevenmile
	26S	14W	14 NW ¼	
	30S	15W	15	Muddy Lake
	23S	12W	28	Templeton Arm
Band-Tailed Pigeon Mineral springs	24S	13W	24 & 25	Haynes
	25S	13W	24	Cooston
	26S	13W	01	
	28S	14W	10	Prosper
	29S	11W	26	
	29S	11W	35	Blueslide
	29S	11W	36	Rock Quarry

ATTACHMENT B

- ***ARTICLE 5.1 REZONES***

- ***SECTION 5.1.100 LEGISLATIVE AMENDMENT OF TEXT ONLY:***

An amendment to the text of this ordinance or the comprehensive plan is a legislative act within the authority of the Board of Commissioners. [OR 04 12 013PL 2/09/05]

- ***SECTION 5.1.110 WHO MAY SEEK CHANGE:***

Coos County shall consider the appropriateness of legislative plan text and map amendment proposals upon: 1. A motion by the Board of Commissioners; or 2. A motion of the Planning Commission; or 3. The submission of formal request made by either: a. The Citizen Advisory Committee; or b. An application filed by a citizen or organization, accompanied by a prescribed filing fee. If a Measure 56 notice is required the applicant shall be responsible for the payment of all cost associated with that service.

- ***SECTION 5.1.115 ALTERATION OF A RECOMMENDED AMENDMENT BY THE PLANNING DIRECTOR:***

The Planning Director may recommend an alteration of a proposed amendment if, in the director's judgment, such an alteration would result in better conformity with any applicable criteria. The Planning Director shall submit such recommendations for an alteration to the Hearings Body prior to the scheduled public hearing for a determination whether the proposed amendment should be so altered.

- ***SECTION 5.1.120 PROCEDURE FOR LEGISLATIVE AMENDMENT:***

The Board of Commissioners shall conduct one or more public hearings with 10 days advance published notice of each of the hearings. The public notice shall state the time and place of the hearing and contain a statement describing the general subject matter of the ordinance under consideration. (ORS 215.060 & ORS 215.223). Notice to DLCD shall be provided 35 days prior to the initial hearing per ORS 197.610. Notice of adoption is subject to ORS 197.615. [OR 04 12 013PL 2/09/05]

- ***SECTION 5.1.125 MINOR TEXT CORRECTIONS:***

The Director may correct this ordinance or the Comprehensive Plan without prior notice or hearing, so long as the correction does not alter the sense, meaning, effect, or substance of any adopted ordinance. [OR 04 12 013PL 2/09/05]

- ***SECTION 5.1.130 NEED FOR STUDIES:***

The Board of Commissioners, Hearings Body, or Citizen Advisory Committee may direct the Planning Director to make such studies as are necessary to determine the need for amending the text of the Plan and/or this Ordinance. When the amendment is initiated by application, such studies, justification and documentation are a burden of the initiator.

- ***SECTION 5.1.135 STATUS OF HEARINGS BODY RECOMMENDATIONS TO THE BOARD OF COMMISSIONERS:***

A Hearings Body recommendation for approval or approval with conditions shall not in itself amend this Ordinance or constitute a final decision.

FINDING: This request is not a text amendment as described in Section 5.1.100. This is request meets the both Sections 5.1.110(1) and (3)(b) as by motion of the Board of

Commissioners to contract out directly with Crystal Shoji to draft the application and submit it for review on behalf of the County Forestry Department. This property was under the management of the County Forestry Department to manage. This does not require a Measure 56 notice as it only effects one property. This property is considered under Ordinance 22-03-002PL.

The Planning Director does not request any additional alternations at this time. The Planning Commission did not recommend a different approval to the Board of Commissioners. However, please note that the parcel size cannot go below 10 acres without an exception to Statewide Planning Goal 14. This will be considered a non-resource rural residential. The Planning Commission did not wish to include additional qualifiers to ensure compatibility with surrounding properties. However additionally, Deschutes County has been given the direction from DLCD that accessory dwelling units will not be allowed on non-resource lands.

The Planning Commission recommended approval of the application during the May 5, 2022 meetings. The Board of Commissioners' will issue the final decision.

- ***SECTION 5.1.200 REZONES:***

Rezoning constitutes a change in the permissible use of a specific piece of property after it has been previously zoned. Rezoning is therefore distinguished from original zoning and amendments to the text of the Ordinance in that it entails the application of a pre-existing zone classification to a specific piece of property, whereas both original zoning and amendments to the text of the Ordinance are general in scope and apply more broadly.

- ***SECTION 5.1.210 RECOMMENDATION OF REZONE EXPANSION BY THE PLANNING DIRECTOR:***

The Planning Director may recommend an expansion of the geographic limits set forth in the application if, in the Planning Director's judgment, such an expansion would result in better conformity with the criteria set forth in this Ordinance for the rezoning of property. The Planning Director shall submit a recommendation for expansion to the Hearings Body prior to the scheduled public hearing for a determination whether the application should be so extended.

- ***SECTION 5.1.215 ZONING FOR APPROPRIATE NON-FARM USE:***

Consistent with ORS 215.215(2) and 215.243, Coos County may zone for the appropriate non-farm use one or more lots or parcels in the interior of an exclusive farm use zone if the lots or parcels were physically developed for the non-farm use prior to the establishment of the exclusive farm use zone.

- ***SECTION 5.1.220 PROCESS FOR REZONES:***

1. *Valid application must be filed with the Planning Department at least 35 days prior to a public hearing on the matter.*
2. *The Planning Director shall cause an investigation and report to be made to determine compatibility with this Ordinance and any other findings required.*
3. *The Hearings Body shall hold a public hearing pursuant to hearing procedures at Section 5.7.300.*

4. *The Hearings Body shall make a decision on the application pursuant to Section 5.1.225.*
5. *The Board of Commissioners shall review and take appropriate action on any rezone recommendation by the Hearings Body pursuant to Section 5.1.235.*
6. *A decision by the Hearings Body that a proposed rezone is not justified may be appealed pursuant to Article 5.8.*

- ***SECTION 5.1.225 DECISIONS OF THE HEARINGS BODY FOR A REZONE:***

The Hearings Body shall, after a public hearing on any rezone application, either:

1. *Recommend the Board of Commissioners approve the rezoning, only if on the basis of the initiation or application, investigation and evidence submitted, all the following criteria are found to exist:*
   a. *The rezoning will conform with the Comprehensive Plan or Section 5.1.215; and*
   b. *The rezoning will not seriously interfere with permitted uses on other nearby parcels; and*
   c. *The rezoning will comply with other policies and ordinances as may be adopted by the Board of Commissioners.*

2. *Recommend the Board of Commissioners approve, but qualify or condition a rezoning such that:*
   a. *The property may not be utilized for all the uses ordinarily permitted in a particular zone;*
   b. *The development of the site must conform to certain specified standards; or*
   c. *Any combination of the above.*

   A qualified rezone shall be dependent on findings of fact including but not limited to the following:
      i. *Such limitations as are deemed necessary to protect the best interests of the surrounding property or neighborhood;*
      ii. *Such limitations as are deemed necessary to assure compatibility with the surrounding property or neighborhood;*
      iii. *Such limitations as are deemed necessary to secure an appropriate development in harmony with the objectives of the Comprehensive Plan; or*
      iv. *Such limitations as are deemed necessary to prevent or mitigate potential adverse environmental effects of the zone change.*

3. *Deny the rezone if the findings of 1 or 2 above cannot be made. Denial of a rezone by the Hearings Body is a final decision not requiring review by the Board of Commissioners unless appealed.*

- ***SECTION 5.1.230 STATUS OF HEARINGS BODY RECOMMENDATION OF APPROVAL:***

The recommendation of the Hearings Body made pursuant to 5.1.225(1) or (2) shall not in itself amend the zoning maps.

- ***SECTION 5.1.240 REQUIREMENTS FOR "Q" QUALIFIED CLASSIFICATION:***

Where limitations are deemed necessary, Board of Commissioners may place the property in a "Q" Qualified rezoning classification. Said "Q" Qualified Classification shall be indicated by

the symbol "Q" preceding the proposed zoning designation (for example: Q C-1).

- ***SECTION 5.1.275 STANDARDS FOR COMPREHENSIVE PLAN AND REZONE FOR NONRESOURCE LAND:***

1. The subject property does not meet the definition of Agricultural Land under Statewide Planning Goal 3 and /or Forest Land under Statewide Planning Goal 4.

   NOTE: If the subject property is predominantly Class 1-IV soils or if it predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.

2. The subject property does not contain any natural resources defined in Statewide Planning Goal 5 which are identified in the Coos County Comprehensive Plan;
3. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract.
4. The subject property is not considered to be nonresource land simply because it is too small to be farmed or forest managed profitably by itself. If the subject property can be sold, leased, rented or otherwise managed as part of a commercial farm, ranch or other forestland it is not considered to be nonresource land.
5. The subject property is not considered to be nonresource land if it has been given a special tax assessment for farm use or as designated forestland at any time in the past five years.
6. If the subject property is found to meet all of the standards above to be considered nonresource land the county shall also determine that rezoning the property to a nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.
7. The subject property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use.

   Any proposal of at least 2 acres but less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040.

8. Rezoning of land that is found to be nonresource land shall be to a "rural" zone that is appropriate for the type of land and its intended use.

   Rural commercial or industrial development must comply with standards for small-scale, low impact commercial and industrial use.

   Development of property rezoned from Forest or Forest Mixed use to a nonresource zone shall comply with the resource development and siting standards. (ORD NO. 04-01-001PL February 10, 2004)

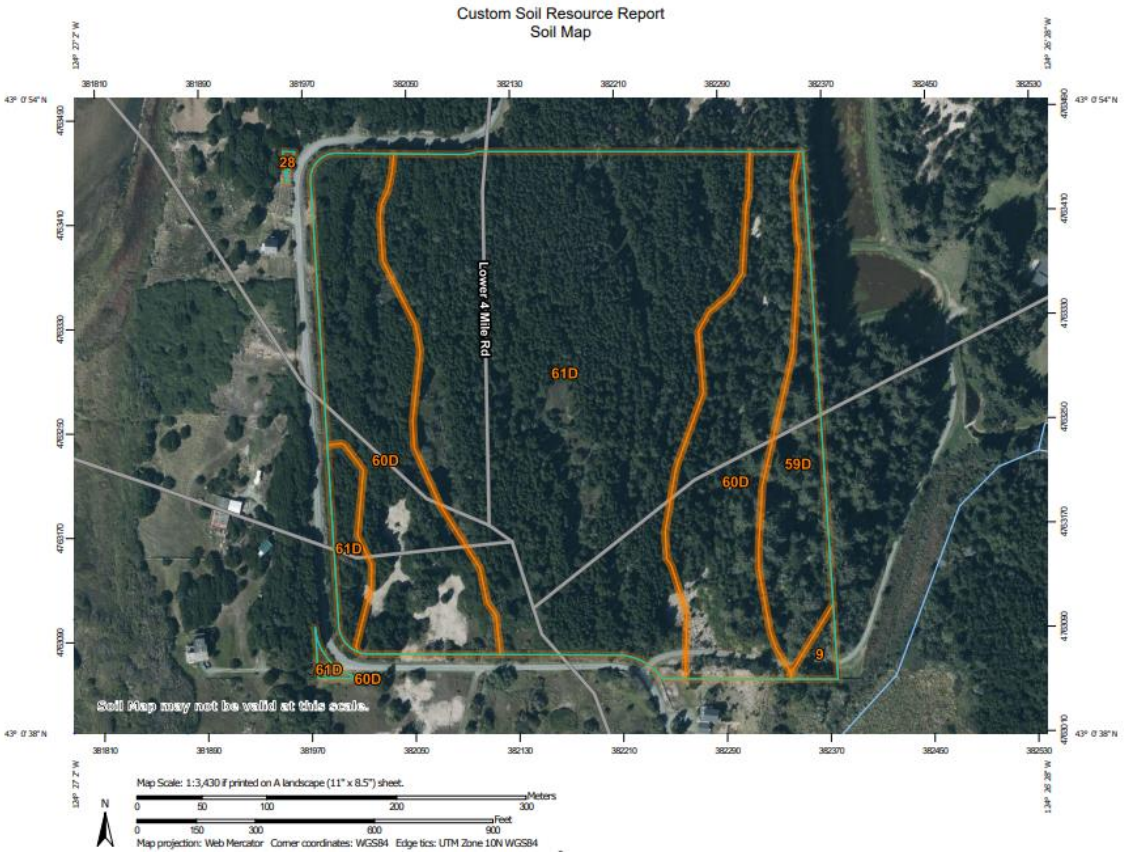
FINDING: The applicant is requesting to change the Plan Map to change the official zone

form from Forest to Rural Residential. This requires the removal from the mixed use inventory and because the minimum size is 10 acres as it will be mapped as a Qualified-Rural Residential-5 zone.

The subject property is not inventoried as having any Goal 5 resources. The subject property has been proven to be generally unsuitable for production of farm crops and livestock or merchantable tree species, considering terrain adverse soil conditions, drainage and flooding, vegetation, location and size of the tract as explained in the application and within this staff report. The county has tried to sell and lease this property with no interest from anyone as described in the application. This property is exempt from property tax classification at this time but that has not been a factor in this process. A nonresource zone will not materially alter the stability of the overall land use pattern in the area and lead to the rezoning of other lands to nonresource use to the detriment of the resource uses in the area.

The subject property is not predominately classified as Class I-IV soils. The applicant stated, and Staff verified, that approximately 98% of the subject property composes of soil not classified as Class I-IV soils; these soils are Waldport-Heceta fine sands – 61D, Waldorf-Dune land complex – 60D, Waldorf fine sand – 59D.

The other criteria is to address is whether the subject property is predominantly consists of soils capable of producing 5000 cubic feet of commercial tree species it is not considered to be nonresource land.



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Chetco silty clay loam	0.3	0.7%
28	Heceta fine sand	0.0	0.1%
59D	Waldport fine sand, 0 to 30 percent slopes	2.8	7.6%
60D	Waldport-Dune land complex, 12 to 30 percent slopes	12.7	34.1%
61D	Waldport-Heceta fine sands, 0 to 30 percent slopes	21.4	57.5%
Totals for Area of Interest		**37.2**	**100.0%**

Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	Common trees	Site Index	Base Age	Site Index Curve Number	Volume Growth Rate (CMAI)
		ft	*yrs*		*cu ft/ac/yr*
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

Staff calculated the following table identifying the cu ft / ac / yr of the subject property. The subject property calculated at 4221.2 cu ft/ac/yr, which is less than the 5000 cu ft/ac/yr requirement for being consider resource land.

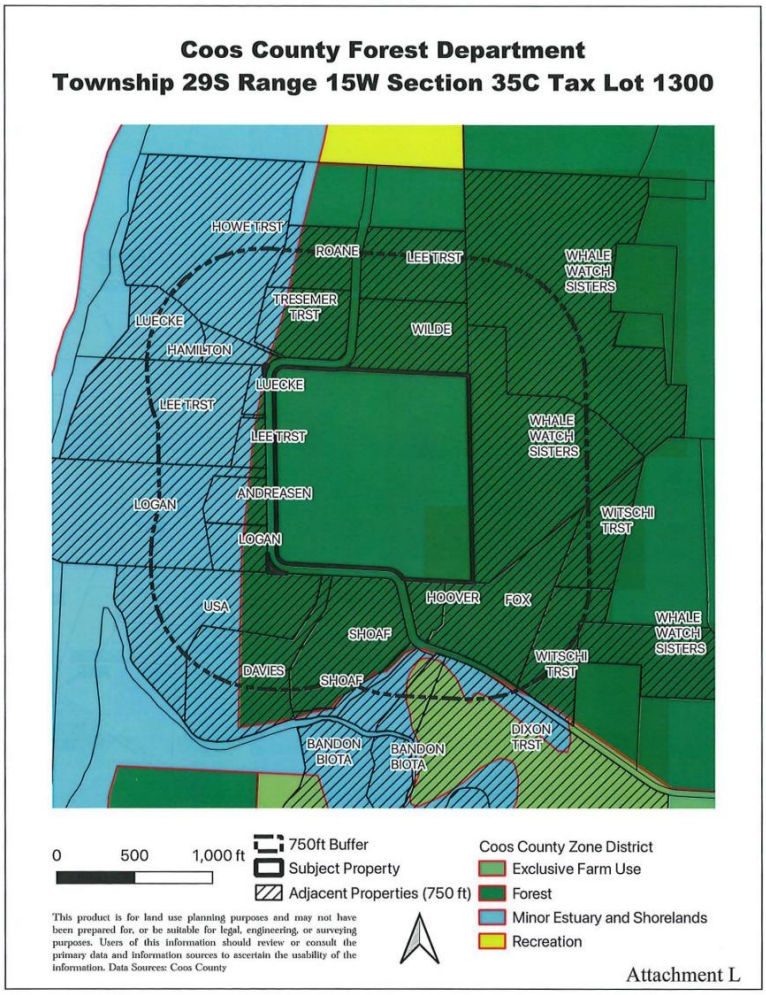
Soil	Acres	Tree Species	cu ft/ac/yr	Total
59D	2.8	Shore pine	86	240.8
61D	21.4	Shore pine	86	1840.4
61D	21.4	Sitka spruce	100	2140
			Total	**4221.2**

This property is surrounded by other resource zoned property. However, the property to the west is a non-conforming subdivision and mostly develop with residential uses. The property is surrounded by tax lots that range in size from 0.90 to 67.84. With an average size of 13.34 and within those tax lots.

MES = Minor Estuary Shorelands, F = Forest, EFU = Exclusive Farm Use and RR-5 = Rural Residential.

Below is the tax lot information to show size, zoning and average size. The area under consideration was the notification area.

Map No	Parcel No	Acres	Plan Zone
29S15W35C	300	3.88	MES
	301	1.70	F
	600	4.18	F, MES
	700	7.29	F
	800	7.74	F
	900	5.54	F, MES
	1000	1.08	MES
	1200	0.90	F, MES
	1201	1.41	F, MES
	1202	8.20	F, MES
	1400	2.70	F, MES
	1500	2.60	F, MES
	1600	20.70	F, MES
29S15W35D	600	37.52	F
	700	22.87	F
	801	5.93	F
30S15W02	101	55.16	MES, EFU
	102	6.20	F
	104	9.74	F
	105	10.27	F
	107	1.54	F
	109	40.00	MES, EFU
	110	9.95	F
	111	67.84	Q-RR-5, MES, F, EFU
	112	1.08	MES
	501	14.20	MES, F
	502	10.00	MES, F
	Average	13.34	



Staff finds it appropriate based on the zoning that at least a minimum of 10 acres be applied. Any proposal of at less than 10 acres requires approval of a Goal 14 exception pursuant to OAR 660-00-0040 based on the language of the CCZLDO. The Board of Commissioners could state that the minimum lot size cannot be less than the average tax lot size of 13.34 acres if they find it necessary to be compatible with surrounding zoning. The properties range in uses, zoning and development capabilities, soils, hydrology of the soils, zoning, flood hazard, erosion and size. However, based on the these factors it does not appear that this proposal will change the overall stability of the land pattern.

The subject property is not developed. Based on the zoning map, the subject property is surrounded by similar forest zoning district.

Typically, the RR-5 zoning district requires a 5-acre minimum lot size. However, applicant requested that a qualifier be placed on the zoning district that lot size is a minimum of 10 acres to be consists with the nonresource rezone criteria. This will meet the standard for non-resource land based on the LUBA case Oregon Shores

Conservation Coalition v. Curry County, 53 Or LUBA 503 (2007). The subject property shall be at least 10 acre in area unless it is contiguous to an area that is zoned for nonresource use.

The application was received on March 4, 2022 and the 35 day notice to DLCD was provided within the appropriate period. The notice shall be provided 35 days prior to the first hearing. The first hearing on this matter is May 5, 2022 and the notice was required to be submitted by March 31, 2022. Notice was provided on March 23, 2022. This hearing is after this date. Therefore, this application meets the minimum of being filed 35 days prior to the first hearing.

This application is plan map amendment to change the zoning from Forest to Rural Residential and the official zoning from Forest to Qualified- Rural Residential with the Qualifier requiring 10 acre minimum lot size. Based on the Planning Commission recommendation, Staff requests the Board of Commissioners approve the rezone based on the findings found in the staff report and application.

Coos County Comprehensive Plan

- ***Coos County Comprehensive Plan Volume II, Part I Section 3.2 and Part II Section 5.1***

3.2 FOREST LANDS

1. Legislative Framework

1.1 Introduction

Forest lands are the resource base for Oregon's leading industry, lumber and wood products. In addition, they provide many other benefits of economic, ecologic, and aesthetic value: water quantity and quality, minerals, grazing for livestock, fish and wildlife, recreation and scenic resources. According to the State Department of Forestry's "Forestry Program for Oregon," there are currently more than 24 million acres of commercial forest land in the State. Of these lands, more than 15 million acres are in public ownership, under the U.S. Forest Service and Bureau of Land Management. Five (5) million acres are owned by the forest industry and more than four (4) million areas are in other private-ownerships. Conservation and proper management of the State's commercial forest lands is essential.

1.2 Statewide Land Use Goal #4: Forest Lands

The State has adopted the following Goal:

GOAL: To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Forest lands are those lands acknowledged as forest lands as of the date of adoption of this goal amendment. Where a plan is not acknowledged or a plan amendment involving forest lands is proposed, forest land shall include lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources.

Uses which may be allowed subject to standards set forth in this goal and administrative rule are: (1) uses related to and in support of forest operations; (2) uses to conserve soil, water and air quality, and to provide for fish and wildlife resources, agriculture and recreational opportunities appropriate in a forest environment; (3) locationally dependent uses; (4) forest management dwellings that are necessary for, and accessory to, forest operations; and (5) other dwellings under prescribed conditions."

