



# AGENDA

Lincoln City Planning Commission  
Tuesday, April 18, 2023, 6:00 PM  
Council Chambers,  
801 SW Highway 101 - 3rd Floor, Lincoln City, OR 97367

- 1. CALL TO ORDER, ROLL CALL, PLEDGE OF ALLEGIANCE**
- 2. CONSENT AGENDA**
  - 2.1. Planning Commission - Regular Meeting - Mar 21, 2023 6:00 PM
  - 2.2. Planning Commission - Workshop - Mar 23, 2023 5:30 PM
- 3. PUBLIC HEARINGS/DELIBERATIONS**
  - 3.1. CPA ZC 2023-05 (continued from March 21, 2023)
- 4. DIRECTOR'S REPORT**
- 5. COMMENTS BY PLANNING COMMISSIONERS/CITIZEN INVOLVEMENT COMMITTEE**
- 6. ADJOURN**

*Individuals wishing to attend via Zoom must email [planning@lincolncity.org](mailto:planning@lincolncity.org) no later than noon on the meeting day. The email must include the person's name and the screen name the person intends to use for the meeting. Instructions will be emailed to the person requesting Zoom attendance. Persons attending via Zoom will need to leave the microphone muted and camera off.*

*The meeting location is accessible to persons with disabilities. A request for an interpreter for the hearing impaired, for a hearing-impaired device, or for other accommodations for persons with disabilities, should be made at least 48 hours in advance of the meeting. To request information in an alternate format or other assistance, please contact the City's ADA Coordinator, Kevin Mattias, at 541-996-1013 or [kmattias@lincolncity.org](mailto:kmattias@lincolncity.org). Visit the ADA Accessibility | City of Lincoln City, OR webpage to view how the City continues to remain in compliance with Title II of the Americans with Disabilities Act regarding City programs, services, processes, and facilities.*

*The Lincoln City Planning Commission reserves the right to add or delete items as needed, change the order of the agenda, and discuss any other business deemed necessary at the time of the meeting.*

*All information for this meeting is available at [www.lincolncity.org](http://www.lincolncity.org) under "Government" then select "Public Meeting, Agendas, Packets & Video". This meeting will be televised live on Channel 4. For additional rebroadcast times, please consult the Channel 4 guide on the hour.*

*Individuals wishing to provide verbal testimony for a public hearing agenda item need to please sign the sign-in sheet for that item. Sign-in sheets are located on the table near the entrance door to the Council Chambers. Individuals who signed in on the sheet will be called to testify during the public testimony portion of the public hearing.*

**LINCOLN CITY PLANNING COMMISSION  
MINUTES  
March 21, 2023**

**1. CALL TO ORDER, ROLL CALL, PLEDGE OF ALLEGIANCE**

<b>Attendee Name</b>	<b>Title</b>	<b>Status</b>	<b>Arrived</b>
Brian Bunnett	Commissioner	Present	
Mellissa Sumner	Commissioner	Absent	
Marci Baker	Commissioner	Present	
Robert Vincent	Chair	Present	
Kim Blackerby	Commissioner	Present	
Charlsy Affuso	Commissioner	Excused	

**2. CONSENT AGENDA**

**RESULT:** PASSED [UNANIMOUS]  
**MOVER:** Bunnett  
**SECONDER:** Baker  
**AYES:** Bunnett, Baker, Vincent, Blackerby  
**ABSENT:** Sumner  
**EXCUSED:** Affuso

**2.1.**

**MOTION:** Minutes for Planning Commission - Workshop - Feb 28, 2023 6:00 PM  
**MOVER:** Bunnett  
**SECONDER:** Baker  
**RESULT:** Passed

**2.2.**

**MOTION:** Minutes for Planning Commission - Workshop - Mar 2, 2023 5:30 PM  
**MOVER:** Bunnett  
**SECONDER:** Baker  
**RESULT:** Passed

**2.3.**

Commissioner Blackerby requested an amendment to the minutes to reflect that he had recused himself from the discussion of and vote on APP 2023-01.

<b>MOTION:</b>	<b>Minutes for Planning Commission - Regular Meeting - Mar 7, 2023 6:00 PM</b>
<b>MOVER:</b>	<b>Bunnett</b>
<b>SECONDER:</b>	<b>Baker</b>
<b>RESULT:</b>	<b>Passed as Amended</b>

#### 2.4.

<b>MOTION:</b>	<b>Minutes for Planning Commission - Workshop - Mar 9, 2023 6:00 PM</b>
<b>MOVER:</b>	<b>Bunnett</b>
<b>SECONDER:</b>	<b>Baker</b>
<b>RESULT:</b>	<b>Passed</b>

### 3. PUBLIC HEARINGS/DELIBERATIONS

#### 3.1. ZOA 2023-01 Title 17 ordinance amendment

Chair Robert Vincent opened the public hearing for ZOA 2023-01 at 6:03 pm. He introduced the application, and asked if any member of the commission should declare ex parte communication, conflict, or bias. With none offered, Chair Vincent read the required statements and Director Anne Marie Skinner provided the applicable substantive criteria.

Director Skinner presented the staff report, summarizing the proposed amendments that included changes to several sections to Title 17, addressing conflicts and restrictions; definitions of abutting, adjacent, contiguous, basement, and detached building or structure; removal of hyphens in zone designations; simplification of setbacks to 5' regardless of height or number of stories in R-1 zones and within the Roads End (R1RE) zone, the minimum setback would be simplified to 7.5'.