COMMENTARY

1) Mapping of site classes. The State Land Conservation and Development Commission has clarified the requirement of the Goal on mapping of site classes. It requires mapping according to "cubic foot site class," a measure of the potential forest productivity of the land.

Where cubic foot site class mapping is not directly available, it can be derived by conversion of other readily available mapping showing other types of site classification, e.g. the State Department of Revenue system. The State Department of Forestry has provided a convenient conversion table which is shown in Table 2.

2) Definition of forest lands. This definition encompasses not only existing and potential commercial forest lands but also non-commercial forest land supporting forest uses other than timber production, non-forest lands which require protection due to their fragility and forested lands in urban and agricultural areas. "Commercial forest land" is not defined in the Goal.

3) Definition of forest uses. This definition includes a number of potential uses, and constitutes a mandate for a "multiple-use" approach to the use of forest lands. It includes all the uses in the multiple-use concept under which public forest lands are managed by the U.S. Forest Service and Bureau of Land Management. While public land must be managed for this full range of uses, private forest land may be managed to emphasize one or other (or more) of these uses. However, other uses like dispersed recreation and water supply may occur on private lands incidentally to the primary use. Most forest uses are compatible with one another, and may occur simultaneously. However, emphasis on one use may exclude others. For instance, developed recreational uses may not always be compatible with time harvest. The Comprehensive Plan identifies special areas where significant resources exist (for example, significant wildlife habitats, or special scenic resources) where conflicts may occur with other forest uses like timber harvest. It should be noted that a residence is not defined as a forest use, whether or not it is provided in conjunction with forest management.

1.4 Relationship of the Forest Lands Goal to the Forest Practices Act

The Forest Practices Act (FPA) (ORS 527.620-527.990) is implemented by the State Department of Forestry and sets minimum standards for the following forest practices:

(a) reforestation of forest land economically suitable therefore;

(b) road construction and maintenance operations in forest land;

(c) harvesting of forest tree species;

(d) application of chemicals on forest land; and

(e) disposal of slashing on forest land.

Sets minimum standards for surface mining. These practices are regulated for the following objectives:

(a) maintaining forest tree species;

(b) maintaining soil air and water resources; and

(c) providing a habitat for wildlife and aquatic life.

These rules apply to any operations on all forest lands throughout the State, except federal lands, and provide a significant level of protection for forest uses. These standards have been recognized by EPA as "Best Management Practices" to protect water quality for forest operations (See ORS 527.620).

The relationship between the Forest Practices Act (FPA) and the goal was addressed by the 1979 Oregon Legislature in HB 3008, which; upon passage, became incorporated into the FPA as part of ORS Chapter 527.

ORS 527.722 (1) Except as provided in subsection (2) of this section, no unit of local government shall adopt any rules, regulations or ordinances regulating the conduct on forest lands of forest operations governed by the Oregon Forest Practices Act or rules promulgated thereunder.

(2) Notwithstanding subsection (1) of this section, a city may adopt rules, regulations or ordinances regulating the conduct on forest lands of forest operations within city boundaries if those rules, regulations, or ordinances establish standards equal to or more stringent than those established by the Oregon Forest Practices Act or rules promulgated thereunder.

ORS 527.724 Any forest operations on forest lands within this state shall be conducted in full compliance with the rules and standards of the Environmental Quality Commission relating to air and water pollution control. In addition to all other remedies provided by law, any violation of those rules or standards shall be subject to all remedies and sanctions available under statute or rule to the Department of Environmental Quality or the Environmental Quality Commission.

ORS 527.726 (1) Nothing in ORS 527.722 and ORS 527.724 is intended to preclude counties from performing their planning duties pursuant to ORS 197.005 to 197.430 with respect to forested lands by:

a) Designating in comprehensive plans forested lands to be conserved in accordance with the statewide planning goals;

b) zoning forested lands for uses other than or complementary to commercial growing and harvesting of forest tree species in implementing a comprehensive plan; or

c) adopting rules, regulations or ordinances regulating forest operations on those forested lands zoned for primary uses other than the commercial growing and harvesting of forest tree species in accordance with the use or purpose for which those lands have been zoned.

(2) As used in this section, "forested lands" means those lands upon which forest tree species are growing.

Thus, the statutes effectively prohibit counties from establishing forest practices rules beyond those in the FPA. The Forest Lands Goal itself does not directly address the application of management standards affecting forestry, the implication being that this is handled by the FPA. As noted in ORS 527.736 above, however, counties adopt more stringent forest practice rules only on forested lands zoned for primary uses other than and not including commercial timber

management and harvest. Thus, if forest land is zoned for another forest use, for instance a municipal watershed with timber management excluded or made a conditional use only, and if it is found that the normal practice of timber harvest would conflict with the water resource, then additional rules, regulations or ordinances regulating forest operations may be imposed to protect that resource. However, if the zone permits forest uses in general, additional regulations may not be imposed. An Attorney General's opinion [#7894, 4/28/80] makes it clear that this section of ORS 527 does not grant counties additional powers. It simply ensures that it retains the powers to zone and regulate uses granted in ORS Ch. 197. The opinion was given in answer to a question by State Senator Kulongowski, who asked whether a county might impose zoning regulations different from the FPA in a watershed.

If there is some concern over the FPA regulations, jurisdictions are required to either:

(a) Work with the local forest practices officer of the State Department of Forestry to have the resource protected through forest operation management plans for specific areas and/or operations, or

(b) Seek an FPA rule amendment through the Regional Forest Practices Committee.

1.5 Special Provision in Coastal Shorelands Goal (#17) Relating to Forest Practices

The Coastal Goals make specific provisions relating to the Forest Practices Act and its implementation. Most refer to estuarine shorelands. (See Estuary Elements). However, there is one requirement which also relates more generally to non-estuarine shorelands. The State Department of Forestry must:

"recognize the unique and special values provided by coastal shorelands when developing standards and policies to regulate uses of forest lands within coastal shorelands. With other state and federal agencies, the Department of Forestry shall develop forest management practices and policies which protect and maintain the special shoreland values and forest uses." (Goal 17, Implementation Requirement (1).)

This means that special forest practices regulation must be developed in coastal shorelands to protect diverse values such as recreation, scenic resources, wildlife habitats or natural areas.

2. Forest Land Inventory

2.1 Forest Productivity Measures.

The 'site index' concept is used to measure the forest productivity of a particular location. 'Site index' is based on the height that a free-growing forest tree will reach within a certain time period (normally 100 years). A fully-stocked stand of trees of this species will add a certain volume of wood growth per acre per year. An alternative measurement of productivity is based on this volume and is called "cubic foot site class." There is a variety of productivity classifications based on these two measures. The classification systems used for Douglas Fir in Western Oregon are summarized in Table 2 below.

Table 2

Classification Systems for Douglas Fir
(below 2500 feet in western Oregon)

Growth Measures	Scale																				
Site Index: Height in Ft. at 100 years	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210				
Potential Yield: cubic feet/acre/year	20	20-49	50-80				85-119		120-164				165-224								
Classification Systems																					
Cubic Foot Site Class	7	6	5				4		3				2								
Site Class (Bulletin 201)			V				IV		III				II				I				
Dept. of Revenue Forest Land Class	FX		FG				FF		FE				FD		FC		FB		FA		

Source: Oregon State Department of Forestry

Douglas fir is used as the basis for productivity because it is the dominant species in most areas west of the Cascades. Along the coast, however, other species like Shore pine or Sitka spruce may be dominant. While the shore pine areas are usually older stabilized sand dune areas and are of low productivity, in Sitka spruce areas the site class may be higher for this species than for Douglas fir.

The Forest Lands Goals requires that forest productivity be inventoried and mapped by 'cubic foot site class.' However, as noted earlier, the Department of Revenue Forest Land Classification System is recognized as an acceptable equivalent, and may be converted to cubic foot site class by Table 2 above.

2.2 Forest Productivity Mapping

Generalized forest site classes for the forest lands of Coos County have been identified on the Forest Resources map at a scale of 1/2" = 1 mile and include:

1. *Cubic Foot Site Classes 2 and 3 (combined) with a potential yield of 120-220 cubic foot per acre per year for Douglas fir.*
2. *Cubic Foot Site Class 4 (85-119 cu. ft./acre/year)*
3. *Cubic Foot Site Class 5 (50-84 cu. ft./acre/year)*
4. *Boundary of area in which Sitka spruce and Hemlock tend to dominate as the major timber type.*

The site productivity mapping is based on the Forest Land classification of the Oregon State Department of Revenue.

These classifications reflect observed growth, rates on sites that were forested in 1967 and are generalized to 40 acre map units. The boundaried area addresses the concern of the Coos County Forestry Department that in many areas where a relatively low site class is indicated for Douglas fir, a significantly higher site class exists for Sitka Spruce or Western Hemlock.

As Table 2 shows, there is not an exact correspondence between the divisions of the Department of Revenue site classes and those of cubic foot site class. For instance, the lower half of Class FE and the upper half of FF correspond with Site Class 4. Thus, some map interpolation is done in order to approximate the extent of Site Class 4 and 5, as suggested by the State Department of Forestry, the procedure followed was to separate Class FE and FF lands into upper or lower divisions based on whether one or more of the neighboring 40 acre units were in a higher or lower class, or the same class. For instance, if a unit of FF is bounded by one or more units of FE, then it is placed in Site Class 4. Otherwise, it is in Site Class 5. The Cape Arago to Beaver Hill area, which includes part of the Coos County Forest, is generally site class 3 or 4 land for Douglas fir. However, it is considerably more productive for Sitka spruce and Hemlock.

As the Forest Resources map indicates, much of the County is highly suitable for timber production of major commercial species. It should be noted that the flood plains, where in agricultural use, were not given site classes by the D.O.R. due to the fact that they were not under forest cover in 1967, though these soils are highly productive.

The original tree cover was mainly hardwoods, alder, maple, ash and myrtle, with some conifers. Technically, these lands could be classified as forest lands, because of the potential vegetation, but their primary value will continue to be as agricultural lands. A somewhat lower productivity is indicated on the coastal plain, where poorer soils and climate limit growth and in the Siskiyou National Forest in the southern part of the county, where elevation and rocky soils are limiting factors. However, even these sites have a potential productivity well above 20 cu. ft./acre/year, which is the standard definition of commercial forest land.

Only the sand dune areas of the coastal fringes have so little growth potential that they fall outside the definition of "commercial forest lands."

Unlike the definition of 'Agricultural Land', which has a different standard in Eastern Oregon, the definition of "commercial forest lands" is the same state-wide. However, in reality a rather different standard operates on the Oregon Coast, where the levels of forest productivity are generally very high. Land of lower site classes in Coos County (site class 4 or below) is regarded as relatively poor timber growing land. Commercial timber production is only feasible on lower site class lands where large contiguous tracts are managed (for example in the Coos County Forest or the upper elevations of the Siskiyou National Forest.) There are a few large corporate holdings on the coastal plain in these lower site class areas which may still be economically feasible to manage. However, many citizens in this area have complained that most timber companies are not interested in purchasing land and in the area for commercial timber production. Thus, while these low site class lands are technically "commercial" forest lands, in practice they are not often managed intensively, particularly where they are in smaller private ownerships.

2.3 Forest Land Types

There are several types of forest land in Coos County, ranging from that intensively managed for timber production, to land used for both timber and grazing/agriculture, to smaller forest ownerships in areas experiencing pressure from development. The categories may generally be described in terms of their use and ownership characteristics as well as other influencing factors, such as topography and access.

Much of the commercial forest land in the County is devoted primarily to the growing and harvesting of timber and other forest products, though other forest benefits are also derived from the land (water, wildlife habitat and recreation, for instance.) Generally, the topography is quite rugged, and access provided through private logging roads. Lands in this category are the steep mountain slopes in the northern, eastern, and extreme southern portions of the County. This category includes much of' the publicly-owned land in the County (Elliott State Forest, Bureau of Land Management, Coos County Forest, Siskiyou National Forest), and much of the forest-industry owned land. Basically, this type of land is unsuited for other non-forest uses. The remoteness of these areas, however, makes them well suited to "intensive" forms of forest management such as fertilization by helicopter and slash burning.

Forest and grazing land includes land that either by use or land ownership pattern, combines forested land with grazing land. Typically, this land is owned by farmers who combine cattle and sheep raising with timber production. There are distinct differences in land ownership/use patterns between different parts of the County. In the southern part of the County, particularly in the drainage of the South Fork of the Coquille River and south of Bandon, there are hill ranches, generally of very large acreage where open grazing land is intermingled with forested land. A few operations may cover an entire major drainage basin. In other parts of the County, particularly the northern and eastern parts, farm/forest ownerships follow narrow valleys. Typically, the bottom lands are in agricultural use, while the lower slopes and benches will also often be in open grazing. However, the upper slopes are generally forested. (Such farm ownerships generally lie along valleys, with the property extending well beyond the bottom land on either side and often reaching to the top of the first ridge.) Beyond that the uplands on all sides are typically in forest industry or public ownership. Good examples of this ownership pattern may be seen in the valleys of the East Bay or Tenmile Lakes. This ownership pattern historically stemmed from the fact that the more inaccessible lands originally in small private ownership were allowed to revert to the County due to non-payment of taxes mostly during the Depression years, and were bought by the major timber companies.

Particularly on the hill ranches of the southern half of the County the land is characterized by a fluctuation in use between timber production and grazing. This includes both the practice of grazing livestock in wooded areas and conversion of timber land to grazing land after the timber is harvested. This type of use of forest land has been important to the County throughout its history.

In certain parts of the County, there are substantial acreages of forest land in smaller private ownerships (mostly under 160 acres) which are not managed in conjunction with farms. This type of land is found primarily in coastal areas north and south of Bandon and also in the Hauser area, on predominately low site class lands (as defined in 2.2 above). There are also similar smaller ownerships in higher site forest lands further inland, particularly close to urban

areas, like the Isthmus Heights, Sumner area. Most of this land is still under forest cover, but is generally not being managed intensively by modern forestry techniques. This is in part due to a low productivity (at least in the Bandon and Hauser areas), and in part due to the intrusion of developed uses, particularly rural homesites on small acreages into many of these areas. Inevitably, the pressure is great to remove any merchantable timber from these lands and convert it to rural homesites of various acreages. The bulk of citizen requests for rural residential designation (as expressed through the citizen involvement program) have been in areas like north and south of Bandon, Isthmus Heights/Sumner and Hauser. The rural housing section and Exception Statement have stated that such areas might best accommodate the public need for future rural residential growth in the County, given the commitment of nearby land to residential use, and other favorable factors, as assessed in the Suitability Rating System. The problem which remains is, how best to plan rural residential growth so that small-scale forest management remains a viable option on the remaining lands.

Finally, there are also certain corporate forest holdings in close proximity to established residential areas. Primary examples are found adjacent to the communities of Glasgow, Cooston, Barview and Millington. While acreages are substantial, there are still problems with the use of industrial forest management practices. The owners may eventually have to look at other options for these lands.

2.4 Forest Land Base

Preservation or enlargement of the amount of land available for timber production is essential to the maintenance of sufficient timber harvest levels. A decline in the amount of land available for growing trees will mean a decline in the potential harvest, unless the degree of intensive forest management practiced on the available lands is increased correspondingly. Estimates for 1973 show that there were 873,000 acres of "commercial forest land" in Coos County, while there were 847,000 acres in 1975.

"Commercial Forest Land," according to the source's definition, is land that is (a) producing or capable of producing usable wood crops (b) economically feasible to harvest new or in the future; (c) not withdrawn from timber harvest. The 1975 figure reflects a net loss of 53,000 acres of commercial forest land over a 12 year period (see Table 3 below). Some of this land went into the "unproductive forest land" category (land not capable of producing wood due to adverse site conditions) and the "productive-reserved" category (productive land removed from commercial use by statute or administrative order).

Of particular concern to land use planning is the 33,000 acre increase in the amount of non-forest land in the county. While most of this acreage may be attributed to conversion of tree-covered land to agricultural and grazing land, it must be assumed that some of it at least, has been permanently removed from the realm of resource production through development as rural homesites. The exact acreage is not known at this time. Land converted to agricultural or grazing use may, in a sense, be assumed to be only temporarily removed, as it can be reclaimed for the production of timber if economic feasibility and the landowner's desires so dictate.

Land converted to urban uses, however, cannot be reclaimed at all and may be assumed to be permanently lost. Considering the County's substantial economic dependence on the

timber/forest products industry, the impact of these land losses to development may be significant. The extent of the impact depends on whether the land lost is of high or lower site class. A fair proportion of rural homesite development over the years has occurred in relatively low site class forest lands, for example north and south of Bandon and near Hauser. Forest land ownership is divided between three major types as follows 35.2% is in public ownership (U.S. Forest Service, Bureau of Land Management, Elliott State Forest and Coos County Forest); 40.5% is in forest industry ownership (major owners are Weyerhaeuser, Menasha Corporation, Georgia Pacific and International Paper); 24.3% is owned by farmers and other private individuals.

The total volume of standing sawtimber was estimated at 17,346 million board feet in 1975. [ibid] Public lands contained 66.7% of this volume, forest industry lands 23.2% and private non-industrial lands, 10.1%. Thus, while private lands total almost two-thirds of the land base, they contain only one-third of sawtimber stocks. Examination of air photographs shows that there is little old growth timber remaining in the western half of the County. A very low percentage of the farm-forest lands in the County contain stands of fully mature timber, older than 100 years. Remaining reserves can be clearly identified by the darker color and rougher texture as it appears on infra-red photography. The more inaccessible areas of the Siskiyou National Forest contain the highest volumes of over-mature material. The Elliott State Forest, however, contains plentiful reserves of older second growth timber of approximately 90-100 years age-class, dating from extensive fires in the last century. In addition, the major timber companies have established extensive stands of younger reproductive growth on their free farms. Unfortunately, large acreages of land in the more accessible parts of the County support "bastard growth", a mixture of hardwoods (mostly alder, maple and myrtle) and conifers (Douglas fir, Grand fir, Hemlock, and cedars). Reproduction by the more economically valuable conifers has been cut back by the aggressive regrowth of "pioneer" species (especially alder.) While this is a stage of natural plant succession, (alder prepares a fertile soil for later colonization by conifers), it would take many times as long to establish a fully stocked coniferous stand by this process as by replanting a harvested site. Generally it takes at least 25 years before fir beneath it to start to grow more rapidly. Some foresters state that the process actually takes much longer, and that often the suppressed trees fail to respond at all.

Future timber supplies will be depleted because of a past failure to re-establish fully-stocked coniferous stands.

A State Department of Forestry Study of the Oregon Coast Range estimates that in 1976, 568,400 acres (or 15% of the area studied) was "underproductive", that is, land that "once supported mature conifer forests that are no longer commercially productive." This points to the magnitude of the problem. The study found that over half of this land is in the "other private" (non-industrial) category, and comprises 30.2% of the total holdings in that category.

Table 3

Forest Land in Coos County, 1963 and 1975

	1963		1973		1963-1973 Acre Change	1975		1973-1975 Acre Change
	Acres	%	Acres	%		Acres	%	
Total Land Area	1,031,000	100.0	1,027,000	100.0	-4,000	1,027,000	100	-
Total Forest Land	905,000	87.8	891,000	86.8	-14,000	868,000	84.5	-23,000
Commercial	900,000	87.3	873,000	85.0	-27,000	847,000	82.5	-26,000
Productive-Reserve	2,000	0.2	3,000	0.3	+1,000	8,000	0.8	+5,000
Unproductive	3,000	0.3	15,000	1.5	+12,000	13,000	1.3	-2,000
Non-Forest Land	126,000	12.2	136,000	13.2	+10,000	159,000	15.5	+23,000

Sources: Forest Statistics for Southwest Oregon; USFS Resources Bulletin PNW-8; & Timber Resource Statistics for Oregon; USFS Resource Bulletin PNW-56.

4. Forest Management and Practices

4.1 Intensive Forest Management Techniques

Some degree of forest management, along with conservation of forest land, is necessary to ensure a continued harvest at levels equal to or greater than the present harvest. "Forest management" is a term used to denote a number of methods or tools aimed at increasing the useable timber harvest from a given piece of land.

"Forest management" refers to any or all of the following practices: (1) forest fire control; (2) insect or disease control; (3) vegetation control; (4) reforestation; (5) precommercial and commercial thinning; (6) fertilization; (7) genetic improvement of timber species; and (8) other measures, such as assistance to forest land-owners, forest research, etc."

Intensive forest management of commercial timberland assumes a management regime of:

A. Harvesting when stands are mature by financial formula commonly used in the area. In most cases in this area this is no greater than stand age 60, though other factors are also used to determine maturity.

B. Investing in site preparation (if needed) and trees and planting as rapidly as possible following harvest, to secure an adequate stocking of the best commercial species as commonly used in the area for that forest growth site.

C. Investing in pre-commercial thinning if necessary to maintain or enhance growth of selected crop trees for future commercial thinning and eventual clearcut.

D. Investing in herbicide spray or hand clearing for site preparation or to secure release from competing overtopping vegetation if needed, keeping the conifers free to grow.

E. Being prepared to do commercial thinning where, early harvest can be secured to maintain or enhance growth of remaining crop trees. More than one commercial thinning at 3 to 8 year intervals may have financial advantages;

F. Beginning the cycle again with clearcut harvest followed by site preparation and planting.

Increases in the level of forest management practices are necessary for all classes of forest land owners: public agencies, forestry industry and non-industrial private owners. There may be pressure from neighbors and local residents not to do many of the things necessary in forest management to obtain the desired standard where commercial lands abut farms or rural residences.

Intensive management using the above practices produces effects which may be objectionable to nearby residents. The use of fire in reducing slash hazard or site preparation will temporarily impact air quality. Management may involve aerial or ground application or herbicides for site preparation or release from competing vegetation. Harvesting operations will cause perceived reduction of aesthetic values for a few years at least. This might be objectionable to local residents for a certain period of time. Heavy truck hauling may cause temporary dust problems or potential extra hazard to school children and passenger car traffic where it passes through residential areas.

Forest management may involve operations close to 'class one streams' which includes streams used for domestic water supply, the protection of which may reduce the actual operable acreage of the tract in question. For reasons outlined above, there may -be pressure from adjacent property owners not to do many of the things necessary to forest management to desired standards, where commercial forest lands abut farms or rural residences.

Some forest industry companies and public timber agencies are experimenting with genetic improvement, specifically development of a larger and faster growing Douglas fir tree.

4.2 Problems for Encouraging Reforestation

The "farmer and other private" owner class controls 1/3 of the commercial forest land in the County. With some notable exceptions, this group practices a minimum of forest management. Their activities are controlled primarily by the regulations of the Oregon Forest Practices Act and individual economic concerns, especially taxes. Both the Forest Practices Act and Oregon timber tax structure are designed to encourage reforestation. The Forest Practices Act does this through requirements for reforestation within five years unless the owners states his intent to convert the land to non-forest use. The long term impact of these reforestation requirements on the continued or increased timber yield from the "farmer and other private" owner class is as yet unknown. Limited financial and staff resources are currently hindering full enforcement of the Forest Practices Act, especially with regard to small private landowners.

The problems of encouraging reforestation must still be addressed. The long term no-return commitment of land to timber growth is leading many to seek more immediate returns on that land, such as by conversion to agriculture and grazing use, after the timber has been harvested. Incentives have been made available to encourage the small private owners to keep that land in tree production.

There are three types of assistance currently available to small, private woodland owners for reforestation and stand improvement: (i) Federal cost-sharing programs administered by the State Department of Forestry Service Foresters with funding through the local Agricultural Stabilization and Conservation Service (ASCS); (ii) Tree farm programs of certain major forest companies; (iii) Assistance provided by forestry consultants. State Department of Forestry Service Foresters also provide other aid to small woodland owners. They may help them to form cooperatives so as to be able to purchase services at a lower rate (helicopter operation, tree planting, purchase of nursery stock and pre-commercial thinning). The Department will also provide equipment and labor where these are not available from the private sector. Service foresters also help landowners design management plans for their forests.

While it is beyond the scope of the State Department of Revenue (administrator of timber land taxation), the State Department of Forestry (administrator of the Forest Practices Act), and local planning agencies to require forest land owners to grow trees, it should, be noted that conversion of land to other uses will, in the long run, mean a decline in timber harvest. Such land will be used for the production of trees only when it is to the economic advantage of the land owner.

4.3 Problems for the Application of Intensive Forest Management Techniques on Small Tracts and Adjoining Lands

The problems discussed below apply especially to small forest-land tracts in the range of 10-40 acres. However, they also apply to larger farm-forest ownerships or even much larger corporate or agency lands where they abut farms or (especially) rural residential areas.

Most forest land tracts of under 10 acres are bought with the primary objective of securing a rural homesite. These areas are therefore classified in the Plan as "Rural Residential." Many owners in the 10-40 acre range also have the objective of rural living. However, few can justify the expense of a tract of this size without also intending to manage the land at some level for resource production, either purely for forest products or a mixture of forestry and grazing. Due to the varied objectives of owners of these small forest tracts, there has been in the past a tendency to practice a less intensive level of forest management than on the corporate agency and larger farm holdings.

Rural living involves establishment and protection of a domestic water supply, access of utilities, right-of-way access, privacy and aesthetics. Most residences involve at least one acre of homesite development. Water supply access can occupy an additional area, and in many instances may affect portions of surrounding ownerships. These influences may have an inhibiting or dampening effect on the practice of intensive forest management on their owner and adjacent forest lands.

Some of these inhibiting effects on intensive forest management can be:

(a) Restrictions on logging where it might destroy or damage domestic water supplies. Water rights for domestic use can be established in drainages originating on other ownerships, or the drainage providing water may originate on another ownership, even though the catch basin is on the owner's land.

(b) The influence of the water supply and homesite situation extends to eliminating or reducing the possible use of herbicides as a management tool within the drainage area or a defined distance from the residence. Oregon State Field Guide to Oregon Forest Practices Rules, (1/10/80) - Rule 629-24-203 'Protection of Waterways, Areas of Open Water, and Dwellings When Spraying,' states; "Protect waterways and areas of open water such as swamps or impoundments from contamination when spraying by aircraft by leaving a buffer strip of at least one swath width untreated on each side of every Class I stream or area of open water.

(c) Access for proper forest management, harvest or project work may be a problem. Where portions of the ownership are steep, the only practical way to harvest the timber may be highlead logging. Highlead logging requires access to proper location for setting landings which are dictated by the terrain. Access to these landings may require negotiation of rights-of-way across steep terrain through one or more adjacent owners. These adjacent owners may or may not be agreeable to temporary or permanent rights-of-way. Their timber may be at a different stage of growth, or newly planted reproduction which would not fit in with a combined harvest to make a more economic harvest setting boundary.

These objections may hinder an owner from securing convenient access to efficiently manage his own lands. Access roads or roads within 10-40 acre tracts may have been built in the- past to much lower standards as to depth of gravel, width, and curve radius, than are public roads or logging roads. Use of these roads, which may not be dedicated public roads, may involve undue damage to thin rock surfaces and ditches.

Use of tract roads for commercial hauling will involve negotiating rights-of-way for commercial log hauling if not already a public road.

(d) For owners of small forest tracts (10-40 ac.), the objective of preserving aesthetic values may tend to deter the application of intensive forest management practices. (This is much more the case with tracts of less than 10 acres). To some owners, the growth of hardwoods may be as pleasing to the eye as well stocked conifer stands, or even more so in the case of certain species like madrone or myrtle.

An owner motivated toward aesthetics may be very reluctant to log by highlead clearcut due to the visual impacts, which persist until new growth has covered the residue from timber harvesting. However, logging by highlead may be the only practical method to remove merchantable volume from steep slopes.

(e) Many of the forest lands which are sold as small: tracts have had a history of repeated selective logging or clearcutting with no subsequent management, which has greatly reduced the value of the remaining stands. These practices tend to reduce the species composition of the stand toward less valuable species of conifer, and promote the predominance of hardwoods, through the removal of overstory conifers which allows smaller understory hardwood trees to increase growth. Even after they are logged, hardwoods can regrow and dominate a site to the exclusion of conifers if continuous efforts are not made to control their regrowth.

Small tracts are often purchased in a poor, unmanaged condition as to potential for forest productivity. With generally low prospects for income from commercial harvest from the existing cover, an owner may be faced with a need to invest money for a considerable period, at interest, before realizing any substantial net income from commercial conifer harvest. This period may be as much as 40 years in the case of site preparation and planting to establish reasonable conifer stocking.

(f) Many types of forest management practice will involve economies of scale. Small tracts mean very infrequent operation which produces rather small income and little incentive for an owner to invest in his own management or harvesting equipment. Letting site preparation operations on a contract basis will attract only high bids because of the cost of moving heavy equipment for a comparatively small project. Site preparation either by tractor scarification, herbicide application, or burning, will have a gradually decreasing cost per acre as the size of the project increases, before lowering costs per acre begin to level off.

In spite of the problems detailed above, it is certainly feasible for intensive forest management to be practiced on tracts of forestland even as small as five acres. However, a set of conditions must exist which is not always found on these smaller tracts.

These conditions are:

1. Strong owner motivation toward forest management practices to produce income often involving part-time manual labor and careful financial and resource planning.

2. Terrain which lends itself to easier and cheaper operations. The best terrain would be gentle enough to allow tractor logging and/or tractor site preparation without damage to the environment (no slopes greater than 35%).

3. A good level of stocking with conifer species, or merchantable hardwood species, so that income could be secured from the first operations. The income from operations should be large enough that site preparation and replanting could be financed and still leave some net income as an incentive to conduct operations.

When one compares the ideal expressed above with the more usual circumstances discussed previously, it becomes evident that few small tracts under 10 acres will be operated under intensive forest management. However, tracts of 10-40 acres will benefit from the increased scale of operation to the point where highlead logging would become more feasible and other economies of scale would begin to be realized.

It is also beneficial to form local owners' cooperatives (either under State Forestry or private industry sponsorship), whereby a group of owners combine together to benefit from economies of scale. This has been successful in the past in the southern states. Federal cost share programs can also improve management of small tracts significantly.

Finally, there are substantial areas on the coastal plain, especially in the Bandon area, which possess reasonably good levels of stocking with coniferous species and have terrain level enough

to permit tractor logging. Such areas are of relatively low site class, and are not attractive to the major companies, but may be ideal for small individual woodlots.

In short, investment costs and owner objectives do not usually combine for a favorable future for good forest management of small woodlot tracts. However, given the right set of conditions as discussed above, and appropriate motivation and management by the owner, tracts of 10-40 acres can be as productive as any forest land of the same site class. A combination of planning and zoning measures, tax incentives and corporate agency programs (Dept. of Forestry, Cooperative Extension and forest industry) could give a boost to good forest practices on small woodlots and supplement the incomes of numerous households in the County.

5. Implementation Strategies

5.1 Proposed Forest Zone

The Planning Commission proposes to implement the Forest Lands Goal by establishing one forest zone. That zone is as follows:

F – "Forest"

Within the forest zone, the extent of preservation of forest lands primarily for forest uses will be established through implementation of the zoning ordinance. Specifically, standards within the ordinance are set to delineate those areas, or parcels, which have historically been managed as "mixed use" areas, including both farm and forest uses. Based on the June 24, 1983 DLCD Staff Report on Coos County, it is understood that uses in these "mixed use" areas are appropriately expanded to include additional non-forest uses that may not otherwise be allowed in a prime commercial forest zone. As stated in that report: "The Commission's decision in Allen v. Umatilla County (LUBA 83-076) supports the mixed use/predominant forest use concept and establishes separate requirements for authorizing certain non-forest uses in each forest area". (June 24, 1983 DLCD Staff Report, p. 106)

The zoning ordinance standards are used, ultimately, to determine the degree of productivity of the land for forest production vs. the productivity of the land for farm use. It is the intent of the Planning Commission to strictly preserve prime commercial timber areas in the county, while allowing for some justified non- forest uses in the areas established as "mixed-use" areas. These "mixed-use" areas are identified on the "Mixed Agriculture-Forest Use Areas" inventory map based on specific review criteria.

Standards for determining the degree of allowance for non-forest uses are based on such things as productivity of the land for forestry, historical land use (i.e. farm uses), terrain and surrounding uses. The review process will occur at the request of the applicant on a case by case basis

There are basically two different types of forest areas in Coos County. These are (i) prime forest areas, and (ii) mixed farm-forest areas. Certain non-farm uses not allowed in the former may be allowed as conditional uses in the latter. The two types of forest land are described in greater detail, as follows:

(i) "Prime Forest Area". These areas or parcels are typically large contiguous blocks of undeveloped land which are managed exclusively for timber production with some ancillary forest uses. Intensive forest management is practiced within this classification. A parcel or area subject to this classification will be preserved primarily for forest uses.

(ii) "Mixed Farm-Forest Area". These areas include land which is currently or potentially in farm- forest use. Typically such lands are those with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and grazing uses. The areas generally occupy land on the periphery of large corporate and agency holdings and tend to form a buffer between more remote uplands and populated valleys. In addition, these "mixed use" areas contain ownerships of smaller size than in prime forest areas. Some are generally marginal in terms of forest productivity, such as areas close to the ocean.

In certain areas of the County, these "mixed use" areas consist of extensive uplands where the lands are held predominantly by ranchers who manage their properties interchangeably between grazing and forestry depending on the economic base of each commodity at any given time. An essential management approach practiced by these ranchers is to maintain enough upland grazing acreage to sustain livestock during the winter months due to the flooding of lowland areas. Some intensive forest management is practiced on these lands, but not to the same extent as in "prime forest areas", and grazing is in many places a co-dominant use. There are typically a mixture of farm and forest uses in these areas. Certain non-forest uses will be allowed in areas that meet the criteria of this classification as established in the zoning ordinance.

The mixed use areas are identified at a scale of 1" = 2 miles on the "Mixed Agricultural-Forest Use Areas" Comprehensive Plan inventory map. A change in the boundary of the "mixed use" inventory map will require a comprehensive plan amendment. Criteria used to designate these areas are as follows:

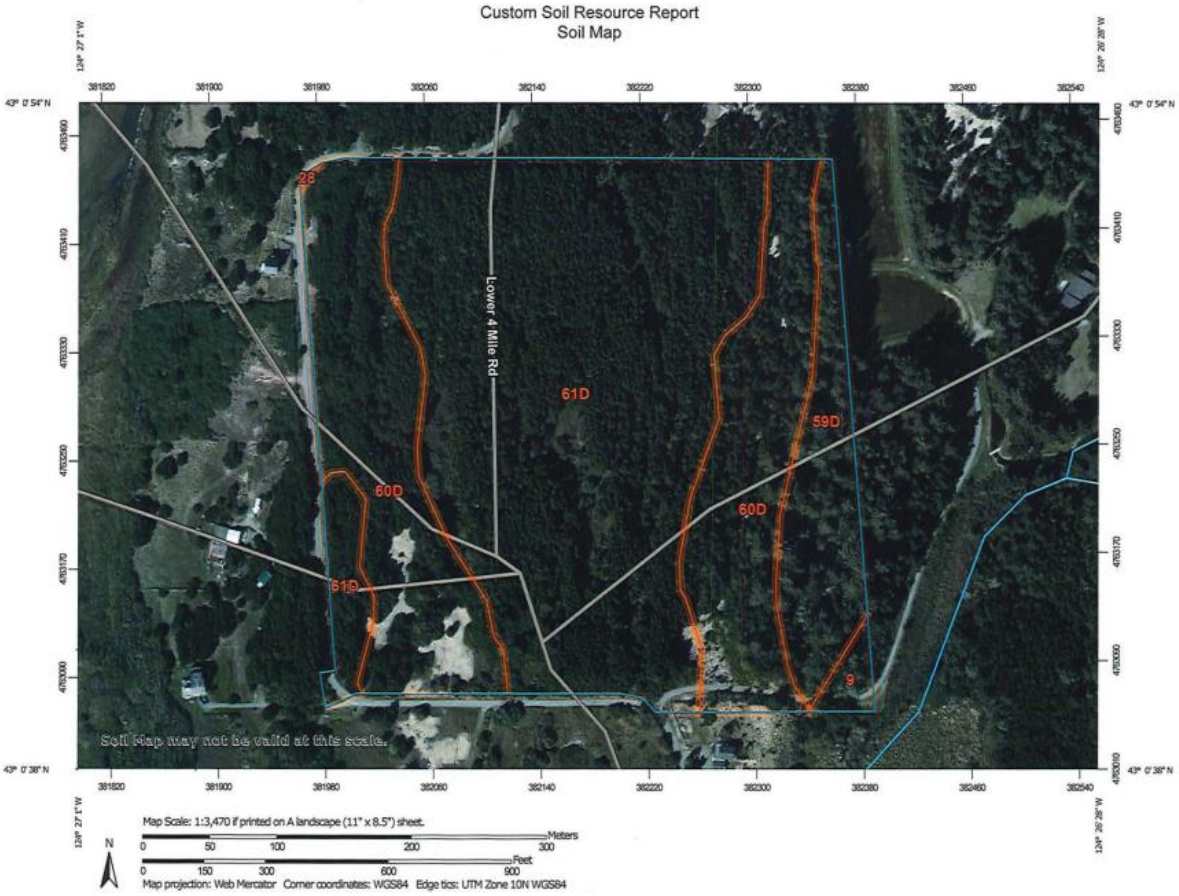
1) Mixed use areas are those areas with soil, aspect, topographic features and present ground cover that are best suited to a combination of forest and agricultural uses.

2) Mixed use areas are those areas generally managed to maintain enough upland acreage to sustain livestock during the winter months due to flooding of lowland areas.

3) Mixed use areas are those areas predominantly co-managed for both farm and forest uses.

FINDING: This application is for a Plan Map Amendment and Rezone of the Official Zone Map from Forest to Qualified – Rural Residential-5 zoning district. The qualifier is a 10 acre minimum lot size which will not require a Statewide Goal 14 exception so long as it meet the nonresource language described in Section 5.1.275.

The subject property is combination of Chetco silty clay loam (9D), Heceta fine sand (28), Waldport fine sand (59D), Waldport-Dune land complex (60D), Waldport-Heceta fine sands (61D) soils types.



9-Chetco silty clay loam. This deep, very poorly drained soil is on flood plains and deltas. It formed in alluvium. Slope is 0 to 3 percent. The native vegetation is mainly conifers, shrubs, forbs, and hardwoods. Elevation is 0 to 40 feet. The average annual precipitation is 60 to 80 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown silty clay loam 10 inches thick. The subsoil is mottled, dark gray silty clay 14 inches thick. The substratum to a depth of 60 inches or more is mottled, dark gray clay.

Included in this unit are small areas of Coquille and Nestucca soils. Also included are small areas of Langlois soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Chetco soil is very slow. Available water capacity is about 5.0 to 8.5 inches. Effective rooting depth is 60 inches or more for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is very slow, and the hazard of water erosion is slight. This soil is subject to frequent periods of flooding during prolonged periods of rainfall. Channeling and deposition are common along

streambanks. The water table fluctuates between the surface and a depth of 18 inches in October to May.

This unit is used mainly for hay and pasture and wildlife habitat.

The, vegetation in areas not cultivated is mainly Sitka spruce, western redcedar, western hemlock, and red alder. The understory vegetation is mainly western swordfern, evergreen huckleberry, slough sedge, soft rush, and skunkcabbage. If this unit is used for hay and pasture, the main limitations are the susceptibility of the surface layer to compaction, wetness, droughtiness in summer, the hazard of flooding, and, for the curing of hay, high humidity. Grazing when the soil is moist results in compaction of the surface layer and poor tilth. Compaction limits the movement of air and water in the soil and restricts the growth of roots; it can seriously reduce the productivity of the soil. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

Drainage and irrigation are needed for maximum production of crops. Water on or near the surface can be removed by use of open ditches and tide gates. Supplemental irrigation is needed in summer.

Wetness and flooding restrict grazing in winter. Protection from flooding during the growing season can be provided only by the use of extensive dikes. The choice of plants is limited to those that withstand periodic inundation. High humidity and frequent periods of rainfall late in spring prevent the production of high-quality hay. To improve the quality of grass for hay, increase the stocking rate in spring. Excess forage in spring can be used as silage.

Fertilizer is needed to ensure optimum growth of grasses. Grasses respond to nitrogen. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Rotation grazing increases the production of forage and helps to control weeds. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth.

This map unit is in capability subclass IVw.

28-Heceta fine sand. This deep, poorly drained soil is in deflation basins and depressional areas between dunes. It formed in eolian material. Slopes are 0 to 3 percent. The native vegetation is mainly sedges, rushes, water-tolerant grasses, and shrubs. Elevation is 0 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is mottled, grayish brown sand.

Included in this unit are small areas of Waldport and Netarts soils and Dune land, Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Heceta soil is rapid. Available water capacity is about 1 to 2 inches. Effective rooting depth is 60 inches for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is ponded, and the hazard of water erosion is slight. The water table fluctuates from 12 inches above the surface to 6 inches below the surface from October to May.

This unit is used for recreation and wildlife habitat. If this unit is used for recreational development, the main limitation is wetness. Use of paths and trails may be limited to 2 or 3 months in summer.

This map unit is in capability subclass IVw.

59D-Waldport fine sand, 0 to 30 percent slopes. This deep, excessively drained soil is on stabilized sand dunes. It formed in eolian deposits. The native vegetation is mainly conifers, shrubs, grasses, and forbs. Elevation is 10 to 120 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

Typically, the surface layer is very dark grayish brown and brown fine sand 7 inches thick. The underlying material to a depth of 60 inches or more is dark yellowish brown fine sand.

Included in this unit are small areas of Heceta soils and Dune land. Also included are small areas of Netarts soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used mainly for timber production, wildlife habitat, and recreation. It is also used for homesite development. This unit is suited to the production of shore pine. Among the other species that grow on this unit are western hemlock, Sitka spruce, and Douglas fir. The understory vegetation is mainly Pacific rhododendron, salal, red huckleberry, evergreen huckleberry, and European beachgrass.

On the basis of a 100-year site curve, the mean site index for shore pine is 90. At the culmination of the mean annual increment (CMAI), the production of 60-year-old shore pine trees 1.5 inches in diameter or more at breast height is 79 cubic feet per acre per year. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this unit are seedling mortality and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. The risk of soil blowing increases if the timber is harvested or the understory is removed. Conventional methods can be used for harvesting timber, but use of skid trails can accelerate erosion.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Seeding road cuts and fills helps to stabilize the soil and reduces the risk of soil blowing. Windthrow is a hazard when the soil is wet and winds are strong.

When openings are made in the canopy, invading brushy plants delay natural reforestation. Undesirable plants reduce adequate natural or artificial reforestation. Intensive site preparation and maintenance generally are not needed. Reforestation can be accomplished by planting shore pine and Sitka spruce seedlings. Droughtiness increases seedling mortality.

If this unit is used for recreational development, the main limitations are the hazard of soil blowing, the instability of the soil, and slope. Use of the unit is restricted to low-intensity types of recreation, such as hiking and horseback riding. Areas used for recreation can be protected from soil blowing by maintaining plant cover. Plant cover can be maintained by limiting traffic.

Roads, paths, and trails are difficult to maintain because of the loose sand. Cutbanks are not stable and are subject to slumping. Access roads should be placed on lower slopes and designed to provide low cut-slope grades.

If this unit is used for homesite development, the main limitations are the hazard of ground water pollution, slope, the hazard of soil blowing, and droughtiness in summer. The very rapid permeability of the subsoil may permit untreated effluent to enter the ground water. Special designs may be needed to prevent contamination of water supplies. The steeper areas of this unit acre not suitable for installation of absorption fields. Community sewage treatment systems may be needed.