In reference to 17.04.050 Restriction, Commissioner Blackerby asked if this meant that if somebody puts in an approved septic system they will be required to sign an agreement to consent to participate in any future local improvement district. Director Skinner concurred.

Commissioner Baker requested clarification regarding the revised definition of basement, citing that many spaces that functioned as basements were open on one side. Director Skinner stated that for purposes of the code, this type of space would be considered a story, regardless of the use of the space. Commissioner Baker suggested retaining the portion of the existing definition that refers to a portion of a building "not deemed a story". Director Skinner agreed to this revision.

In reference to required minimum setbacks, Commissioner Baker asked about the intent of minimum setbacks, and whether they were relevant to the issue of fire safety. Director Skinner stated that the Building Code was the relevant code for fire safety issues, and that building separation required by the building code is 3' without a fire-rated wall.

Commissioner Blackerby moved to close the public hearing, seconded by Commissioner Bunnett. The motion passed unanimously.

Chair Vincent moved to recommend approval of ZOA 2023-01, adding the change to the proposed definition of basement to include the reference "not deemed a story". Commissioner Baker seconded, and the motion passed unanimously.

<b>MOTION:</b>	<b>Approve ZOA 2023-01 Title 17 ordinance amendment as written, but with the inclusion of “not deemed a story” for the basement definition</b>
<b>MOVER:</b>	<b>Vincent</b>
<b>SECONDER:</b>	<b>Baker</b>
<b>AYES:</b>	Bunnett, Baker, Vincent, Blackerby
<b>ABSENT:</b>	Sumner
<b>EXCUSED:</b>	Affuso
<b>RESULT:</b>	<b>Passed as Amended</b>

### 3.2. CPA ZC 2023-01 to CPA ZC 2023-05

Chair Robert Vincent opened the public hearings for CPA ZC 2023-01 through 2023-06 at 6:23 pm. He introduced each of the applications, and asked if any member of the commission should declare ex parte communication, conflict, or bias. No commissioners declared bias, and no challenges were presented. Chair Vincent read the required statements and Director Anne Marie Skinner described the applicable substantive criteria, including the Lincoln City Comprehensive Plan and the Oregon Statewide Planning Goals.

Director Skinner presented an overview of the staff reports and relevant findings. She shared a map of the Villages area, and identified each of the five sites included in the CPA ZC 2023-01 through CPA ZC 2023-05 applications. All of the properties are currently zoned R-1-7.5, with proposed changes to either Open Space or Park zoning. The city retained the services of PBS Environment and Engineering to prepare a development feasibility study of city-owned properties within the Villages, identifying areas of significant wetlands, riparian areas, buffers, wildlife habitat, unstable soils, and steep slopes. The proposed rezoning is based upon the resulting studies.

Commissioner Blackerby asked if N Clancy Rd might be intended for a future connector from the Villages and Roads End through to Highway 101. Director Skinner concurred, but later restated that this connection was not part of the current Lincoln City Transportation System Plan (TSP).

Director Skinner noted that the PBS study included several additional properties for parks/open space which will be brought forward for zone change applications in the future. Developable areas will be also rezoned to a to-be-created residential zone specific to the Villages, and a commercial area.

Commissioner Bunnett asked for clarification about the PBS document. Director Skinner stated that the PBS assessment was only applied to the city-owned portions of the Villages. City Attorney Richard Appicello clarified that the city will retain ownership of the properties being rezoned to parks and open space.

Commissioner Baker asked about the different uses allowed within the Park and Open Space zones. Mr. Appicello stated that the City Council had requested a mix of uses to allow some flexibility in providing amenities appropriate to recreation uses, such as trailhead parking, utilities, etc.

Responding to a question from Commissioner Blackerby, Director Skinner clarified that there is a rectangular island of private property within the project boundary and that island is not in city limits or owned by the city. On packet page 131, Commissioner Blackerby had a question about PBS not including any recommended Park zoning. Director Skinner stated that while there were no recommendations for traditional developed parks, the city was looking to maintain some flexibility to provide parking or recreational support facilities. She noted, however, that regardless of the zoning, the presence of significant wetlands would prohibit most types of development in the five sites.

Testimony in opposition to the application was provided by DeAnn Wright who resides in the N Clancy Rd area, along with six other households. She voiced concerns regarding impacts to traffic on a substandard one-way roadway, the creek and wetlands, natural areas and wildlife habitat, and the neighborhood. She stated that the neighborhood would prefer that CPA ZC 2023-05 be revised to change the zone from residential to open space, instead of the current proposal to zone the site Park (P).

Jeff Stewart, also a N Clancy Rd resident, concurred with Ms. Wright's testimony and opposed the zone change to Park (P). He cited the traffic impacts and the presence of wildlife as primary reasons for his opposition.

Chair Vincent requested additional information about the allowed uses in Park vs. Open Space.

Director Skinner provided the following description of the Open Space allowed uses: passive recreation activities (hiking, biking, birdwatching, picnicking), development and maintenance of trails and footbridges, educational and research activities, natural resource restoration and enhancement, interpretive displays and public safety activities (removal of timber, rocks). Conditional uses allowed include nature center, restrooms, access and parking areas, public drainage and public utilities, and docks. In the Park zone, the following uses are allowed: parks, playgrounds, recreational buildings and facilities, athletic fields and facilities, public community centers and auditoriums, vending, special events, uses permitted in the open space zone, public parking, community gardens, mobile food units, visitor information center, and community meeting buildings. Conditional uses allowed include open air farmers markets, public utilities, docks, commercial uses, and campgrounds. She clarified an earlier statement, stating that conditional use approval is needed in both zones for public utilities.