Extensive cutting and. filling are required to provide level building sites. Excavation for houses and access roads exposes material that is highly susceptible to soil blowing. Revegetating disturbed areas around construction sites as soon as feasible helps to control soil blowing. It is difficult to establish plants in areas where the surface layer has been removed. Mulching and fertilizing cut areas help to establish plants. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees.

This map unit is in capability subclass VIIe

60D-Waldport-Dune land complex, 12 to 30 percent slopes. This map unit is on stabilized and active foredunes. The vegetation on the Waldport soil is mainly European beachgrass. Dune land does not support vegetation. Elevation is 10 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

This unit is 60 percent Waldport fine sand and 30 percent Dune land. The Waldport soil is in areas that have been stabilized with vegetation. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used. Included in this unit are small areas of Heceta soils.

Included areas make up about 10 percent of the total acreage.

The Waldport soil is deep and excessively drained. It formed in eolian deposits. Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is dark yellowish brown fine sand.

Permeability of the Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of erosion is slight. The hazard of soil blowing is severe.

Dune land is deep and excessively drained. It formed in eolian deposits. Typically, the areas of Dune land are fine and medium sand to a depth of 60 inches or more.

Permeability of Dune land is very rapid. Available water capacity is about 3 to 4 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used for recreation and wildlife habitat.

If this unit is used for recreational development, the main limitations are soil blowing and the instability of the soil. Use of this unit is limited to low-intensity types of recreation, such as hiking, horseback riding, and operating off-road vehicles. Areas used for recreation can be protected from soil blowing by establishing plant cover. Plant cover can be maintained by limiting traffic. Excavation for roads and buildings exposes material that is highly susceptible to soil blowing. Establishing vegetation on disturbed areas around construction sites as soon as possible helps to control soil blowing. Roads and trails are difficult to maintain because of the loose sand. Roads must be surfaced for use by conventional vehicles.

This map unit is in capability subclass Vlle.

61D-Waldport-Heceta fine sands, 0 to 30 percent slopes. This map unit is mainly on stabilized sand dunes and in depressional areas between sand dunes. Some areas are on deflation basins. The native vegetation is mainly conifers, shrubs, grasses, and forbs on the Waldport soil and sedges, rushes, water-tolerant grasses, and shrubs on the Heceta soil. Elevation is 0 to 80 feet. The average annual precipitation is 50 to 70 inches, the average annual air temperature is 51 to 53 degrees F, and the average frost-free period is 200 to 240 days.

This unit is 50 percent Waldport fine sand and 30 percent Heceta fine sand. The Waldport soil is on stabilized sand dunes, and the Heceta soil is in interdunal swales and depressional areas. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Netarts and Yaquina soils and Dune land. Included areas make up about 20 percent of the total acreage.

The Waldport soil is deep and excessively drained. It formed in eolian deposits. Slope is 7 to 30 percent. Typically, the surface layer is very dark grayish brown and brown fine sand 7 inches thick. The substratum to a depth of 60 inches or more is dark yellowish brown fine sand.

Permeability of the Waldport soil is very rapid. Available water capacity is about 3 to 4 inches. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

The Heceta soil is deep and poorly drained. It formed in eolian material. Slope is 0 to 3 percent. Typically, the surface layer is very dark grayish brown fine sand 4 inches thick. The substratum to a depth of 60 inches or more is mottled, grayish brown sand.

Permeability of the Heceta soil is rapid. Available water capacity is about 1 inch to 2 inches. Effective rooting depth is 60 inches for water-tolerant plants, but it is limited by the water table for non-water-tolerant plants. Runoff is ponded, and the hazard of water erosion is slight. The water table fluctuates from 12 inches above the surface to 6 inches below the surface from October to May.

The Waldport soil in this unit is used mainly for timber production, and the Heceta soil is used mainly for wildlife habitat. The unit is also used for recreation. The Waldport soil is suited to the production of shore pine. Other species that grow on this soil include western hemlock, Sitka spruce, and Douglas fir. The understory vegetation is mainly Pacific rhododendron, salal, red huckleberry, evergreen huckleberry, and European beachgrass. The Heceta soil is poorly suited to the production of timber. The vegetation on this soil is mainly slough sedge, salt rush, coast willow, waxmyrtle, evergreen huckleberry, and salal.

On the basis of a 100-year site curve, the mean site index for shore pine is 90 on the Waldport soil. At the culmination of the mean annual increment (CMAI), the production of 60-year-old shore pine trees 1.5 inches in diameter or more at breast height is 79 cubic feet per acre per year. High winds from the Pacific Ocean may seriously limit the growth of trees unless they are in a protected area.

The main limitations for the management of timber on this soil are seedling mortality and plant competition. Careful use of wheeled and tracked equipment reduces the disturbance of the protective layer of duff. The risk of soil blowing increases if the timber is harvested or the understory is removed. Conventional methods can be used for harvesting timber, but use of skid trails can accelerate erosion.

Proper design of road drainage systems and care in the placement of culverts help to control erosion. Seeding cuts and fills helps to stabilize the soil and reduce soil blowing. Windthrow is a hazard when the soil is wet and winds are strong.

When openings are made in the canopy, invading brushy plants can delay natural reforestation. Undesirable plants reduce adequate natural or artificial reforestation. Intensive site preparation and maintenance generally are not needed. Reforestation can

be accomplished by planting shore pine and Sitka spruce seedlings. Droughtiness increases seedling mortality.

If this unit is used for recreational development, the main limitations are the hazard of soil blowing, the instability of the Waldport soil, and the wetness of the Heceta soil. These limitations restrict the use of this unit mainly to low-intensity types of recreation, such as hiking and horseback riding. The unit can be used for other kinds of recreational activities that require a minimum of construction and soil disturbance. Areas used for recreation can be protected from soil blowing by maintaining plant cover. Plant cover can be maintained by limiting traffic. Excavation for houses and access roads exposes material that is highly susceptible to soil blowing. Revegetating disturbed areas around construction sites as soon as feasible helps to control soil blowing.

Roads, paths, and trails are difficult to maintain because of the loose sand. Cutbanks are not stable and are subject to slumping.

Wetness limits most recreational development on the Heceta soil. Use of paths and trails may be limited to 2 to 3 months in summer. Drainage is impractical because of the lack of suitable outlets.

This map unit is in capability subclass VIIe.

The applicant submitted the required NRCS custom soil report that identifies forest volume growth rates on the subject property. The County must follow the NRCS reports unless proven otherwise by site specific alternative data. The County has a set of guidelines to follow as identified in Oregon Administrative Rules 660-006-0005.

List in order:

A. Natural Resource Conservation Service soil surveys

B. Oregon Department of Revenue Western Oregon site class maps

C. USDA Forest Service plant association guides

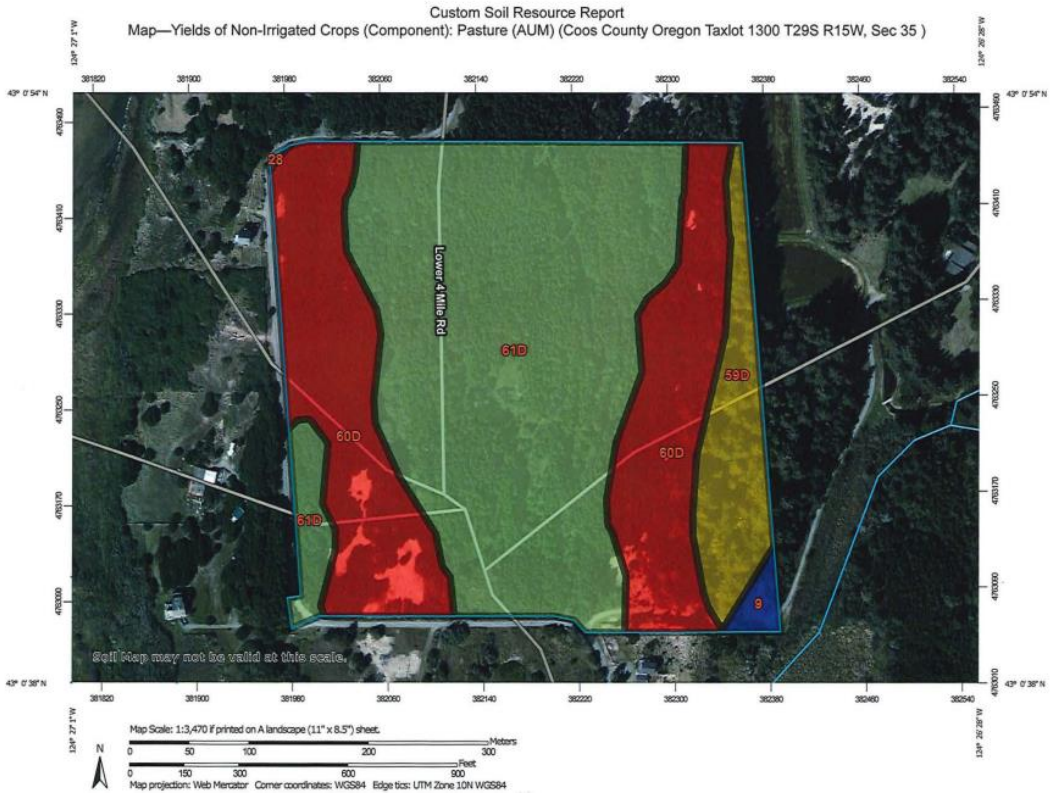
D. Other existing data sources determined by the State Forester to be of equal or better quality to Items A, B, and C

E. Alternate methods to develop site productivity data based on direct tree measurements and calculations using applicable Douglas-fir, western hemlock, or ponderosa pine site tables, with priority given to the species among these three that dominates the area being evaluated

F. Alternate methods based on direct tree measurements and calculations using other native forest tree species site tables

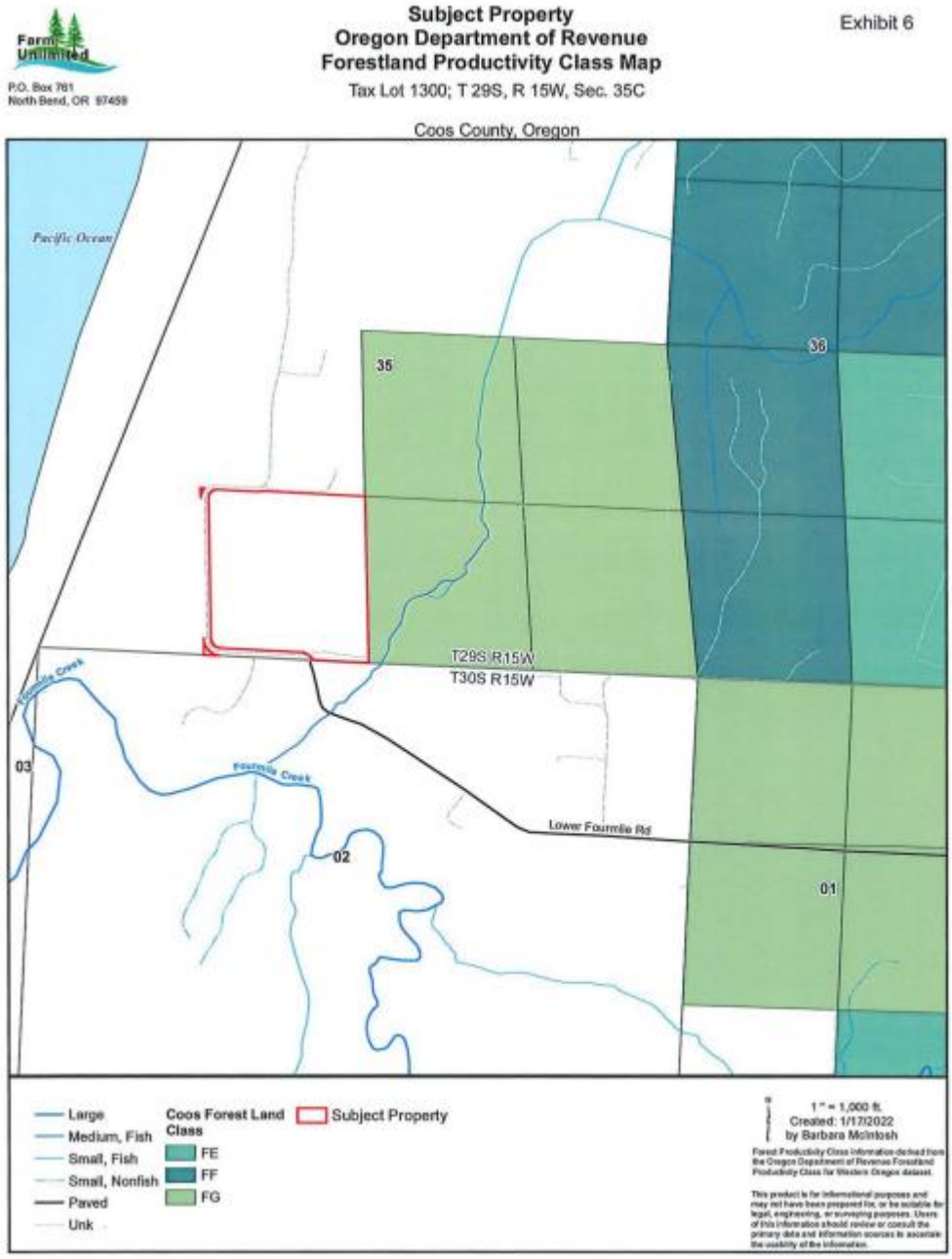
G. Site-specific soil surveys.

Below are soil maps and the forest productivity with site index base for the subject property.



Forestland Productivity with Site Index Base–Coos County, Oregon					
Map unit symbol and soil name	Common trees	Site Index	Base Age	Site Index Curve Number	Volume Growth Rate (CMAI)
		ft	yrs		cu ft/ac/yr
9—Chetco silty clay loam					
Chetco	—	—	—	—	—
Coquille	—	—	—	—	—
Langlois	—	—	—	—	—
28—Heceta fine sand					
Heceta	—	—	—	—	—
59D—Waldport fine sand, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
60D—Waldport-Dune land complex, 12 to 30 percent slopes					
Waldport	—	—	—	—	—
Dune land	—	—	—	—	—
Heceta	—	—	—	—	—
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes					
Waldport	shore pine	92	100 TA	Alexander 1966 (520)	86.00
	Sitka spruce	—	—	—	—
	western hemlock	—	—	—	—
Heceta	—	—	—	—	—
Yaquina	shore pine	—	—	—	—
	Sitka spruce	85	100 TA	Meyer 1961 (490)	100.00

The applicant submitted the following map, identified as Exhibit #6, showing the OR DOR Western Oregon site class maps. Like other government properties, the subject property was never assigned a site class by the Oregon Department of Revenue.



Staff requested official comments from Oregon State Forester Calvin Mukumoto on April 8, 2022.

Chris MacWhorter

From: Planning Department
Sent: Friday, April 8, 2022 8:49 AM
To: 'forestryinformation@odf.oregon.gov'
Cc: Planning Department
Subject: Coos County Planning Department

Hello,

Please find a link to a land use application currently under consideration in Coos County: https://www.co.coos.or.us/planning/page/2022-amendment-rezones

Please have State Forester Calvin Mukumoto contact us if he wishes to make any official comments on this particular application.

We may be reached at 541-396-7770 for further information.

Thanks,
Chris MacWhorter, Planning Staff
Coos County Planning Department
planning@co.coos.or.us

Chris MacWhorter

From: INFORMATION Forestry * ODF <forestryinformation@odf.oregon.gov>
Sent: Friday, April 8, 2022 8:49 AM
To: Planning Department
Subject: Automatic reply: Coos County Planning Department

This Message originated outside your organization.

Thank you for contacting the Oregon Department of Forestry. Your e-mail will be referred to the appropriate agency personnel for response/action, and they will reply to your request.

ODF Public Affairs Program

Other than the auto-generate email, Staff has not received any comments from Oregon Department of Forestry (ODF). ODF rarely responses to requests for comments and it is not mandatory that they respond, but staff does make every effort to solicit comments from other agencies when an application is proposed.

The applicant hired Farm Unlimited to perform a Forest Productivity / Suitability Report. The applicant submitted a timber inventory cruise complied by Eric Farm and James Hill of Farm Unlimited.

Mr. Farm and Mr. Hill include a list of their background and educational credentials. Under Oregon (OAR 674.100) appraisal rules, professional foresters are exempt from

licensing for appraising the value of timber as part of forest management consultation. Goal 4 directs the County to protect forest land, including lesser value forest lands. Although, there is not necessary a formal definition of a professional forester. ODF Land Use Planning Note #3 advises "*Where tree measurements are undertaken, a professional forester who is either registered as a full member in good standing with the Association of Consulting Foresters of America or Certified by the Society of American Foresters should be retained by the landowner to take tree measurements and prepare a report*". Mr. Farm identifies himself as an ACF certified forester, and Staff feels there is no reason to question that. Staff advises the Board of Commissioners that these are really only guidelines, not requirements. Staff has not really found any formal State land use requirements for timber cruising or valuation, and the Board of Commissioners may decide whether Mr. Farm and Mr. Hill are expert witnesses. Based on these two individuals' backgrounds, they appear meet the requirements to work in the County's Forestry Department as field foresters. Therefore, Staff recommends that their educational background and experience are sufficient for this report.

ODF Land Use Planning Note #3 identifies a series of steps that required to be look at before alternative methodologies are used. The first source is NRCS soil surveys which the indicate that Shore pine and Sitka spruce are trees to manage on site. They further indicated the property is not include in DOR site class maps, and no alternative data sources existing direct tree measurements.

Therefore, they submitted a report to comply with alternative methodologies under Step 2.

Mr. Farm indicated the entire site was fully stocked with Shore pine with some scatter Sitka spruce. They indicated the timber is between 32 to 46 years old, and 25-50 feet tall. Based on aerial imagery and other site assessment of neighboring properties. Staff has found no compelling reason not to take their forest inventory as an accurate assessment.

However, the applicant's forester is making the assertion that Shore pine is not commercially marketable as a timber species and the site class index for Shore pine is not applicable to western Oregon.

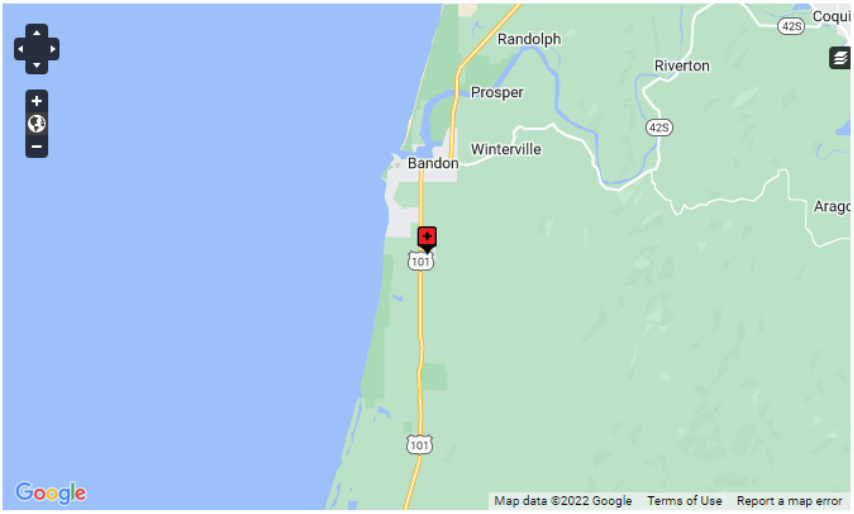
These two concepts need further planning discussion. The first concept that Shore pine is not a commercially marketable timber species in Coos County. The applicant asserts that "*no local sawmills, veneer mills, or wood chip manufacturer will accept shore pine. Additionally, mills will not pay for a load with shore pine included and may reject the load entirely and not accept/unload a truck that arrives at the mill with shore pine included on the load. It is not foreseeable that any mill will accept delivery of shore pine in the future*".

Typically, Planning Department would ask the County Forestry Department to verify this statement. However, the Forestry Department are the applicants for this application.

So, Staff verified this statement using the following methodology. Oregon State University manages a website called Oregon Forest Industry Directory. This website is part of the College of Forestry outreach program. One of the features of the site is link to companies that buy logs. Staff utilized this website to check the log buying specifications of three nearby mills.

The first mill is Oregon Overseas Timber Co. Inc. located in Bandon, Oregon.

Oregon Overseas Timber Co. Inc.



Products Produced | Products Purchased | **Species** | Residue | Services

Douglas-fir

Company Contacts

Name	Position/Title	Phone	Email address
Jim Curran	Mill Manager	541-347-4419 x309 (work)	Email Contact
Ulrich Lau	Sales	541-347-4419 x304 (work)	
Jim Curran	Log Buyer	541-347-4419 x309 (work)	

Additional Information:
Wood products made of mainly Douglas-fir for European market. Sawmill Hours: Mon-Fri 7 a.m. till 4 p.m. Retail Hours: Tue-Sat 8 a.m. till 4:30 p.m. Retail Phone Number: 541-347-4410

Are you with this company? Request an account or permission to edit this listing.