Responding to a request from Commissioner Blackerby, Director Skinner stated that it was her understanding that the Urban Renewal Director was in favor of the park zone simply because of the additional flexibility it would provide as the Villages area proceeded to development.

Responding to a question from Commissioner Bunnett, Director Skinner stated that currently the entire site was zoned for residential development. Commissioner Bunnett added that if needed, city staff could seek to rezone the parcels zoned as open space to park in order to allow for further development. Director Skinner concurred.

Director Skinner noted that road construction would be permitted in either zone, under a conditional use permit, and in either case the presence of designated wetlands would present significant physical and regulatory obstacles to such a project.

Attorney Appicello shared that the City Council's goals for this effort were twofold--one, to protect the important natural resource values of the site, and two, to facilitate development of the residential and commercial areas within the Villages.

Director Skinner clarified that transportation uses are permitted in the Park zone, but not listed in the Open Space zone and read the definition from the code for transportation uses.

Commissioner Bunnett again asked for clarification about the need for a road through the N Clancy area to connect to the Villages. While an alternative connection to Highway 101 is a future goal, the current TSP does not designate N Clancy for that connection.

Commissioner Baker asked if all of the sites were intended to be used as developed or undeveloped recreational areas. Director Skinner stated that the intent was to leave the sites pretty much as they exist, as undeveloped recreation areas.

Chair Vincent asked if anyone who had provided testimony would like the record to remain open. The participants representing opposition to CPA ZC 2023-05 requested a continuance. Commissioner Blackerby moved, seconded by Commissioner Bunnett to close the record for CPA ZC 2023-01, 2023-02, 2023-03, and 2023-04. The motion passed unanimously.

Commissioner Baker stated that she supported the Planning Commission approving the zone change for all four sites to Open Space (OS) – CPA ZC 2023-01 and 2023-02 as proposed, and CPA ZC 2023-03 and 2023-04 being amended to Open Space rather than Park.

Chair Vincent moved to reopen the record, seconded by Commissioner Blackerby. The motion was approved.

In responding to a question from Commissioner Blackerby, Director Skinner stated that the Planning Director and the Parks & Recreation Director supported all four of these sites being zoned as open space, in accordance with the recommendations in the PBS report. The Urban Renewal Director supported all of the sites being zoned park.

The Planning Commission voted to close the record.

Commissioner Blackerby expressed support for the original proposal to rezone two of the parcels as park, in order to provide the city with latitude as it grows and develops.

Chair Vincent stated he supported Commissioner Baker's proposal to rezone all four parcels to open space.

Commissioner Baker stated that the city ownership would ensure opportunities for future planning, and if additional development was desired outside of the uses allowed by the open space zone, there remained the option to pursue conditional use permits or zone change applications.

Commissioner Baker moved to recommend approval to City Council of CPA ZC 2023-01, seconded by Chair Vincent. The motion passed unanimously.

Chair Vincent moved to recommend approval to City Council of CPA ZC 2023-02, seconded by Commissioner Bunnett. The motion passed unanimously

Commissioner Bunnett moved to recommend approval to City Council of CPA ZC 2023-03, with a zone change to Open Space rather than Park, seconded by Chair Vincent. The motion passed, with 3 in favor, 1 opposed. Commissioner Blackerby stated his opposition was due to the desire to provide additional flexibility and opportunities as the city continues to grow and expand.

Chair Vincent moved to recommend approval to City Council of CPA ZC 2023-04, with a zone change to Open Space rather than Park, seconded by Commissioner Baker. The motion passed, with 3 in favor, 1 opposed. Commissioner Blackerby again stated that his opposition was due to the desire to provide additional flexibility.

Attorney Appicello stated that he did find a reference within the TSP to a study for \$50,000 to determine roadway connectivity in the area bounded by NW Logan Road, the north area of the Lincoln City urban growth boundary, and Highway 101 to improve east-west connectivity.

**MOTION:** Recommend approval to City Council of CPA ZC 2023-01 from R-1-7.5 to Open Space  
**MOVER:** Baker  
**SECONDER:** Vincent  
**AYES:** Bunnett, Baker, Vincent, Blackerby  
**ABSENT:** Sumner  
**EXCUSED:** Affuso  
**RESULT:** Passed

**MOTION:** Recommend approval to City Council of CPA ZC 2023-02 from R-1-7.5 to Open Space  
**MOVER:** Vincent  
**SECONDER:** Baker  
**AYES:** Bunnett, Baker, Vincent, Blackerby  
**ABSENT:** Sumner  
**EXCUSED:** Affuso  
**RESULT:** Passed

**MOTION:** Recommend approval to City Council of CPA ZC 2023-03 from R-1-7.5 to Open Space  
**MOVER:** Bunnett  
**SECONDER:** Vincent  
**AYES:** Bunnett, Baker, Vincent  
**NAYS:** Blackerby  
**ABSENT:** Sumner  
**EXCUSED:** Affuso  
**RESULT:** Passed

<b>MOTION:</b>	<b>Recommend approval to City Council of CPA ZC 2023-04 from R-1-7.5 to Open Space</b>
<b>MOVER:</b>	<b>Vincent</b>
<b>SECONDER:</b>	<b>Baker</b>
<b>AYES:</b>	Bunnett, Baker, Vincent
<b>NAYS:</b>	Blackerby
<b>ABSENT:</b>	Sumner
<b>EXCUSED:</b>	Affuso
<b>RESULT:</b>	<b>Passed</b>

**3.3. CPA ZC 2023-06**

Director Skinner provided an overview of the staff report for CPA ZC 2023-06, the site of D River Wayside and future Welcome Center. The site is owned by the Oregon Parks & Recreation Department, and the city has received \$2.5 million funding to further develop the site as a tourism welcome center, maintaining the ongoing recreation uses there.

Commissioner Bunnett noted that this is the fifth most visited Oregon State Park, with more than 1.3 million visitors annually.

Attorney Appicello stated that the city is seeking to lease the property from the state, and the rezone request is part of that larger effort.

Commissioner Blackerby moved to close the record, seconded by Chair Vincent. The motion was approved and the hearing was closed.

Commissioner Baker stated she supported the rezone, as did Chair Vincent and Commissioner Blackerby.

Commissioner Blackerby moved to approve CPA ZC 2022-06, seconded by Commissioner Baker. The motion passed unanimously.

<b>MOTION:</b>	<b>Recommend approval to City Council of CPA ZC 2023-06 from Recreation Commercial to Park</b>
<b>MOVER:</b>	<b>Blackerby</b>
<b>SECONDER:</b>	<b>Baker</b>
<b>AYES:</b>	Bunnett, Baker, Vincent, Blackerby
<b>ABSENT:</b>	Sumner
<b>EXCUSED:</b>	Affuso
<b>RESULT:</b>	<b>Passed</b>

**4. FINAL RECOMMENDATIONS**

**4.1. Final Recommendations**

Director Skinner stated that due to the fact that the April 4th Planning Commission has been cancelled because of the lack of a quorum, she is requesting that the Planning Commission vote

to authorize the Chair to sign the Final Recommendations as amended. Commissioner Blackerby made the motion to authorize the Planning Commission Chair to sign the Final Recommendations for ZOA 2023-01, CPA ZC 2023-01, CPA ZC 2023-02, CPA ZC 2023-03, CPA ZC 2023-04, and CPA ZC 2023-06. Commissioner Bunnett seconded the motion and it passed unanimously.

<b>MOTION:</b>	<b>Authorize Planning Commission Chair to sign the Final Recommendations for ZOA 2023-01, CPA ZC 2023-01, CPA ZC 2023-02, CPA ZC 2023-03, CPA ZC 2023-04, and CPA ZC 2023-06.</b>
<b>MOVER:</b>	<b>Blackerby</b>
<b>SECONDER:</b>	<b>Bunnett</b>
<b>AYES:</b>	Bunnett, Baker, Vincent, Blackerby
<b>ABSENT:</b>	Sumner
<b>EXCUSED:</b>	Affuso
<b>RESULT:</b>	<b>Passed</b>

Director Skinner asked if the Planning Commission could also authorize the Chair to sign the Final Order for APP 2023-01. Commissioner Baker made the motion, and Commissioner Bunnett seconded the motion. Responding to a question from Commissioner Blackerby, Attorney Appicello cited the rule of necessity in allowing Commissioner Blackerby to participate in the quorum and vote to authorize the signature of FO 2023-02 for APP 2023-01. The motion passed unanimously.

<b>MOTION:</b>	<b>Authorize Planning Commission Chair to sign the Final Order of FO 2023-02 for APP 2023-01</b>
<b>MOVER:</b>	<b>Baker</b>
<b>SECONDER:</b>	<b>Bunnett</b>
<b>AYES:</b>	Bunnett, Baker, Vincent, Blackerby
<b>ABSENT:</b>	Sumner
<b>EXCUSED:</b>	Affuso
<b>RESULT:</b>	<b>Passed</b>

## 5. DIRECTOR'S REPORT

### 5.1. Scheduling

Director Skinner stated that there had not been any activity on recently approved land use cases.

Chair Vincent asked about the progress at the Ebb St. Lofts. Director Skinner stated that the applicants are revising some components of their building permits to accommodate a fire code requirement. There was no activity to report on the Natural Resource Variance site nearby.

Responding to a question from Chair Vincent, Director Skinner stated that the building permit application for the conversion of the former movie theater to a 38-unit apartment building is under review and that Copeland Lumber has submitted a development review application for the adjacent parcel created through a recent partition.

Commissioner Blackerby asked about the Lincoln Palisades Phase VI site work. Director Skinner stated that she had forwarded the information to the Public Works Department and the site development permit application is likely imminent.

Director Skinner provided an update regarding regular Planning Commission meetings and Work Sessions. An unscheduled meeting for April 18th was added to the schedule, and the May 2nd meeting was canceled. A May 16th Planning Commission meeting is pending confirmation of attendance from one or two additional commissioners to have a quorum.

Meeting materials for the March 23rd work session were published on Tuesday, March 21st. Commissioner Baker stated that she would only be able to attend the first hour of the work session. Commissioner Bunnett suggested that the agenda be restructured accordingly. Director Skinner agreed to review the agenda on Thursday.

Director Skinner suggested adding a work session immediately after the regular Planning Commission meeting on April 18th. Commissioner Baker is available until April 20th. For May, Commissioner Bunnett is out of town from May 12th to June 8th and Commissioner Blackerby will be out May 29th through June 7th. Director Skinner will be out as well. For May, Director Skinner proposed a tentative date for a work session for Monday, May 22nd. Commissioner Baker stated her preference would be to meet between 2 and 7 pm if possible.

**6. COMMENTS BY PLANNING COMMISSIONERS/CITIZEN INVOLVEMENT COMMITTEE**

There were no comments by the Planning Commissioners/Citizen Involvement Committee.

**7. ADJOURN**

Chair Vincent adjourned the meeting at 7:56 PM.