Company Information

87680 Kehl Lane
P.O. Box 1701
Bandon, OR 97411
Website: http://ootci.com
County: Coos
Phone: 541-347-4419

Log Buying Preferences

Minimum Diameter: 26
Minimum Length: 8
Maximum Length: 40
Length Preference: 40
Notes: high grade logs, old-growth culls
Accepts Big Logs

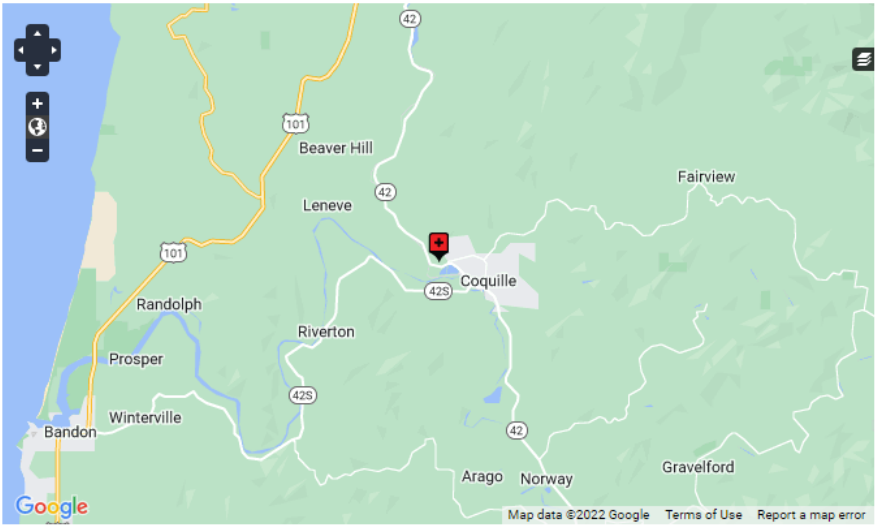
Certifications

Forest Stewardship Council (FSC)

Staff had a telephone discussion, on April 14, 2022, with the log buyer for Oregon Overseas Timber Co. Inc. This is the nearest mill to the subject property. When asked about selling of Shore pine. The log buyer informed Staff the only use for Shore pine was burning as outdoor fire wood as it was not a commercially viable forest product.

The second mill was Roseburg Forest Products in Coquille, Oregon.

Roseburg Forest Products - Coquille



Company Information

Cedar Point Road
P.O. Box 218
Coquille, OR 97423
Website: http://www.roseburg.com
County: Coos
Phone: 541-396-2131

Log Buying Preferences

Minimum Diameter: 5
Maximum Diameter: 30
Minimum Length: 17
Maximum Length: 34
Length Preference: 34

Certifications

Forest Stewardship Council (FSC)

Products Produced | Products Purchased | **Species**

Fir, grand	Fir, white	Hemlock, western	Douglas-fir
Pine, lodgepole	Pine, ponderosa	Pine, sugar	Pine, western white
Spruce, Engelmann	Spruce, Sitka		

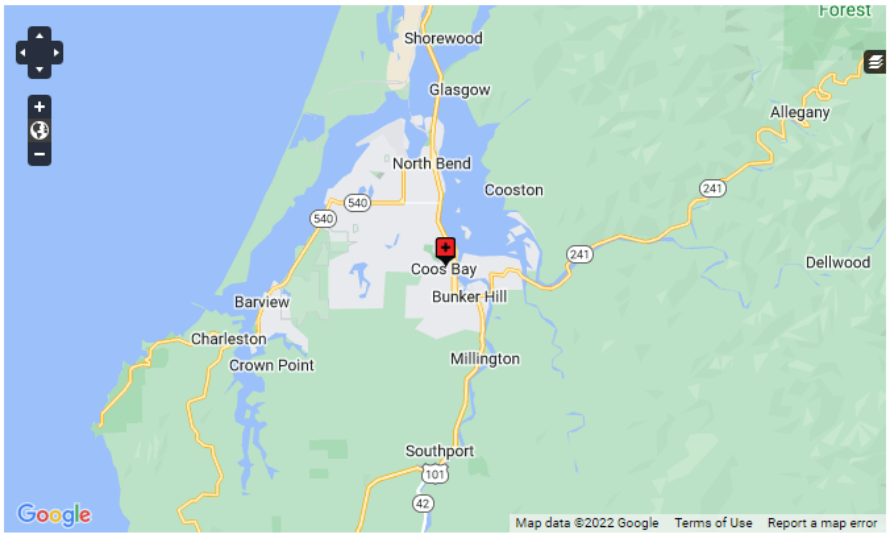
Company Contacts

Name	Position/Title	Phone
Joshua Phillips	Log Buyer	541-396-2131 (work)

While Shore pine (Pinus contorta var. contorta) sounds similar to Lodgepole pine (Pinus contorta var. latifolia) it is not. A telephone conservation, on April 15, 2022, with a log buyer from Roseburg Forest Products (RFP) about the two species and he explained these two tree species are completely different. They look different, they cut different, they have different characteristics, and RFP had no interest in buying Shore pine for commercial forest products. They were willing to buy Lodgepole pine if anyone was willing to ship to the Douglas County at a cost effective price. RFP is in the business of buying timber for commercial purposes and Staff recommends that this is considered expert advice on the market.

The third mill contacted was Southport Forest Products located in Coos Bay, Oregon.

Southport Forest Products



Company Information

P.O. Box 298
Coos Bay, 97420, OR 97420
Website: http://www.southportforest.com/
County: Coos
Phone: (541) 266-0903

Log Buying Preferences

Minimum Diameter: 4"
Maximum Diameter: 60"

Products Produced | Products Purchased | **Species** | Residue

Fir, grand	Fir, white	Hemlock, western	Douglas-fir
Pine, lodgepole	Pine, ponderosa	Pine, sugar	Pine, western white
Spruce, Engelmann	Spruce, Sitka		

Company Contacts

Name	Position/Title	Phone	Email address
Jason Smith	Manager	541-266-0903 (work) (cell)	Email Contact
Forest Flowers	Log Buyer	541-266-0903 (work) 541-297-5482 (cell)	
Jacob Steensen	Log Buyer	541-266-0903 (work)	

Staff had a telephone conservation with Jacob Steensen on April 14, 2022. Mr. Steensen indicated that Southport had no interest in buying only Shore pine, and would only allow a minor amount of Shore pine mixed into Douglas fir or white wood mix of pulp wood.

These three sources support that the there is a very limited commercial value in the timber on this property.

The applicant's consulting forester, Mr. Eric Farm, is asserting that there is no site index for Shore pine. While typically, Staff checks the cubic feet per acre per year (cf/ac/yr) of vegetation growth on a subject property. Tree site index is similar enough to cf/ac/yr measurements and the conversion factor is listed in Oregon Department of Forestry's Land Use Planning Note #3.

Mr. Farm indicates that *"the NRCS soil survey shows a value for forest productivity based on the Alexander lodgepole pine site index table. This site index table is not applicable to western Oregon per the author's note".*

The applicant submitted the report for Lodgepole pine.

Site Indexes for Lodgepole Pine, with Corrections for Stand Density: Instructions for Field Use

by

Robert R. Alexander

Lodgepole pine (Pinus contorta Dougl.) commonly grows in overly dense stands, and crowding restricts the rate of height growth. Site index must, therefore, be adjusted for stand density. Figures 1 and 2, and tables 1 through 7 have been prepared for field use in estimating site index for lodgepole pine. They are applicable to lodgepole pine stands in Colorado, Wyoming, Utah, Idaho, Montana, and eastern Washington and Oregon.[2] Information necessary to understand field application of the site index curves and instructions for their use are presented in this paper. Methodology used to develop the site index curves will be presented in a subsequent paper.

Stand density is expressed as Crown Competition Factor (CCF).[3] CCF compares growing space available to a tree with the space represented by a vertical projection of the average crown area of an open-grown tree of the same stem diameter (Maximum Crown Area, MCA). Because space occupied by a single tree is not easily determined, the comparison is made on a stand basis. CCF may be obtained from the numbers and diameters of trees in a stand, or it may be estimated from measurements of basal area and average diameter.

[2] *This paper is based on a cooperative study planned and undertaken jointly by the Rocky Mountain, Intermountain, and Pacific Northwest Forest and Range Experiment Stations. David Tackle (INT) and Walter G. Dahms (PNW) collected the field data in their respective areas.*

[3] *Krajicek, John E., Brinkman, Kenneth A., and Gingrich, Samuel F. Crown competition factor, a measure of density. Forest Sci. 7: 35-42. 1961.*

Site index is expressed as the average height of dominant trees in pure, even-aged stands at age 100 years. For stands where the CCF is 125 or less, height growth is unaffected by density. For stands where the CCF is greater than 125, height growth is reduced as density increases, and the reduction in height growth at any level of CCF above 125 becomes greater as site quality improves.

Site index can be estimated from tables 1 through 5 for all combinations of height, age, and density indicated in the Rocky Mountain and Intermountain regions, providing the average height of the trees selected for site determination is equal to or exceeds the height of the site index 30 class but does not exceed the height of the site index 100 class at the age sampled. Figure 1 can be used if the CCF is 125 or less. In the Pacific Northwest region, site index can be estimated reliably only if the "site trees" are 50 or more years old.

Field Application of Site Index Curves

Step 1.--Determine average height and age of the stand. Select four or more dominant trees (site trees) and measure heights and ages in the conventional manner.[4] Average total age may be approximated from age at breast height by adding 9 years to the average age at breast height (fig. 1 and all tables are based on total age).

[4] *Chapman, Herman H. and Meyer, Walter H. Forest mensuration, Chap. 15, "The measurement of heights in standing trees," pp. 149-212 and Chap. 23, "The age of standing trees," pp. 318-323. New York: McGraw-Hill Book Co. 1949.*

When Staff is confused on a technical question, such as the site index of Shore pine. We often rely on NRCS for guidance. Staff visited the NRCS office for assistance on April 14, 2022. NRCS staff did not know the specifics of whether the site index for Lodgepole pine from a 1966 applies to Shore pine. That is too specific of a question for local NRCS to answer. NRCS staff referred Planning staff to contact OSU Extension Staff about tree species site index questions.

Staff then contact OSU Extension Staff. Dr. David Shaw, Forest Health Specialist, offered his expert opinion *"My general thought is that Alexander was the Rocky Mt. variety, i.e. P. contorta subsp. latifolia. And of course shore pine is P. contorta subsp. contorta. And grows on much different soils and climate. So I don't think those site index and density and yield tables would work for coastal Oregon. Not sure specific site index yield estimates for shore pine exist for Oregon".* Staff wishes to inform the Board of Commissioners, that while a rotating professorship, this is the most qualified non-bias expert in the State of Oregon. Dr. David Shaw does not need to prove his qualifications under the rules we need follow. The Planning Commission recommended that the Board of Commissioners consider OSU Extension as expert witnesses.

Based on the submitted NRCS soils, there is a potential for Sitka spruce on the subject property within the 61D soil class. The applicant's forester found some legacy Sitka spruce on the subject property. The applicant did not provide much information on whether they try previous reforestation efforts onsite. When asked for additional information from Staff about previous reforestation effects. The applicant stated there had not been any previous reforestation attempts on the subject property and they felt it would not have been successful.

The applicant's consulting forester also submitted additional information. The summary is that the soils and climate factors would not be suitable for the commercial growing of Sitka spruce.

Staff did consult with NRCS – Coquille office staff on April 25, 2022 to verify that Sitka spruce had potential to growth in 61D soil types. There is potential for Sikta spruce to growth at this site. Goal 4 identifies Forest land shall include *"lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources".*

There is an interesting LUBA opinion from Linn County for the Board of Commissioners to consider. The application involved rezoning of 28.62 acre parcel from Farm/Forest to Non-Resource (NR-5). The site had the forest productivity for Douglas-fir of 106 cf/ac/yr, which produces a similar example of the 100 cf/ac/yr of Sitka spruce on this subject property. At the time of the application, only 2 acres of the Linn property was stocked in timber. The remainder of the Linn property was

covered in *"scattered deciduous and Douglas-fir trees species, open grassy area and rock outcrops".* The petitioner argues that *"where NRCS data is available local governments "must rely on that information and may not substitute other information when conducting an inventory of forest land".* The intervenor argued that *"a local government may choose to rely on that study rather than the NRCS ratings to determine the productivity of the parcel and hence whether it is suitable for commercial forest uses under Goal 4".* Like most LUBA opinion, both sides argue they were correct and the other side was completely wrong. Every application is unique, and what the decision concluded in this case was that "*essentially, that because the majority of the property is not forested and has no streams, the property is not "other forested lands" that maintain the listed resources".* The question is are the existing Shore pines enough to be consider other forest lands that provides for soil, air, water and fish & wildlife resources.

The Planning Commission had detailed discussion about the habitat values of the subject property and found that property does not meet the definition of Goal 4 based on the site conditions described in report by Eric Farm.

<u>Forest Management</u>
Some of the comprehensive plan implementation goals relates to siting of new rural residential dwellings and their effects on nearby farm and forest lands.

If the zone change is approved, then there will be analysis of the changes to nearby farming or forestry practices. The County must analyze whether those effects would be significant changes or not. Most forest operations are preempted from planning review by OAR 660-006-0060.

Comprehensive Plan Volume 1 Part 2 provides the inventory and factual background for forest lands in Coos County. The plan identifies the following methods or tools as the forest management, which is supposed to increase the usability of timber lands: *"refers to any or all of the following practices: (1) forest fire control; (2) insect or disease control; (3) vegetation control; (4) reforestation; (5) precommercial and commercial thinning; (6) fertilization; (7) genetic improvement of timber species; and (8) other measures, such as assistance to forest land-owners, forest research, etc."*

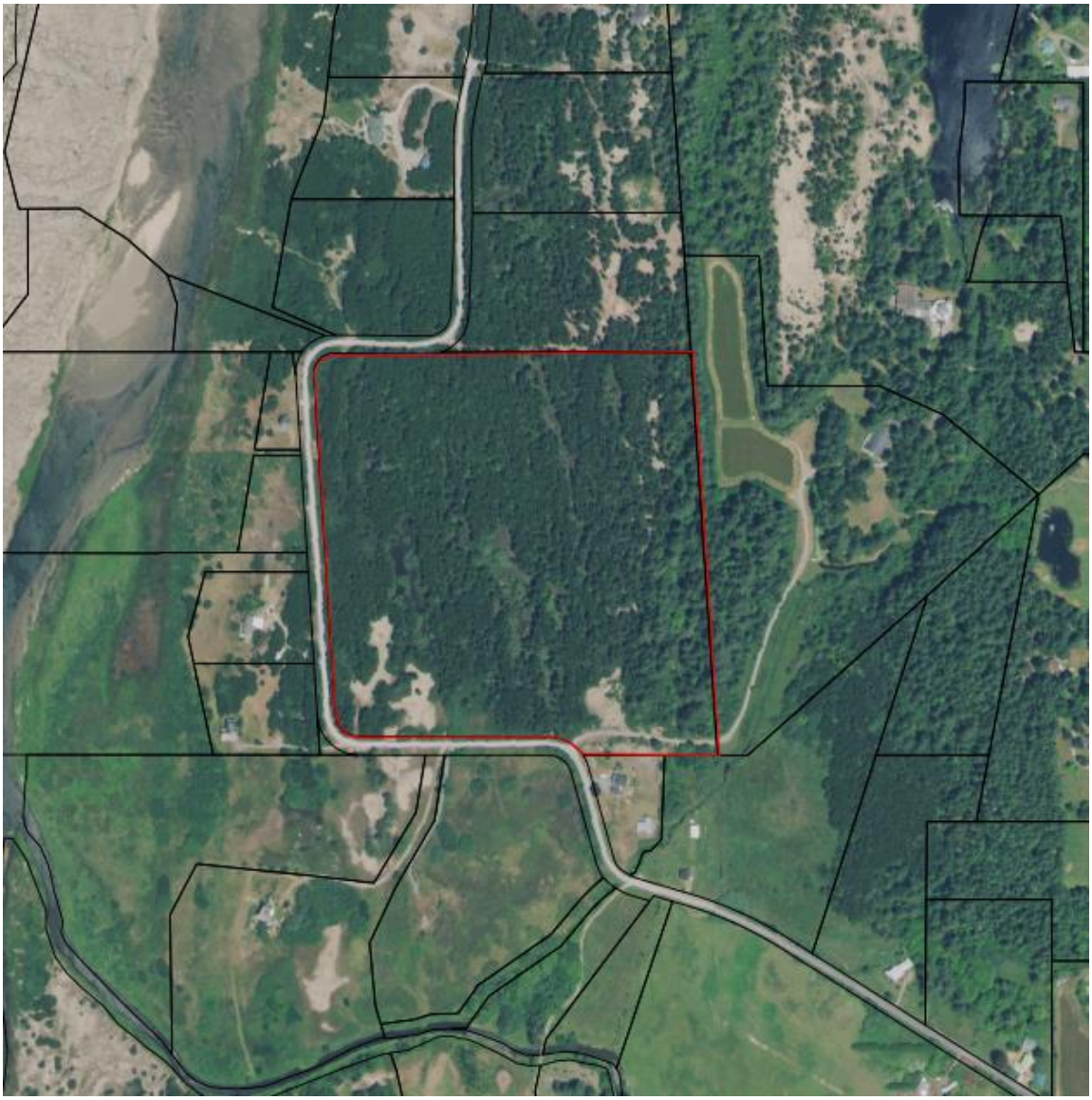
Rezoning from Forest to Qualified Rural Residential-5 zones will not have a direct effect on forest fire control. The subject property is currently, and remain, within Bandon Rural Fire Protection District for structural protection. The subject property is currently, and remain, within Coos Forest Protection District for wildland protection. While the subject property appears to be cover with Gorse, which is a flammable invasive species, the rezoning process will not necessary require removal any invasive species.

Insect and disease control measures are not necessarily affected by County zoning districts. First, Staff has no evidence provided that there are any insect or disease damage on the subject property or nearby properties for that matter. Second, there are a handful of residential tree services businesses in the Bandon area provide services to

rural residential properties. Changing the zoning district will not necessary increase any challenges for controlling pest damage.

Vegetation control refers to controlling unwanted vegetation that competes with commercial tree species. This does not necessarily mean only invasive species. Based on the submitted professional forester report, by Eric Farm, the subject property a very minimal commercial tree species.

Based on the aerial imagery of the subject property and nearby area, there are a varied of timber stand types in this area.



Senate Bill 1602 increased the helicopter spray distance buffer from 60 feet to 300 feet of an inhabitable dwelling starting January 1, 2021. The Anderson v. Coos County, 51 Or LUBA 454 (2006) case established an important factor. According to the LUBA

case, a reasonable assumption could conclude that herbicides would be applied to land less than 40 acres using ground application methods. Spraying herbicides using ground spraying applications is permitted up to the property line. Herbicide application by aerial spraying is preferred for lands over 40 acres.

While it appears, there may be forestlands suitable for harvest and within 300 ft on the adjacent tract to the east. Staff finds that it is reasonable to conclude ground-based herbicide treatments would be utilized on these timber stands given the existing cranberry bogs on this tract and adjacency to Laurel Lake.

The parcels located to the north, south and west of the subject property are mostly residentially developed. These parcels are all less than 40 acres in size. Any herbicide application is likely to be ground side, and likely residential in nature.

Reforestation refers to replanting of trees. State Forest Practices Act regulates any commercial forest practices regardless of the County zoning. Any specific requirements for restoration are outside the purview of County zoning regulations. Rezoning of the subject properties is not likely to affect reforestation on the adjacent forest lands.

Precommercial and commercial refers to types of thinning operations. This is when the forest stand is removed of a percentage of trees in the stand. This is not considered a full harvest of the stand. Forest thinning is more complicated than simply cutting every other tree, and these are considered operations under the purview of the Forest Practices Act.

Fertilization refers to the application of applying fertilizer to increase tree species growth. Changing the zoning district will not affect applications of fertilizer to subject property.

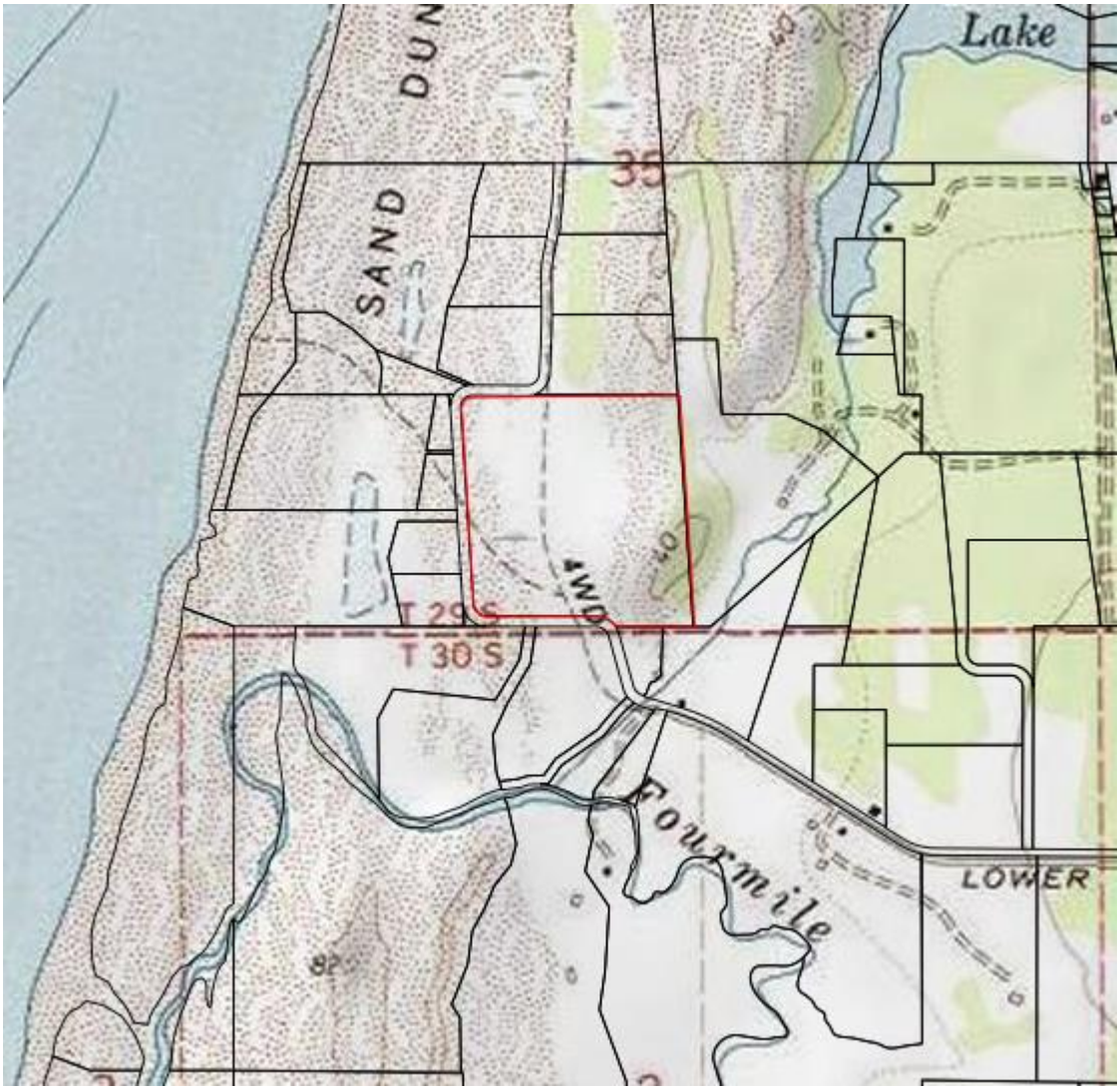
Planting genetic improved trees are not affected by zone changes. This refers to the tree species propagation. This is does not include reforestation or herbicide vegetation control is analyzed elsewhere. For context, an example of this would be the building a house using LVL studs vs dimensional lumber. Siting of the house would be regulated by land use planning. However, the type of stud utilized is not land use criteria.