Respectfully submitted,

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Anne Marie Skinner  
Planning Director

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Robert Vincent  
Chair

**LINCOLN CITY PLANNING COMMISSION WORK SESSION  
MINUTES  
March 23, 2023**

**I. CALL TO ORDER, ROLL CALL**

<b>Attendee Name</b>	<b>Title</b>	<b>Status</b>	<b>Arrived</b>
Brian Bunnett	Commissioner	Present	
Melissa Sumner	Commissioner	Present	
Marci Baker	Commissioner	Excused	
Robert Vincent	Chair	Present	
Kim Blackerby	Commissioner	Present	
Charlsy Affuso	Commissioner	Excused	

**II. DISCUSSION ITEMS**

**2.1. 4<sup>th</sup> Draft – Public Facilities and Services**

Director Anne Marie Skinner read the draft document, including the introduction, goal, and policies in the following areas: overall, sanitary sewer & water, stormwater, police & fire, health services, schools, solid waste, telecommunications, and daycare.

Responding to a comment from Commissioner Blackerby, Director Skinner added a reference to inert solid waste in the policy section.

Director Skinner read the remaining components of the Public Facilities and Services chapter, including recently added policies addressing telecommunications and daycare. Commissioners present expressed support for these additions.

**2.2. 4<sup>th</sup> Draft – Transportation**

Director Skinner read the introduction, goals, and policies of the fourth draft of the Transportation chapter.

In addition to some minor edits, the Commissioners also supported adding the term sustainable to the goal and the first overall transportation policy, and moving the emergency preparedness policies to the chapter on Community Resiliency.

**2.3. 2<sup>nd</sup> Draft – Citizen Involvement**

Director Skinner provided an overview of progress to-date on the second draft of the Citizen Involvement chapter.

Commissioner Bunnett asked if the Planning Commission would be responsible for implementing the Citizen Involvement policies. In response, Director Skinner clarified that for policies to be implemented they would need to be adopted into the code or passed as a resolution by the City Council. She added that the Planning Commission would be instrumental in working with staff to develop a draft Citizen Involvement plan.

Director Skinner read the revised introduction to the Citizen Involvement chapter. In response to a question from Commissioner Blackerby, she provided clarification regarding how the recommendations made by he and Commissioner Baker were reflected in the revised language.

Commissioner Blackerby expressed concern regarding the goal, stating that it did not reflect the significant edits he had proposed from the Putting People in Planning document. Ms. Riner shared that their had been an effort to reduce the goal statements to one or two succinct sentences. Director Skinner stated that other significant components could be moved to the list of policies as desired, and read the remainder of the draft document.

Commissioner Bunnett restated his question about how the policies would be implemented, and how the role of the Planning Commission as the Citizen Involvement Committee would be defined. Director Skinner stated that implementation would be the responsibility of the City Council and staff, although the Planning Commission will be involved in a review role for development of the Citizen Involvement Plan described in policy #2. In addition, she stated, many of the policies are already reflected in the current public involvement program. Commissioner Bunnett stated that the Putting People in Planning booklet which included a reference to a public involvement toolbox within the Appendix. Ms. Riner stated that she would look for the document and send it out, but that it would likely be a good reference following adoption of the Comprehensive Plan when initiating the community involvement plan discussions.

Commissioner Bunnett emphasized that he, and several other Planning Commissioners, remained committed to creating a more robust public involvement program, and that he was glad to hear how the Planning Commission would be involved moving forward.

Commissioner Blackerby stated that he remained ambivalent about the goal, and the Commissioners considered various options for enhancing the text. Director Robertson suggested moving some of the desired text to the introduction, in order to leave the goal a more straightforward statement.

The Commission worked to revise policy #8, to be more inclusive of the range of under represented community interests.

The discussion closed with a review of Commissioner Baker's notes from the previous work session, to make sure that the current draft reflected key elements of her input, including the language for the goal: "Educate and engage the public around the land use process and continue to provide opportunities for citizens, organizations and individuals to be involved in all phases of the land use planning process." Some members of the Commission were supportive of this language, while others felt it was already reflected in the policies. Commissioner Baker had also presented the policies under several headings, including Overall, the Committee for Citizen Involvement, and the Citizen Involvement Program.

Commissioner Bunnett asked about the intended audience for the Comprehensive Plan, and whether the public would find the examples provided by Commissioner Baker helpful. Director Skinner stated that there are three primary uses: when developing findings for zoning ordinances and ordinance amendments, requests for zone change, and grant opportunities. Director Robertson added that Urban Renewal also needs to provide findings for their work, and that the use of the Comprehensive Plan is more technical and not as general public information. Several components of Commissioner Baker's notes were incorporated into the draft, and others were

noted as being best used to begin the draft Citizen Involvement Program document at such time the Planning Commission begins work on that item.

#### 2.4. 1st Draft – Natural Resources, et al

Ms. Riner introduced the discussion packet provided for this item, which included the relevant Oregon Statewide Goals, current Lincoln City Comprehensive Plan goals and objectives, community feedback from the surveys, and sample objectives from other Oregon communities' comprehensive plans (Brookings, Florence, Cannon Beach, Oregon City, Sherwood, etc.). Ms Riner clarified that these items were for reference only, and were not intended to be the draft chapter. The Natural Resources chapter will address three Statewide Goals, including #5, Open Spaces, Scenic and Historic Areas and Natural Resources, #6, Air, Land & Water Quality, and #13, Energy Conservation. Open Spaces, however, will be moved to a newly titled chapter addressing Parks, Recreation, and Open Space.

Director Skinner acknowledged that the goals from the current Comprehensive Plan, including Aesthetics, Energy, and Overall Environmental, were likely not useful for the update, and that entirely new goal needs to be crafted. She added that the first draft of the Natural Resources chapter was presented at the March 2nd work session, and included the following goal: To protect natural resources, to protect and conserve scenic areas, to designate and then protect and conserve historic areas, sites, buildings and structures.

Commissioners and staff discussed a number of possible objectives relating to historic preservation, including providing appropriate visible recognition of the historical significance of sites, structures, areas or elements within the City; maintain, update and create historical signage throughout the City; investigate community interest in expanding historic preservation activities and establishing historic districts; and identify and protect important artistic and cultural resources and historic amenities through programs, designation, interpretive signage, and other means to increase awareness and generate appreciation.

Commissioners supported existing energy policy #2, consider ways to conserve energy in all public buildings and facilities; #3, actively explore alternative energy funding for local facilities such as federal and state grants; and #5, ensure that users of alternative energies do not have access to energy sources restricted. Commissioners agreed to eliminate the existing aesthetics goal, although there was interest in bringing scenic resources goals forward into the updated Comprehensive Plan. The discussion that followed lead to several different perspectives regarding the definition and feasibility of language protecting scenic viewpoints, viewsheds and scenic resources. The consensus was to not move this objective forward into the update. Director Skinner stated that the City already required private developers to put utilities underground for new construction. There was also agreement to move the text relating to the Dorchester House and the Taft Pioneer Cemetery to the introductory statements. Commissioner Blackerby suggested an objective highlighting the value of code enforcement in improving community aesthetics.

The meeting concluded with a discussion of current natural resource related comp plan objectives the Commission wanted to retain, including minimizing wildlife habitat disruption, preservation of native trees, watershed protection, conducting or updating natural resource inventories, and reviewing the open space zoning and tree ordinances. Several objectives were identified as being more appropriate within the parks, recreation and open space chapter.

#### 2.5. 1st Draft – Economy and Urbanization

This item was tabled for the next work session.

### III. ADJOURN

The next work session was scheduled for April 18th, following the Regular Planning Commission Meeting.

Respectfully submitted,

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Anne Marie Skinner  
Planning Director

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Robert Vincent  
Chair

# Planning Commission Communication

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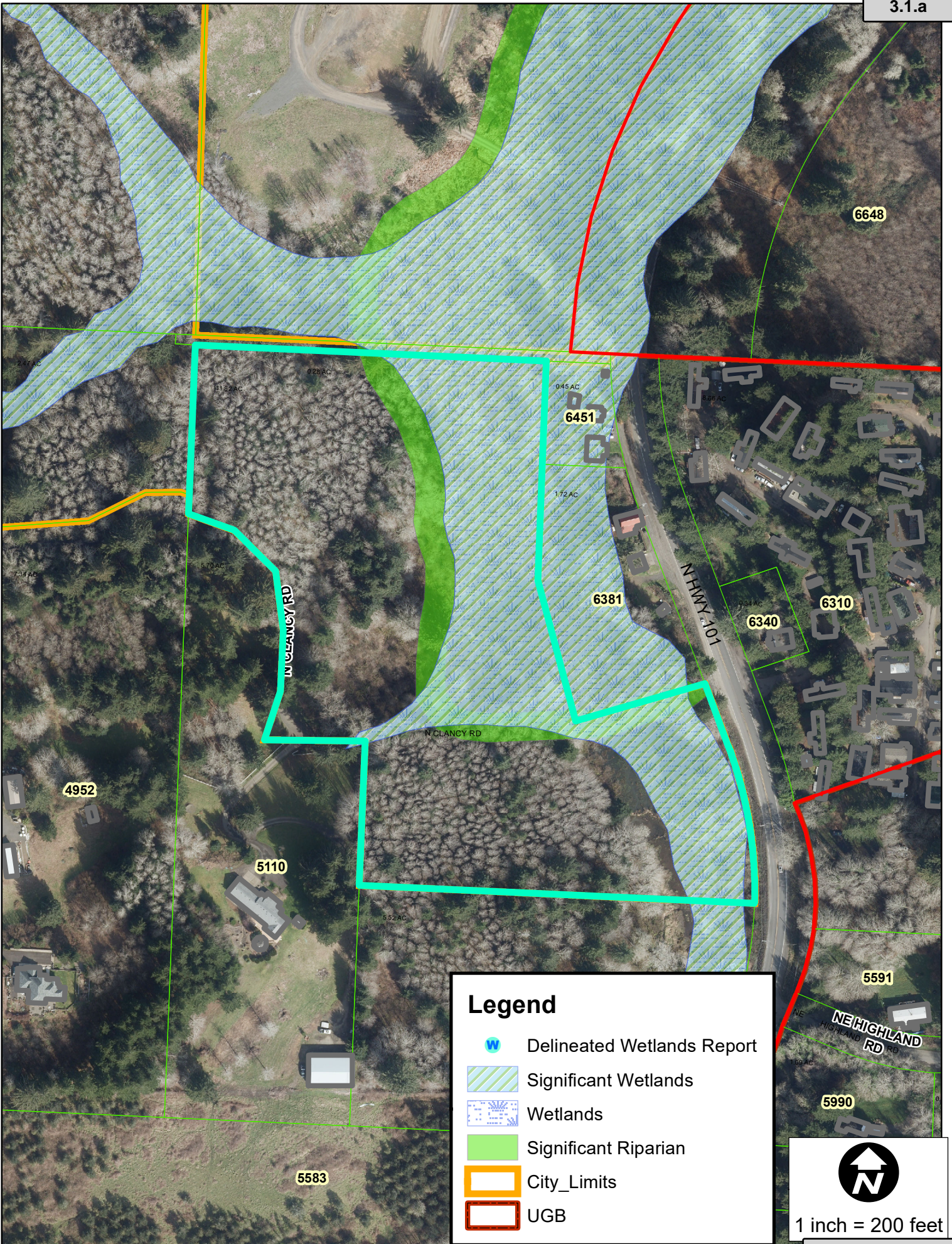
## CPA ZC 2023-05