The Comprehensive Plan also identifies intensive forest management of commercial timberlands consisting of timber harvests, initial site preparation, pre-commercial thinning, release site preparation, commercial thinning, then final harvest.

Oregon Department of Forestry's Land Use Planning Note #2 provides guidance for harvesting on forest lands, and the relationship between residential development and nearby forest lands. The note states that slope is an important factor in determining whether timber harvest will be by ground based equipment or using cable yarding equipment. It is appropriate to assume cable yarding will be used for slopes over 35%, while ground based equipment will be use for slopes under 35%. The note states that a minimum of 500 feet safety buffer should be between residential developed and cable

yarding harvests. While only a 300 feet buffer should be required for ground based harvesting methods.

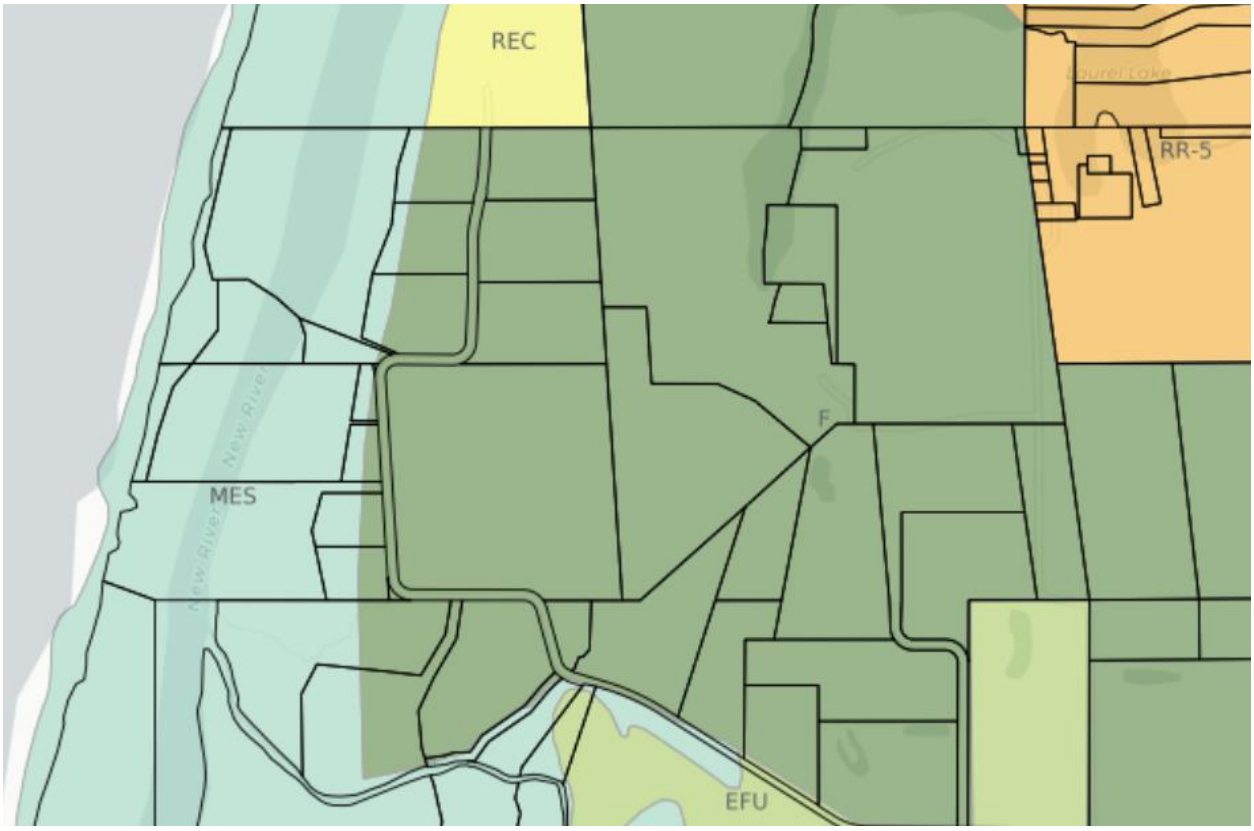
Based on the topographic map indicating less than 35% slope, this area will likely be harvested using ground-based equipment.



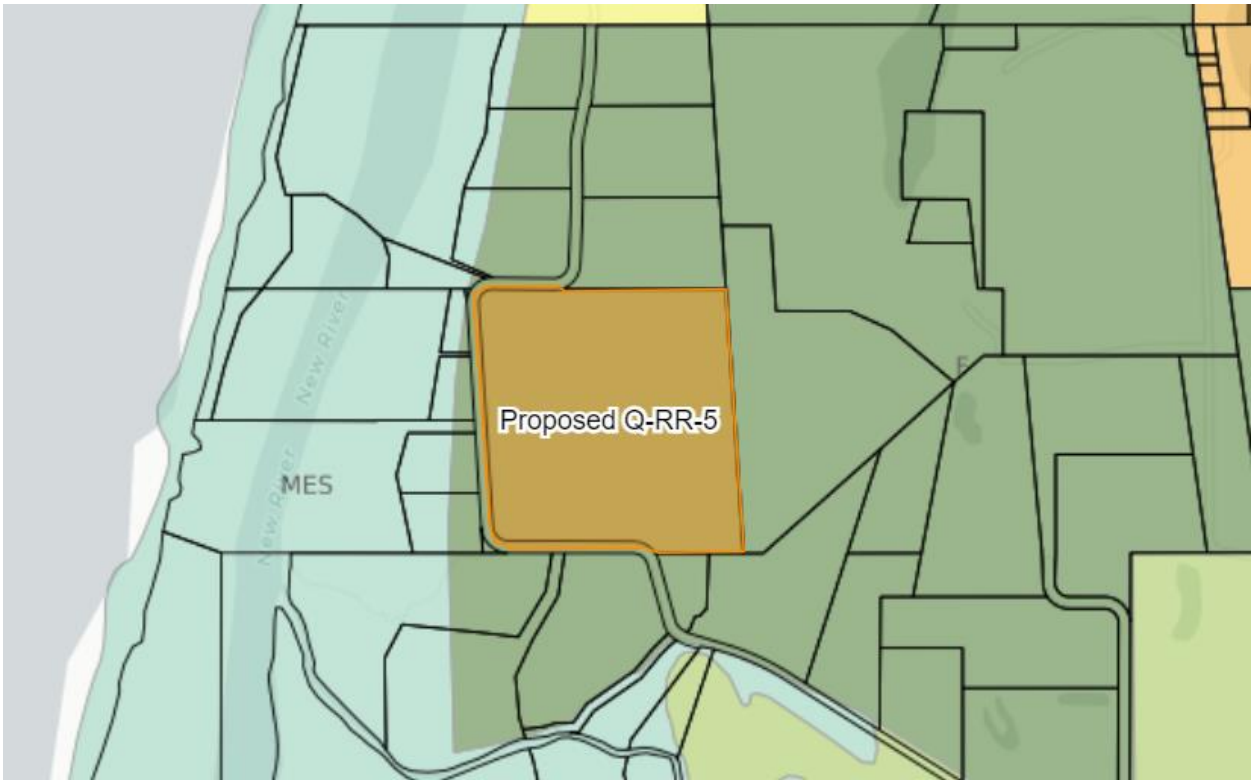
Based on the information and analysis above, Staff recommends the finding that a rezone from Forest to Qualified Rural Residential-5 zoning district will not have a significant negative effect on nearby forest practices.

- ***Coos County Comprehensive Plan Maps #14 Zone Maps and #16 Mixed Use Maps***

FINDING: The subject property is currently zone as Forest zoning district.



If approved, the subject property will be changed to Qualified – Rural Residential -5 zoning district.



Therefore, Staff recommends the subject property be removed from the mixed use overlay.

3.1 AGRICULTURAL LANDS - INVENTORY AND ASSESSMENT

1. Statutory Framework
1.1 Introduction – Intent of the Oregon Legislature

Agriculture is the second greatest industry in Oregon, after lumber and wood products. Land suited to agricultural use is a valuable resource which is under pressure from development for other uses.

In response to a state-wide problem of loss of prime agricultural land to non-resource producing uses, in 1973 the Oregon Legislature acted to stem the rapid conversion of agricultural land to other uses. The Legislature's agricultural land use policy was codified in ORS 215.243: "215.423 Agricultural land use policy. The Legislative Assembly finds and declares that:

> *(1) Open land used for agricultural use is an efficient means of conserving natural resources that constitute an important physical, social, aesthetic and economic asset to all of the people of this state, whether living in rural, urban or metropolitan areas of the state.*
>
> *(2) The preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state and for the assurance of adequate, healthful and*

nutritious food for the people of this state and nation.

(3) Expansion of urban development into rural areas is a matter of public concern because of the unnecessary increases in costs of community services, conflicts between farm and urban activities and the loss of open space and natural beauty around urban centers occurring as the result of such expansion.

(4) Exclusive farm use zoning as provided by law, substantially limits alternatives to the use of rural land and, with the importance of rural lands to the public, justifies incentives and privileges offered to encourage owners of rural lands to hold such lands in exclusive farm use zones."

This land use policy was implemented through the establishment of Exclusive Farm Use (EFU) zoning and taxation assessment. The E.F.U. zoning was later embodied in State-wide Planning Goal #3 (Agricultural Lands).

FINDING: Based on the application, the *"entire tract is fully stocked with shore pine"*. The subject property is currently mostly covered in Gorse and beach grass as the understory layer; Gorse is an invasive species. In staff's review it appears that the undeveloped open space lands to the north are also covered in a mixture of Gorse and Scotch broom. This is based on previous applications to the planning department where the applicants identified the vegetation cover as these invasive species.

The parcels to the south of the subject property are described as "open space" in their dwelling applications. The Oregon Department of State Lands inferred there may be wetlands covering these parcels. Either way, Staff has never been given any evidence of farming on the adjacent lands other than the aerial imagery showing the cranberry bogs to the east of the subject property.

Based on the attached soils reports and analysis presented in the report. These nearby lands do not appear to have much potential "*for the primary purpose of obtaining a profit in money*".

1.9 Definition of 'Commercial Agriculture'

In accordance with the Oregon Administrative Rules, Chapter 660, Division 5 – Land Conservation and Development Commission, the definition of commercial agriculture is as follows:

"COMMERCIAL AGRICULTURAL ENTERPRISE" consists of farm operations which will:

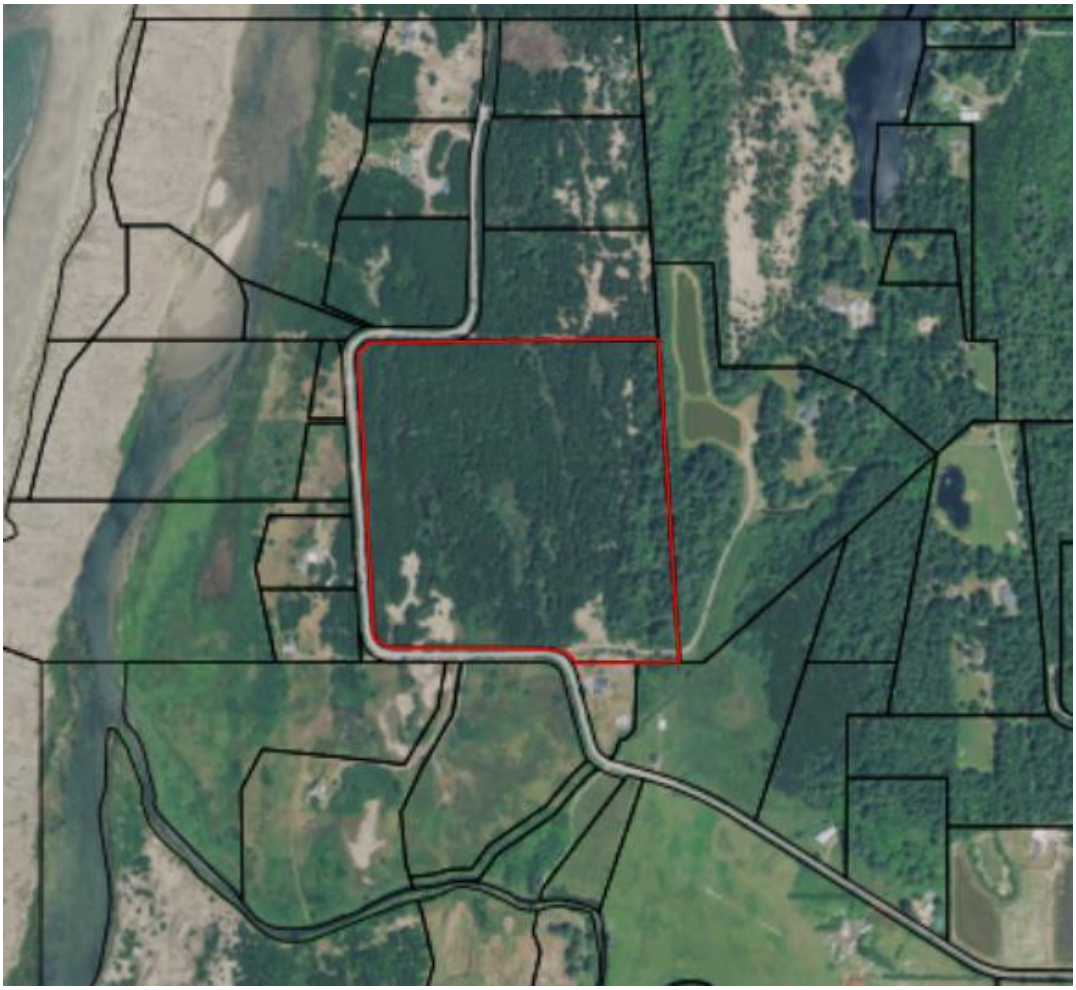
(a) Contribute in a substantial way to the area's existing agricultural economy; and
(b) help maintain agricultural processors and established farm markets;
(c) when determining whether a farm is part of the commercial agricultural enterprise, not only what is produced, but how much and how it is marketed shall be considered.

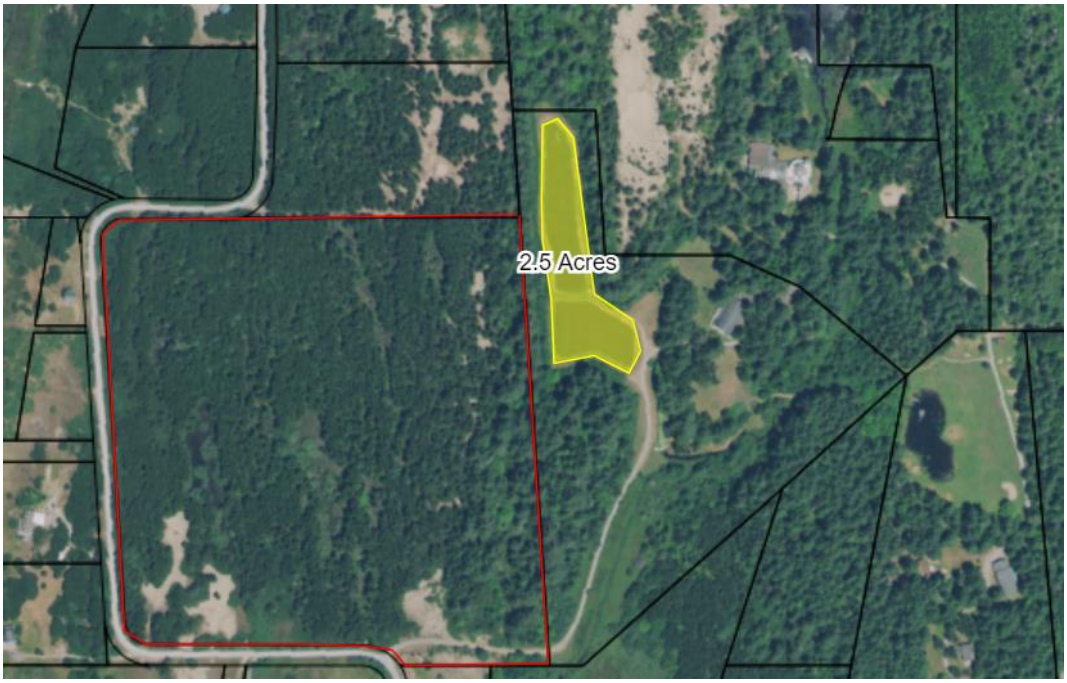
The type and value of products produced and how they are marketed are key factors in identifying the existing commercial agricultural enterprise. Owner characteristics, such as percent of income from farming and primary occupation, do not necessarily define a commercial farmer, or a commercial farm unit. Commercial agriculture in Oregon is supported in part, by less than full-time farmers. However, profitability or gross farm income is a factor in determining whether a farm operation is part of the commercial agricultural enterprise. Appropriate minimum lot size or performance standards as are utilized for any farm use zone shall be appropriate for the continuation of the existing agricultural enterprise within the area.

The inclusion of part-time or "small-acreage" farmers is of special relevance to Coos County, where a significant volume of farm products are produced by these farmers. This is substantiated in the sections which follow discussing farm size distribution and types of agricultural practices and products.

FINDING: Staff reviewed the aerial imagery of the subject property and nearby lands and did not find any commercial agricultural enterprise inside of this area. There is a small amount of cranberry farming located on the tract to the east. Staff estimates there is 2.5 acres of cranberry bogs.

The County's comprehensive plan identifies the average cranberry farm is 7 to 10 acres. Staff has not received any indication from the owner of tract, Whale Watch Sisters, whether their 2.5 acres in profitable or not. This property is under farm tax deferral, so the County Assessor does recognize the property is at least trying to be commercial farm operation.




2.5 Acres

Staff still must analyze whether the rezone will have any effect on this adjacent cranberry farm.

To provide the Board of Commissioners with at least some context of cranberry farming practices and the effects of nearby development. Friday Farms, operated by the Freitag's, have successfully grown cranberries directly adjacent to the City of Bandon for decades. The majority of cranberry farmers live on-site at their farming operations. Modern commercial cranberry growing has little direct correlation to adjacent lands, other than water rights and during the fall crop transportation.

Based on the NRCS custom soils report of the subject property, the subject property is capable of growing 5 tons of cranberries per year.

Custom Soil Resource Report

Irrigated and Nonirrigated Yields by Map Unit Component–Coos County, Oregon										
Map symbol and soil name	Land capability		Cranberries		Grass hay		Grass-legume hay		Pasture	
	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated	Irrigated	Nonirrigated
			Tons		Tons		Tons		AUM	
9—Chetco silty clay loam										
Chetco	4w	4w	—	—	3.50	2.00	—	—	6.0	1.5
Coquille	4w	4w	—	—	3.50	2.00	—	—	10.0	6.0
Langlois	4w	4w	—	—	10.00	6.00	—	6.00	12.0	8.0
28—Heceta fine sand										
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
59D—Waldport fine sand, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
60D—Waldport-Dune land complex, 12 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Dune land	—	8	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
61D—Waldport-Heceta fine sands, 0 to 30 percent slopes										
Waldport	—	7e	—	—	—	—	—	—	—	—
Heceta	4w	4w	5.00	—	—	—	—	—	4.0	2.0
Yaquina	—	4w	—	—	—	—	—	—	—	3.0

Onsite Cranberry Production:
Just because there are currently not cranberries on the subject property does not mean that the land could not be used for cranberry production. However, cranberries are an irrigated crop. This mean the landowners would need a water right to irrigate the subject property.

The subject property is the SESW of Section 35 of T29S-R15W. Below a map of the Oregon Water Resources Department Water Rights Mapping Tool.

There are no water rights on the subject property according to the map tool and verification with Water Resources.

The next logical thought is could a landowner owner apply for water rights. Staff verified thru the Oregon Water Resources Department Water Availability Analysis website.