Meeting Date: April 18, 2023                      Primary Staff Contact: AnneMarie Skinner  
Department: Planning Commission              E-Mail: ASkinner@lincolncity.org  
Secondary Dept:                                      Secondary Contacts:  
Approval:    Estimated Time:

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### Attachments:

CPA ZC 2023-05 Map                      (PDF)  
CPA ZC 2023-05 Application                      (PDF)  
CPA ZC 2023-05 Narrative (PDF)  
CPA ZC 2023-05 Staff Report - Revised                      (DOCX)  
Villages\_CA\_report\_final                      (PDF)



### Legend

-  Delineated Wetlands Report
-  Significant Wetlands
-  Wetlands
-  Significant Riparian
-  City Limits
-  UGB

  
 1 inch = 200 feet  
 Packet Pg. 17

# Rezone/Comprehensive Plan Map Amendment Application

**PROPERTY OWNER/CONTRACT PURCHASER (as listed on deed OR purchase contract):**

*Copy of purchase contract must be included with submittal for application to be accepted.*

NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
E-MAIL: \_\_\_\_\_

**PROPERTY OWNER/CONTRACT PURCHASER (as listed on deed OR purchase contract):**

*Copy of purchase must be included with submittal for application to be accepted.*

NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
E-MAIL: \_\_\_\_\_

**CONTACT:**

NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
E-MAIL: \_\_\_\_\_

**SITE INFORMATION:**

CURRENT COMPREHENSIVE PLAN MAP CLASSIFICATION: \_\_\_\_\_  
CURRENT ZONE: \_\_\_\_\_  
TAX MAP AND LOT: \_\_\_\_\_  
TOTAL GROSS ACREAGE: \_\_\_\_\_  
SITE ADDRESS (or location if unaddressed): \_\_\_\_\_

**REQUEST:**

REQUESTED COMPREHENSIVE PLAN MAP CLASSIFICATION: \_\_\_\_\_  
REQUESTED ZONE: \_\_\_\_\_





Land Conservation and Development Department  
 Chapter 660  
 Division 18  
 POST-ACKNOWLEDGEMENT AMENDMENTS  
 660-018-0020  
 Notice of a Proposed Change to a Comprehensive Plan or Land Use Regulation

Local File: CPA ZC 2023-05

(1) Before a local government adopts a change to an acknowledged comprehensive plan or a land use regulation, unless circumstances described in OAR 660-018-0022 apply, the local government shall submit the proposed change to the department, including the information described in section (2) of this rule. The local government must submit the proposed change to the director at the department's Salem office at least 35 days before holding the first evidentiary hearing on adoption of the proposed change.

**Response:** The information described in section (2) of this rule is listed below. The first evidentiary hearing is scheduled for March 21, 2023. The proposed change was submitted to DLCD on January 30, 2023, which is more than 35 days before March 21, 2023.

(2) The submittal must include applicable forms provided by the department, be in a format acceptable to the department, and include all of the following materials:

**Response:** The submittal on January 30, 2023 used the online system required by DLCD.

(a) The text of the proposed change to the comprehensive plan or land use regulation implementing the plan, as provided in section (3) of this rule;

**Response:** The proposal does not include any proposed changes to the text of the comprehensive plan. The proposal does not include any text changes to land use regulations implement the comprehensive plan. Rather, the proposal is a change to the comprehensive plan use map and zoning map.

(b) If a comprehensive plan map or zoning map is created or altered by the proposed change, a copy of the relevant portion of the map that is created or altered;

**Response:** A copy of the relevant portion of the map was included with the submittal on January 30, 2023.

(c) A brief narrative summary of the proposed change and any supplemental information that the local government believes may be useful to inform the director and members of the public of the effect of the proposed change;

**Response:** A large portion of the site is a significant wetland natural resource and a significant riparian natural resource. While the site is zoned for residential use, the site will not be used for residential use because of the natural resources contained on and within the site. To preserve the area and keep the natural resources intact, the city is requesting to rezone the site to Park. Having the site zoned as residential skews the number of available buildable acres in the city

because the site is not buildable due to being a mapped significant wetland. Accomplishment of this rezone will satisfy Statewide Planning Goals 5, 6, 7, and 8, and contribute to satisfaction of Goals 4 and 9, with full findings outlined in the staff report.

(d) The date set for the first evidentiary hearing;

**Response:** The date set for the first evidentiary hearing is March 21, 2023.

(e) The notice or a draft of the notice required under ORS 197.763 regarding a quasi-judicial land use hearing, if applicable; and

**Response:** A draft of the notice required under ORS 197.763 for the local newspaper publishing and for the mailing to property owners with 500 feet of the site is included with the online submittal.

(f) Any staff report on the proposed change or information that describes when the staff report will be available and how a copy may be obtained.

**Response:** The staff will be available at least seven days prior to March 21, 2023. The staff report will be posted on Lincoln City's website. Individuals may also request hard copies of the staff report. Hard copies can be mailed or given in person. The staff report can also be emailed to anyone requesting a copy by email.