Water Availability Analysis

FOURMILE CR > NEW R - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 4/18/2022

Watershed ID #: 70915 (Map)
Date: 4/18/2022

Exceedance Level: 80%
Time: 3:50 PM

Download Data

Water Availability

Select any Watershed for Details

Nesting Order	Watershed ID #	Stream Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	70915	FOURMILE CR> NEW R- AT MOUTH	No	No	No	No	No	No	No	No	No	No	No	No	Yes

Limiting Watersheds

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Limiting Watershed ID #	Stream Name	Water Available?	Net Water Available
JAN	70915	FOURMILE CR > NEW R - AT MOUTH	No	-40.60
FEB	70915	FOURMILE CR > NEW R - AT MOUTH	No	-25.20
MAR	70915	FOURMILE CR > NEW R - AT MOUTH	No	-30.10
APR	70915	FOURMILE CR > NEW R - AT MOUTH	No	-17.60
MAY	70915	FOURMILE CR > NEW R - AT MOUTH	No	-3.88
JUN	70915	FOURMILE CR > NEW R - AT MOUTH	No	-8.67
JUL	70915	FOURMILE CR > NEW R - AT MOUTH	No	-6.02
AUG	70915	FOURMILE CR > NEW R - AT MOUTH	No	-3.74
SEP	70915	FOURMILE CR > NEW R - AT MOUTH	No	-1.78
OCT	70915	FOURMILE CR > NEW R - AT MOUTH	No	-2.24
NOV	70915	FOURMILE CR > NEW R - AT MOUTH	No	-22.90
DEC	70915	FOURMILE CR > NEW R - AT MOUTH	No	-43.10
ANN	70915	FOURMILE CR > NEW R - AT MOUTH	Yes	3,730.00

Detailed Reports for Watershed ID #70915

FOURMILE CR > NEW R - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 4/18/2022

Watershed ID #: 70915 (Map)
Date: 4/18/2022

Exceedance Level: 80%
Time: 3:50 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	30.30	0.90	29.40	0.00	70.00	-40.60
FEB	46.20	1.41	44.80	0.00	70.00	-25.20
MAR	40.80	0.95	39.90	0.00	70.00	-30.10
APR	25.20	0.92	24.30	0.00	41.90	-17.60
MAY	10.50	1.28	9.22	0.00	13.10	-3.88
JUN	5.04	1.91	3.13	0.00	11.80	-8.67
JUL	3.56	2.43	1.13	0.00	7.15	-6.02
AUG	2.77	2.10	0.67	0.00	4.41	-3.74
SEP	2.19	1.34	0.85	0.00	2.63	-1.78
OCT	1.97	0.75	1.22	0.00	3.46	-2.24
NOV	7.96	0.61	7.35	0.00	30.20	-22.90
DEC	27.80	0.93	26.90	0.00	70.00	-43.10
ANN	27,900.00	937.00	27,000.00	0.00	23,700.00	3,730.00

Detailed Report of Consumptive Uses and Storage

Consumptive Uses and Storages in Cubic Feet per Second

Month	Storage	Irrigation	Municipal	Industrial	Commercial	Domestic	Agricultural	Other	Total
JAN	0.31	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.90
FEB	0.81	0.00	0.00	0.04	0.00	0.01	0.54	0.00	1.41
MAR	0.35	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.95
APR	0.02	0.31	0.00	0.04	0.00	0.01	0.54	0.00	0.92
MAY	0.01	0.67	0.00	0.04	0.00	0.01	0.54	0.00	1.28
JUN	0.01	1.30	0.00	0.04	0.00	0.01	0.54	0.00	1.91
JUL	0.00	1.84	0.00	0.04	0.00	0.01	0.54	0.00	2.43
AUG	0.00	1.51	0.00	0.04	0.00	0.01	0.54	0.00	2.10
SEP	0.00	0.75	0.00	0.04	0.00	0.01	0.54	0.00	1.34
OCT	0.00	0.16	0.00	0.04	0.00	0.01	0.54	0.00	0.75
NOV	0.02	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.61
DEC	0.34	0.00	0.00	0.04	0.00	0.01	0.54	0.00	0.93

Detailed Report of Reservations for Storage and Consumptive Uses

Reserved Streamflow in Cubic Feet per Second

No reservations were found for this watershed.

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IS70915A	CERTIFICATE	70.00	70.00	70.00	41.90	13.10	11.80	7.15	4.41	2.63	3.46	30.20	70.00
Maximum		**70.00**	**70.00**	**70.00**	**41.90**	**13.10**	**11.80**	**7.15**	**4.41**	**2.63**	**3.46**	**30.20**	**70.00**

While this report contains some technical information the red "No" under water availability means there is no available water rights, thus no availability to irrigate cranberry bogs which is a crucial component to growing and harvesting cranberries.

Onsite Grazing

The applicant quoted the following from the NRCS soil report ".... ***Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Wetness and flooding restrict grazing in winter*****". The applicant stated their professional forester visited the site in early February and part of the land was under water. Considering this both a mapped 100 year floodplain and a mapped wet deflation plane; Staff has no reason to doubt this statement and there has been no evidenced submitted to contradict the information. On site grazing may be a possibility but without onsite water to use for watering for livestock it is not likely a viable grazing.**

The Planning Commission had detailed discussions about the potential for grazing on the subject property. After much discussion, the conclusion given the limited success in grazing these wet deflation plains. The Planning Commission found that the subject property is unsuitable for summertime grazing.

Goal 5 Natural Resources, Scenic and Historic Areas, and Open Spaces
To protect natural resources and conserve scenic and historic areas and open spaces.

Local governments shall adopt programs that will protect natural resources and conserve scenic, historic and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

Applicable OARs:
OAR 660-023 – Procedures and Requirements for Complying with Goal 5
OAR 660-016 – Complying with Statewide Planning Goal 5
OAR 660-031 – State Permit Compliance and Compatibility

Coos County Comprehensive Plan, Volume 1, Part 1
5.6 FISH AND WILDLIFE HABITATS GOAL:

Coos County shall value its identified significant fish and wildlife habitat and shall strive to protect them where practicable.

PLAN IMPLEMENTATION STRATEGY
1. Coos County shall consider as "Sc" Goal #5 resources (pursuant to OAR 660-16-000) the following"

- *"Sensitive and peripheral Big-game Range" (ORD 85-08001 0L)*
- *Bird Habitat Sites {listed in the following table)*
- *Salmonid Spawning and Rearing Areas*

2. Coos County shall manage its riparian vegetation and identified non-agricultural areas so as to preserve their significant habitat value, as well as to protect their hydrological and water quality benefits (ORD 85-08-0l0L). This strategy does not apply to forest management actions, which are regulated by the Forest Practices Act. This strategy recognizes that protection of riparian vegetation and other wetland areas is essential to preserve the following qualities deriving from these areas:

- *Natural Flood Control - Flow stabilization of streams and rivers*
- *Environmental Diversity - Habitat for fish and wildlife, including fish and wildlife of economic concern*
- *Reduction of sedimentation*
- *Recreational opportunities*
- *Improved water quality*
- *Recharge of aquifers*

4. Coos County shall protect for agricultural purposes those land areas currently in agricultural use but defined as "Wet meadow" wetland areas by the U.S. Fish and Wildlife Service, and also cranberry bogs associated sumps and other artificial water bodies. Coos County shall also consider as Goal #5 "5c" resources the following bird habitat areas. The policy shall be implemented by: c. (ORD 85.08.0l0L) Use of the "Special Considerations Map" to identify (by

reference to the detail inventory map) salmonid spawning and rearing areas subject to special riparian vegetation protection; and sensitive and peripheral big game range.

6. Coos County shall consider the following to be ("5b) resources pursuant to the inventory information available in this Plan and OAR 660-16-000(5)(b): • Osprey Nesting Sites • Snowy Plover Habitat (outside the CBEMP) • Spotted Owl Nesting sites.

FINDING: Coos County relies on Oregon Department Fish & Wildlife for providing guidance for development near bird site. The way the process works is bird sites are buffered a predefined distance to create an overlay zone. Any proposal development within these overlay zones are sent to ODFW for technical guidance. There are none of these bird site overlay zone on the subject property.

There are no streams on the subject property, so no riparian corridors would be required. In addition, a rezone from Forest to Qualified – Rural Residential-5 does not have an effect on the feature. This is should also be considered an overlay zone.

There are "Wetlands" on the subject property. Approving a rezone will not have the effect of removing this feature. Any future development, or action, on the property will be addressed during any future application. Staff does not see any reason this would be a concern.

Coos County Comprehensive Plan, Volume 1, Part 1
5. 7 HISTORICAL, CULTURAL AND ARCHAEOLOGICAL RESOURCES, NATURAL AREAD AND WILDERNESS

ISSUES:
*I. The historical sites and structures have been identified in uninco1porated Coos County by Dr. Stephen Dow Beckham for OCC&DC and the State Pm*s Division. Of these, the Philpott Indian Village site, the Bandon Lighthouse, and Cape Arago Lighthouse are in the National Register of*

Historic Places. In other cases, however, the presence of historical resources are either not generally known to the public or the resources may be located in areas under pressure for development. What measures can the County take to protect the value of these resources while permitting development of non-conflicting uses? 2. Both the State Office of Historic Preservation (SOHP) and local tribal authorities are aware of the exact) location of relic archaeological sites. However, once publicly identified, the sites often fall prey to amateur "pot hunters" that could desecrate gravesites and diminish the value of the resource. What can Coos County do to protect these archaeological resources without inadvertently endangering them through widespread public dissemination of site-specific invent01y information?

PLAN IMPLEMENTATION STRATEGIES
1. Coos County shall manage its historical, cultural and archaeological areas, sites, structures and objects so as to preserve their original resource value. This strategy recognizes that preservation of significant historical, cultural and archaeological resources is necessary to sustain the County's cultural heritage.

2. Coos County shall permit the expansion, enlargement or other modification of identified historical structures or sites provided that such expansion, enlargement or other modification is consistent with the original historical character of the structure or site.

3. Coos County shall continue to refraining widespread dissemination [sic} site specific inventory information concerning identified archaeological sites. Rather, Coos County shall manage development in these areas so as to preserve their value as archaeological resources.

This strategy shall be implemented by requiring development proposals to be accompanied by documentation that the proposed project would not adversely impact the historical, cultural and archaeological values of the project's site. "Sufficient document" shall be a letter from a qualified archaeologist/historian and/or duly authorized representative of a local Indian tribe(s). . . . "Appropriate measures" are deemed to be those which do not compromise the integrity of remains, such as (1) paving over the sites, (2) incorporating cluster-type housing design to avoid the sensitive areas, or (3) contracting with a qualified archaeologist to remove and re-inter the cultural remains or burial(s) at the developer's expense. If an archaeological site is encountered in the process of development, which previously had been unknown to exist, then these three appropriate measures shall still apply. Land development activities found to violate the intent of this strategy shall be subject to penalties prescribed by ORS 97. 745. - Coos Bay Plan.

FINDING: There are adopted cultural resources maps. Staff did check the map that was adopted. There are no known sites on the subject property. Therefore, there really can not be any affects of rezoning the subject property. Realistically, this provides further rationale for rezoning this parcel to Qualified - Rural Residential-5 since there are not any known archaeological sites on this parcel.

Goal 6 Air, Water and Land Resource Quality
To maintain and improve the quality of the air, water and land resources of the state.

Applicable OARs: None

Coos County Comprehensive Plan, Volume 1, Part 1
5.12 AIR, LAND & WATER QUALITY

Problem/Opportunity Statement

Protection of the quality of air, land, and water resources is especially important in Coos county because the region's economy is almost totally dependent on natural resources for agriculture, forestry, fishing, and tourism. At the same time, development needs often conflict with stringent legal requirements for maintaining environmental quality.

GOAL

Coos County shall exercise sound land use practices to maintain the quality of its air, land, and water resources in a manner that reflects County citizens' desires for a quality environment and a healthy economy.

FINDING: If the Planning Commission recommends the zone change from Forest to Qualified – Rural Residential -5. There will no significant negative effect air, land, or water quality. This land use goal is encouraging franchise system of private solid waste, the County's Beaver Hill solid waste site, promotes general air quality standards. Rezoning 38 acres to either Q-RR-5, or even RR-5 will not have any significant effect on any of these programs.

Goal 7 Areas Subject to Natural Hazards
To protect people and property from natural hazards.

Applicable OAR: None

Coos County Comprehensive Plan, Volume 1, Part 1
5.11 NATURAL HAZARDS

Problem/Opportunity Statement

Coos County's topography, geology and climate create a variety of hazards to life, structures and natural resources such as farm and forestlands.

GOAL

Coos County shall strive to protect life and property from natural disasters and hazards, based on an inventory of areas potentially subject to such problems

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall regulate development in known areas potentially subject to natural disasters and hazards, so as to minimize possible risks to life and property. Coos County

*considers natural disasters and hazards to include stream and ocean flooding, wind hazards, wind erosion and disposition, *critical streambank erosion, coastal erosion and deposition, mass movement (earthflow and slump topography), earthquakes, and weak foundation soils.*

This strategy shall be implemented by enacting special protective measures through zoning and other implementing devices, designed to minimize risks to life and property.

This strategy recognizes that it is Coos County's responsibility (1) to inform its citizens of potential risks associated with development in known hazard areas, and (2) to provide appropriate safeguards to minimize such potential risks.

Finding: The subject property has the following natural hazards overlays:

- Wind Erosion
- Earthquake & Liquefaction
- Tsunami

Coos County Zoning & Land Development Ordinance
4.11.132 Natural Hazards (Balance of County Policy 5.11)

Coos County has inventoried the following hazards:

- *Flood Hazard*
  - *o Riverine flooding*
  - *o Coastal flooding*
- *Landslides and Earthquakes*
  - *o Landslide Susceptibility*
  - *o Liquefaction potential*
- *Tsunamis*
- *Erosion*
  - *o Riverine streambank erosion*
  - *o Coastal*
    - *♣ Shoreline and headlands*
    - *♣ Wind*
- *Wildfire*

Purpose Statements: Coos County shall regulate development in known areas potentially subject to natural disasters and hazards, so as to minimize possible risks to life and property. Coos County considers natural disasters and hazards to include river and coastal flooding, landslides, liquefaction potential due to earthquakes, fault lines, tsunamis, river bank erosion, coastal erosion along shorelines and headlands, coastal erosion due to wind, and wildfires, including those areas affected by gorse.

This strategy shall be implemented by enacting special protective measures through zoning and other implementing devices, designed to minimize risks to life and property associated with new development and substantial improvements. The determination of whether a property is located in one of the above referenced potentially hazardous areas shall be made by the reviewing body (Planning Director, Planning Commission, Board of Commissioners, or any designee based

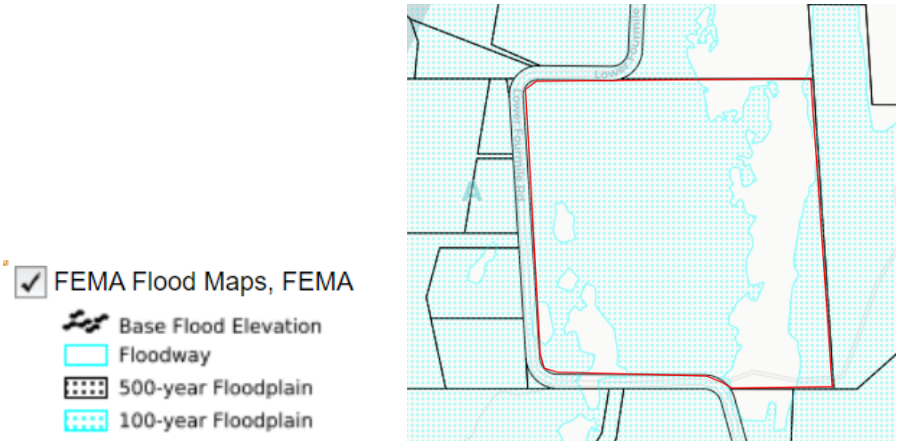
upon adopted inventory mapping). A specific site may not include the characteristics for which it is mapped. In these circumstances staff shall apply § 4.11.132.ii.2m

a. Flooding: Coos County shall promote protection of valued property from risks associated with river and coastal flooding along waterways in the County through the establishment of a floodplain overlay zone (/FP) that conforms to the requirements for participation in the National Flood Insurance Program. See Sections 4.11.211-257 for the requirements of this overlay zone. See Sections 4.11.211-257 for the requirements of this overlay zone.

Comprehensive Plan
2. Coos County shall continue to participate in the National Flood Insurance Program (Public Law 90-448), recognizing that participation in this program substantially insures the health and safety of County residents and allows property owners to benefit from subsidized insurance rates. Further, this strategy also recognizes that failure to participate in this program would prohibit affected property owners from receiving construction and permanent mortgage loans by federally insured lending institutions.

2a. The areas of special flood hazard, identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Coos County" dated September 25, 2009, with accompanying Flood Insurance Rate Maps and Flood Boundary - Floodway Maps is hereby adopted by reference and declared to be a part of the Coos County Comprehensive Plan Inventory.

FINDING: The subject is within the A zone of the 100-year floodplain. This is part of the area adopted into the National Floodplain Insurance program. Below is a map of the subject property with the floodplain identified. Most of the subject property is covered in the 100 year floodplain.

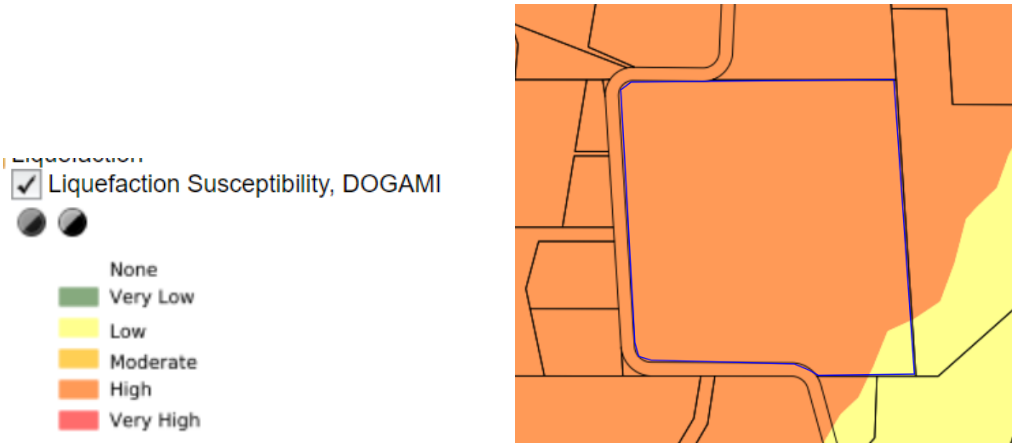


However, changing the zoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district will have no effect on the floodplain overlay zone.

b. Landslides and Earthquakes
Earthquakes: Coos County shall promote protection of life and property in areas potentially subject to earthquake hazards. New development or substantial improvements in mapped areas

identified as potentially subject to earthquake induced liquefaction shall be subject to a geologic assessment review as set out in this section. Such areas shall include lands subject to "very high" and "high" liquefaction identified in DOGAMI Open File Report O-13-06, "Ground motion, ground deformation, tsunami inundation, co-seismic subsidence, and damage potential maps for the 2012 Oregon Resilience Plan for Cascadia Subduction Zone Earthquakes."

FINDING: The subject is within the liquefication zone. This is part of the area adopted into the County's natural hazard program. Below is a map of the subject property with the liquefaction susceptibility identified. Most of the subject property is covered in the High liquefaction zone.



However, changing the zoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district will have no effect on the liquefaction susceptibility overlay zone.

c. Tsunamis: Coos County shall promote increased resilience to a potentially catastrophic Cascadia Subduction Zone (CSZ) tsunami through the establishment of a Tsunami Hazard Overlay Zone (THO) in the Balance of County Zoning. See Sections 4.11.260-4.11.270 for the requirements of this overlay zone.

FINDING: The subject property is mapped as an area susceptible to both small and medium scenario tsunami. Changing the zoning will not have a direct effect on the overlay zone. Specific land use actions will trigger different rules or regulations. This overlay zone will be addressed during those applications.

e. Erosion: Coos County shall promote protection of property from risks associated with shoreline, headland, and wind erosion and deposition hazards.

Coos County shall promote protection of property from risks associated with bank erosion along rivers and streams through necessary erosion-control and stabilization measures, preferring nonstructural solutions when practical.

Any proposed structural development within a wind erosion/deposition area, within 100 feet of a designated bank erosion area, or on a parcel subject to wave attack, including all oceanfront lots, will be subject to a geologic assessment review as set out in Section 4.11.150. There is a setback of 100 feet from any rivers or streams that have been inventoried in the erosion layer. If a variance is requested, a geologic assessment will be required.

FINDING: This overlay zone will need to be addressed during any application process. Staff does not have any proposal other than rezoning from Forest with Mixed Use overlay to Qualified – Rural Residential-5 zoning district.

Goal 8 Recreational Needs
To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Applicable OAR:
OAR 660-034

Coos County Comprehensive Plan, Volume 1 Part 1
5.20 RECREATION
County residents have difficulty engaging in certain recreational activities because the opportunity or supply is lacking.

FINDING: Most of the comprehensive plan implementation strategies revolve government parks, specifically County operated parks. This proposal is about a rezone to Qualified – Rural Residential-5, so no major effects to County recreation is expected.

Goal 9 Economic Development
To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Applicable OARs:
OAR 660-009

5.16 INDUSTRIAL & COMMERCIAL LANDS

GOAL

Coos County shall strive to diversify and improve its regional economy.

FINDING: Goal 9 revolves around implementation of strategies for commercial and industrial development. This application is rezoning Forest zoned lands to Rural Residential zoning. There is not much relevance between the request and this goal. The applicant did state that *"New development can enhance the tax base and contribute to the business climate of the community".* Staff wishes to caution the Board of Commissioners that increases to the tax base is not criteria for approval of a land use planning action.

Goal 10 Housing
To provide for the housing needs of citizens of the state.

Applicable OARs:
OAR 660-007
OAR 660-008
OAR 660-038
OAR 660-039

5.17 HOUSING

GOAL

Coos County shall provide for the housing needs of its residents.

PLAN IMPLEMENTATION STRATEGIES

1. *Coos County shall provide zoning for adequate buildable lands and shall encourage the availability of adequate numbers of housing units for future housing needs at price ranges and rent levels, which are commensurate with the financial capabilities of Coos County households.*

   This strategy shall be implemented: (1) through appropriate Comprehensive Plan map and zoning designations, as appropriately determined to meet housing and estimates established in this plan's inventory and assessment, (2) through cooperation by Coos County with the Coos-Curry Housing Authority (CCHA) in their efforts to develop housing assistance programs for people with low and moderate incomes. This strategy recognizes (1) the lead role of CCHA in housing assistance planning, (2) each city's

responsibility for assessing housing needs within its urban growth boundary (UGB), and (3) the County's responsibility for assessing housing needs within all other unincorporated areas and for coordinating the UGB housing assessments of each city.

2. *Coos County shall encourage the availability of a wide variety of housing locations in urban and rural areas. For urban and urbanizable areas, this strategy shall be implemented through urban growth management agreements and appropriate coordinated land use designations. For rural areas, this strategy shall be implemented through appropriate land use designations for acreage homesites as selected and justified in the County's rural housing exception.*

   This strategy recognizes that the selected urban and rural locations are necessary to provide flexibility in housing location.

3. *Coos County shall structure its implementing zoning ordinance such that it: (1) permits mobile homes, (2) permits mobile homes and clustering of dwellings under a Planned Unit Development concept in most residential zones, (3) permits multiple family dwellings in selected locations within urban growth boundaries (UGB's), and (4) permits multiple family dwellings outside UGB's when part of a Recreation Planned Unit development. This strategy recognizes that such flexibility of housing type provides greater choice and enhanced ability to meet the housing needs of the citizens of Coos County.*

4. *Coos County shall structure its implementing ordinance so that it allows increasing density for (from lowest to highest) acreage homesites, rural centers, and UGA's.*

FINDING: The applicant is making the argument that since the subject property will not be considered Goal 3 or Goal 4 lands, and thus be considered non-resource lands. Then the property may be under Goal 10. Staff does not necessary disagree that if lands are not considered farm or forest, then lands could then be used for rural housing.

County housing inventories are a complex matter and beyond the scope of this application. There is not necessarily a shortage of existing housing in Coos County, or especially the Bandon area. There appears to be a shortage of affordable housing, workforce housing, houses for citizens wishing reside in their dwellings. Based on the City of Bandon's 2018 Housing Needs Assessment identified that approximately 20% of the City's housing stock were not being used for long term housing because the land owners simply choose for them not to be occupy. The County's rural residential housing stock, in the Bandon, could easily be in the same situation.

Staff wishes to point out to the Board of Commissioners that is currently no shortage of vacant, or undeveloped, Rural Residential, Commercial, or Industrial lands. Changing to a Rural Residential zoning would not necessary be a positive or negative benefit.

Goal 11 Public Facilities and Services
"To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development".

Applicable OARs:
OAR 660-011

5.18 PUBLIC FACILITIES & SERVICES

GOAL

Coos County shall encourage the timely, orderly and efficient development of public facilities and services necessary to support appropriate for needed rural and urban development.

PLAN IMPLEMENTATION STRATEGIES

2. Coos County shall provide opportunities to its citizens for a rural residential living experience, where the minimum rural public services necessary to support such development are defined as police (sheriff) protection, public education (but not necessarily a rural facility), and fire protection (either through membership in a rural fire protection district or through appropriate on-site fire precaution measures for each dwelling). Implementation shall be based on the procedures outlined in the County's Rural Housing State Goal Exception.

This strategy is based on the recognition: (1) that physical and financial problems associated with public services in Coos Bay and North Bend present severe constraints to the systems' ability to provide urban level services, and (2) that rural housing is an appropriate and needed means for meeting housing needs of Coos County's citizens.

FINDING: The subject property will meet at least the minimum rural public services. Realistically, the property is already zoned Forest and the landowner could apply for either a template or 200-acre non-contiguous dwelling. The Coos County Sheriff Department will provide police protection no matter what the zoning is. The same is true for structural fire protection from Bandon Rural Fire Protection District. Wildfire protection is provided thru the Coos Forest Protective Association under an Oregon Department of Forestry contract. Port Orford Langlois School District provides local public educational services for the subject property. Staff recommends the Board of Commissioners finds that Goal 11 is met either with or without approval of this zone change.

Goal 12 Transportation
To provide and encourage a safe, convenient and economic transportation system.

Applicable OARs:
OAR 660-012
OAR 660-034

5.19 <u>TRANSPORTATION</u>

GOAL

Coos County shall strive to provide and encourage a transportation system that promotes safety and convenience for citizens and travelers and that strengthens the local and regional economy by facilitating the flow of goods and services.

Finding: The County Comprehensive has various strategies for implementing Goal 12 elements. However, the request is for rezoning Forest to Rural Residential zone change. Staff recommends the Planning Commission finds that Goal 11 is met either with or without approval of this zone change.

Goal 13 Energy Conservation
To conserve energy.

Applicable OARs:
None

5.21 ENERGY

PLAN IMPLEMENTATION STRATEGIES

6. Coos County shall ensure that its implementing ordinances promote the conservation of energy, based upon sound economic principles, by considering utilization of the following techniques as incentives:

i. lot size, dimension and siting controls;

ii. building height, bulk and surface area;

iii. density of uses, particularly housing;

iv. availability of light, wind, and air.

In addition, alternate energy devices (such as wind energy towers) shall be conditionally permitted to exceed the maximum height limitation of its particular zone if found to be visually compatible with the immediate neighborhood.

This strategy recognizes that implementing ordinances can provide incentives in development to promote energy conservation.

FINDING: The applicant's is requesting a zone change from the Forest zone to a Rural Residential zoning district. The applicant is requesting a qualifier that would raise the minimum lot size to 10 acres. Even if the Board of Commissioners approves a standard Rural Residential-5 zoning district with 5 acres and further goal exceptions. This is only an increase the density of three to four more dwellings in typical part of Coos County, that is relatively sparse. Staff could not could to any real, useful, reason that this proposal would not necessary comply with the intent of Goal 13.

Goal 14 Urbanization
To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Applicable OARs:
OAR 660-011 – Public Facilities Planning
OAR 660-012 – Transportation Planning
OAR 660-014 – Newly Incorporated Cities, Annexations, Urban Development on Rural Lands
OAR 660-021 – Urban Reserves (applies statewide except the Portland Metro area)
OAR 660-022 – Unincorporated Communities
OAR 660-024 – Urban Growth Boundaries
OAR 660-025 – Periodic Review
OAR 660-027 – Urban and Rural Reserves in the Portland Metro Area
OAR 660-032 – Population Forecasts
OAR 660-038 – Simplified Urban Growth Boundary Method

5.22 URBANIZATION

GOAL

Coos County shall provide for an orderly and efficient transition from rural to urban land use, and shall establish urban growth boundaries to identify and separate urbanizable land from rural land.

FINDING: Goal 14 is important for Coos County. However, this proposal is not requesting any development that would trigger Goal 14 level of reviews. The requested lot size is above 10 acres.

Goal 15 Willamette River Greenway
To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Applicable OARs:
660-020 – Willamette River Greenway Plan

FINDING: The Willamette River Greenway is outside of the jurisdiction of Coos County.

Goal 16 Estuarine Resources
To recognize and protect the unique environmental, economic and social values of each estuary and associated wetlands; and

To protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Applicable OARs:
OAR 660-017 – Classifying Oregon Estuaries
OAR 660-031 – State Permit Compliance and Compatibility

OAR 660-035 – Federal Consistency

FINDING: Goal 16 is important land goal in Coos County. It is so important that the County has adopted two federally recognized estuary management plans, Coos Bay and Coquille. But the subject property is located approximately 7 miles south of the Coquille River Estuary Management Plan. Therefore, Goal 16 does not apply to this application.

Goal 17 Coastal Shorelands
To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and

To reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands.

Applicable OARs:
OAR 660-035 – Federal Consistency
OAR 660-037 – Goal 17 Water-Dependent Shorelands

5.10 DUNES, AND OCEAN AND COASTAL LAKE SHORELANDS

GOAL

Coos County shall manage its dune areas, ocean and coastal lake shorelands, and minor estuary shorelands, to provide for diverse uses consistent with maintenance of the natural values associated with such areas and with the need to reduce hazards to human life and property.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall base policy decisions for dunes and ocean, coastal lake, and minor estuary shorelands on the boundaries for these areas as identified on the Special Considerations Map.

In addition, the County shall utilize the Special Considerations Map and the boundaries it delineates for the following specific areas:

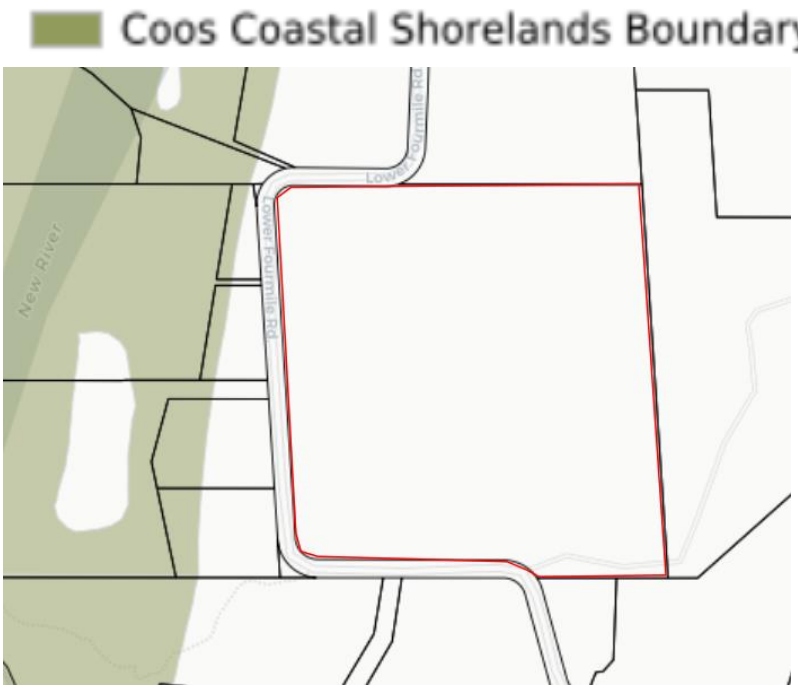
i. "Coastal Shorelands Boundary"'

ii. "Coastal Lake Shorelands Boundary:'

iii. "Suitable", "Limited Suitability" and "Not Suitable" areas of development potential.

This strategy recognizes that the Special Considerations Map specifically delineates the boundaries for areas identified in the Dunes and Ocean, Coastal Lakes Inventory and Assessment.

FINDING: Coastal Shoreland Boundary is also an important aspect of Coos County Comprehensive Plan. Attached is a map of the subject property and the location to the CSB. The location of the CSB is close to the subject property, however Lower Fourmile County Road is between the CSB and the subject property.



Goal 18 Beaches and Dunes
To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and

To reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Applicable OARs:
OAR 660-034 – State and Local Parks Planning
OAR 660-035 – Federal Consistency

5.10 <u>DUNES, AND OCEAN AND COASTAL LAKE SHORELANDS</u>

GOAL

Coos County shall manage its dune areas, ocean and coastal lake shorelands, and minor estuary shorelands, to provide for diverse uses consistent with maintenance of the natural values

associated with such areas and with the need to reduce hazards to human life and property.

PLAN IMPLEMENTATION STRATEGIES

1. Coos County shall base policy decisions for dunes and ocean, coastal lake, and minor estuary shorelands on the boundaries for these areas as identified on the Special Considerations Map.

In addition, the County shall utilize the Special Considerations Map and the boundaries it delineates for the following specific areas:

i. "Coastal Shorelands Boundary"'

ii. "Coastal Lake Shorelands Boundary:'

iii. "Suitable", "Limited Suitability" and "Not Suitable" areas of development potential.

This strategy recognizes that the Special Considerations Map specifically delineates the boundaries for areas identified in the Dunes and Ocean, Coastal Lakes Inventory and Assessment.

2. Coos County shall permit development within areas designated as "Beach and Dunes Areas with Limited Development Suitability" on the Special Considerations Map only upon the establishment of findings that consider at least:

i. the type of use proposed and the adverse effects it might have on the site and adjacent areas,

ii. the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation,

iii. the need for methods for protecting the surrounding area from any adverse effects of the development, and

iv. hazards to life, public and private property, and the natural environment which may be caused by the proposed use.

Further, Coos County shall cooperate with affected local, state and federal agencies to protect the groundwater from drawdown, which would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of salt water into water supplies.

Implementation shall occur through an Administrative Conditional Use process, which shall include submission of a site investigation report by the developer that addresses the five considerations above.

This policy recognizes that:

i. The Special Considerations Map Category of "Beach and Dune Areas with Limited Development Suitability" includes all dune forms except older stabilized dunes, active foredunes, conditionally stable foredunes that are subject to ocean undercutting or wave-overtopping, and interdune areas (deflation plains) subject to ocean flooding.

ii. the measures prescribed in this policy are specifically required by LCDC Goal #18 for the above-referenced dune forms, and that this strategy recognizes that potential mitigation sites must be protected from pre-emptory uses.

3. Coos County shall prohibit residential development and commercial and industrial buildings within areas designated as "Beach and Dunes Areas Unsuitable for Development" on the Special Considerations Map.

Further, Coos County shall permit other developments in these areas only:

i. When specific findings have been made that consider at least:

a) the type of use proposed and the adverse effects it might have on the site and adjacent areas;

b) the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;

c) the need for methods for protecting the surrounding area from any adverse effects of the development; and

d) hazards to life, public and private property, and the natural environment which may be caused by the proposed use; and

ii. When it is demonstrated that the proposed development:

a) is adequately protected from any geologic hazards, wind erosion, undercutting, ocean flooding and storm waves; or is of minimal value, and

b) is designed to minimize adverse environmental effects, and

iii. When specific findings have been made, where breaching of foredunes is contemplated, that (1) the breaching and subsequent restoration is consistent with sound principles of conservation, and either (2) the breaching is necessary to replenish sand supply in interdune areas, or (3) the breaching is done on a temporary basis in an emergency (e.g., fire control, cleaning up oil spills, draining farm lands, and alleviating flood hazards).

Further, Coos County shall cooperate with affected local, state and federal agencies to protect the groundwater from drawdown, which would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.

This policy shall be implemented through (1) review of the Special Considerations Map when development is proposed in these areas, and (2) an Administrative Conditional Use process where findings are developed based upon a site investigation report submitted by the developer, which addresses the considerations set forth above.

iv. This policy recognizes that:

a) The Special Considerations Map category of "Beach and Dune Areas Unsuitable for Development" includes the following dune forms:

1) active foredunes

2) other foredunes which are conditionally stable and that are subject to ocean undercutting or wave overtopping, and

3) interdune areas (deflation plains) that are subject to ocean flooding,

b) the measures prescribed in this policy are specifically required by LCDC Goal #18 for the above referenced dune forms, and that

c) it is important to ensure that development in sensitive beach and dune areas is compatible with or can be made compatible with, the fragile and hazardous conditions common to such areas.

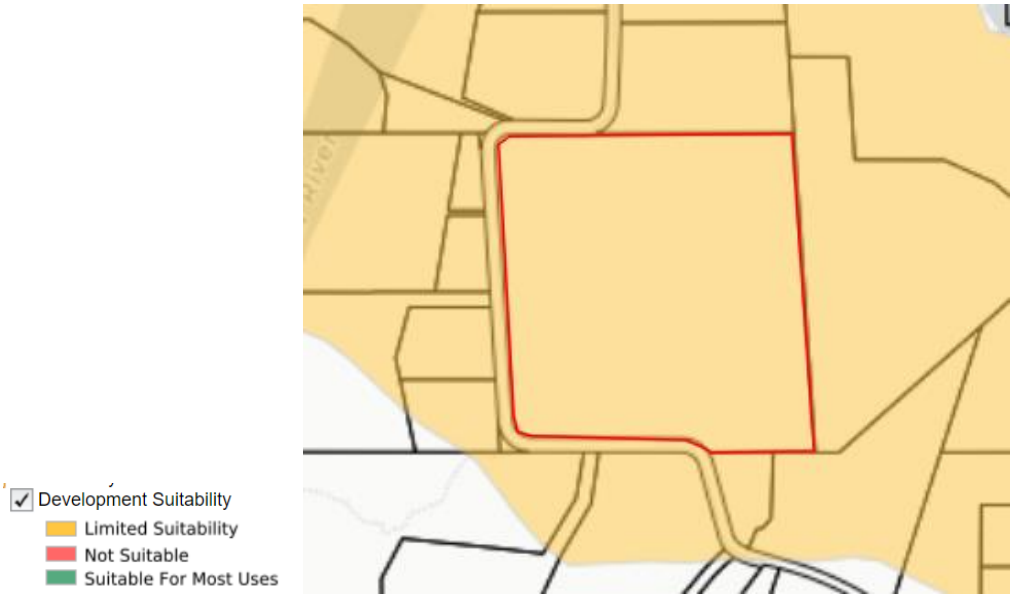
4. Coos County shall cooperate with state and federal agencies in regulating the following actions in the beach and dune areas described in subparagraph (iii) of Policy #1: (1) destruction of desirable vegetation (including inadvertent destruction by moisture loss or root damage), (2) the exposure of stable and conditionally stable areas to erosion, (3) construction of shore structures which modify current or wave patterns leading to beach erosion, and (4) any other development actions with potential adverse impacts.

This strategy shall be implemented through the processes described in Policies #2 and #3 above and through review and comment by the County on state and federal permits in beach and dune areas.

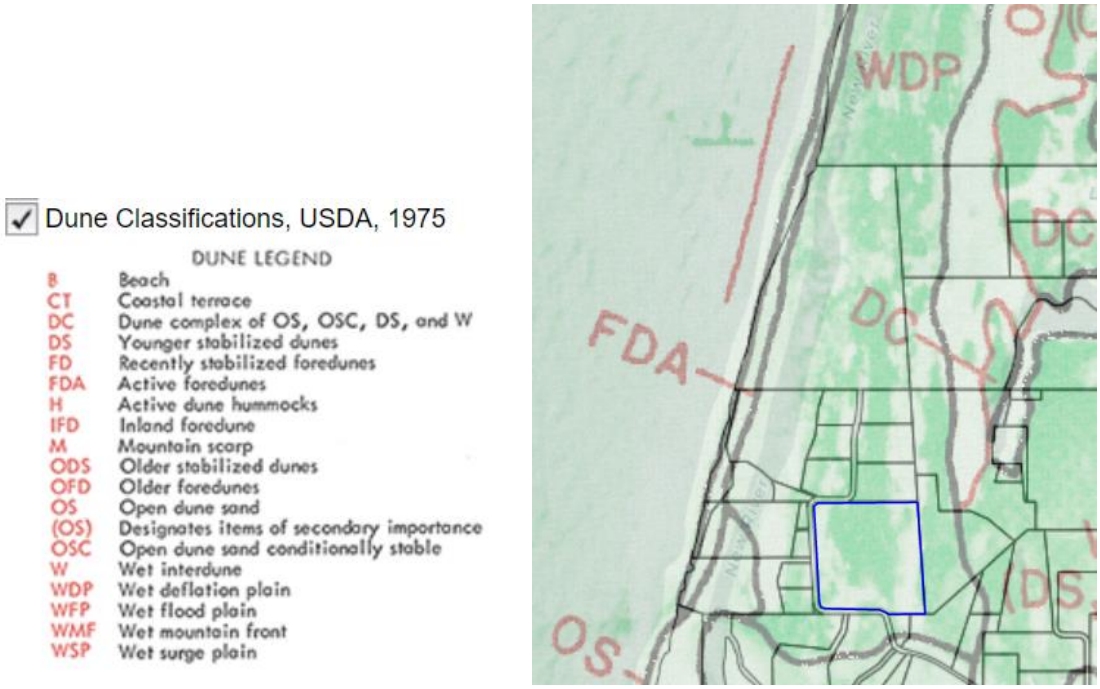
This strategy recognizes that regulation of these actions is necessary to minimize potential erosion.

FINDING: While applicant stated that "*there are no dune areas identified though this application",* meaning the subject property. The subject property is entirely covered by the Beaches and Dunes overlay, specifically classified as "Limited Suitability".

Below is a map of the subject property identified in red.



Below is a map of the 1975 USDA Dune Classification, with the subject identified in blue. The subject property is within the "Wet deflation plane".



Since Coos County implements Goal 18 as an overlay zone, changing the zoning from Forest to Rural Residential will not have an effect on the County's implementation of Goal 18.

The Planning Commission had much discussion about the wet deflation plains on the subject property and found that because of soil compaction concerns, these lands are unsuitable for livestock grazing.

Goal 19 Ocean Resources
To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.

Applicable OARs:
OAR 660-036 – Ocean Planning

FINDING: The subject property is close to the ocean, but on the dry side of 1967 OPRD Statutory Vegetation Line. Therefore, this goal does not apply.

RECOMMENDATION:
The Planning Commission recommended approval of the requested rezone from Forest to Qualified – Rural Residential-5 zoning district. The qualifier for this zoning district will be a 10-acre minimum lot size. The rezone will also remove the subject property from the Forest Mixed Use overlay map.

Staff only received one public comment during the public hearing. Mr. Kent Howe, 86200 Lower Fourmile Lane, expressed comments concerning the maintenance of the gravel portion of Lower Fourmile Road. Mr. Howe requested that the subject property have a condition of approval that it must participate in road maintenance. While this is a valid request for the Board of Commissioners in broad sense. This is not land use criteria. There is process thru either the County Counsel office or County Road Department to form a local improvement district for road maintenance.

Staff also received a few phone calls prior the hearing from neighbors. They also expressed concerns about road maintenance of Lower Fourmile Road. To assistance the Board, Staff confirmed with the County Roadmaster that the County ends maintenance responsibility at mile post 1.52, which is just past where the pavement ends near 86655 Lower Fourmile Road. Staff estimated using GIS software that the subject property is an additional 500 feet beyond this point.