(3) The proposed text submitted to comply with subsection (2)(a) of this rule must include all of the proposed wording to be added to or deleted from the acknowledged plan or land use regulations. A general description of the proposal or its purpose, by itself, is not sufficient. For map changes, the material submitted to comply with Subsection (2)(b) must include a graphic depiction of the change; a legal description, tax account number, address or similar general description, by itself, is not sufficient. If a goal exception is proposed, the submittal must include the proposed wording of the exception

**Response:** No text is being changed. The request is only a map change. A graphic depiction of the site was included with the upload on January 30, 2023.

# Comprehensive Plan Map Amendment Zone Change Staff Report for Planning Commission Public Hearing Case File CPA ZC 2023-05

<b>Date:</b>	updated March 22, 2023
<b>Case File:</b>	CPA ZC 2023-05
<b>Property Owner:</b>	City of Lincoln City PO Box 50 Lincoln City, OR 97367
<b>Situs Address:</b>	Unaddressed
<b>Location:</b>	Easterly boundary of N Hwy 101, westerly boundary of N Clancy Rd; N Clancy Rd bisects and connects to N Hwy 101 on the easterly boundary
<b>Tax Map and Lot:</b>	06-11-36-BD-00500-00
<b>Comprehensive Plan Designation:</b>	Medium-Density Residential District (R-7.5)
<b>Zoning District:</b>	Single-Unit Residential (R-1-7.5) Zone
<b>Site Size:</b>	11.74 acres
<b>Proposal:</b>	Comprehensive Plan Map Amendment to Open Space and Zone Change to Open Space
<b>Surrounding Land Uses and Zones:</b>	North: Undeveloped, wetlands; unincorporated Lincoln County South: Undeveloped, wetlands; unincorporated Lincoln County East: Wetlands, N Hwy 101; unincorporated Lincoln County West: Rural housing, undeveloped, wetlands; unincorporated Lincoln County; R-1-7.5
<b>Authority:</b>	Lincoln City Municipal Code (LCMC) 17.76.050.G states that Table 17.76.020-1 identifies the decision authority for each Type III application. Table 17.76.020-1 of LCMC Chapter 17.76 identifies a comprehensive plan amendment and a zone change as a Type III application with the decision authority given to the City Council after a recommendation from the Planning Commission.
<b>Procedure:</b>	The Planning and Community Development Department mailed notice to the owners of all properties within 500 feet of the site on February 28, 2023. The <i>News Guard</i> published the public hearing notice on March 7, 2023. The Oregon Department of Land Conservation and Development was notified on January 30, 2023.



**Applicable Substantive Criteria:** Oregon Statewide Planning Goals  
Lincoln City Comprehensive Plan  
LCMC 17.77.050 and 17.77.150

### **BACKGROUND**

The subject property (site) is unaddressed and identified as Tax Map 06-11-36-BD-00500-00. The site is approximately 11.74 acres in the R-1-7.5 zone. North of the site is undeveloped wetland and riparian area in unincorporated Lincoln County. South of the site is undeveloped area and wetland in unincorporated Lincoln County. East of the site is undeveloped area, wetland, and N Hwy 101, all in unincorporated Lincoln County. The northernmost portion that is west of the site is undeveloped wetland area in the city's R-1-7.5 zone. The remaining area west of the site is developed as rural houses in unincorporated Lincoln County.

Almost the entire site is designated as significant wetland and significant riparian area. Along with the significant wetland and riparian area, the site contains trees, vegetation, and wildlife. N Clancy Rd runs through the significant wetland and significant riparian area.

The public hearing with Planning Commission was held on March 21, 2023. A citizen requested that the record be held open and the hearing continued. The record was held open until 5:00 PM on March 28, 2023. The hearing was continued to the next available hearing on April 18, 2023.

### **COMMENTS**

Comments were received from the Oregon Department of State Lands on January 30, 2023, via email, stating the following: "DSL supports these five proposals of zone change from residential to open space because all of these lots contain significant wetland resources. Retaining the natural surroundings of these wetlands to the extent possible will help to maintain the functions of these wetlands and the values that performing these functions provide to the community surrounding them."

Comments were received from Lincoln City's Parks & Recreation Director on January 30, 2023, via email, stating the following: "Thank you for all of these re-zones."

### **ANALYSIS**

#### **A. Lincoln City Comprehensive Plan**

##### **1. Land Use Planning Goal**

*"To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions."*

The City Council established a land use policy framework and implementing ordinance through adoption of a comprehensive plan and zoning ordinance, respectively. The Land Conservation and Development Commission acknowledged the City of Lincoln City's Comprehensive Plan and implementing land development regulations, including LCMC Title 17 Zoning, as complying with the Oregon Statewide Planning Goals. Review of the proposed amendment in accordance with the Lincoln City Comprehensive Plan and the applicable zoning ordinance provisions, including the provisions of LCMC Chapter 17.77, establishes conformance with this goal.

The Comprehensive Plan Land Use Planning element identifies zoning as the most common method of land use regulation and control. The plan states:

*"Essentially, zoning is a means of ensuring that the land uses of an area are properly situated in relation to one another. It provides adequate amounts of space for each type of development."*

The proposed map amendment and zone change would designate the site with the OS zone to align with its use as significant wetland and riparian area, and adjacent to other significant wetland and riparian area. Staff finds the proposal is consistent with Goal 1.

## **2. Citizen Involvement Goal**

*“Develop a Citizen Involvement Program which ensures the continued participation of citizens in the land use planning process.”*

The Comprehensive Plan’s Citizen Involvement Program goal is to “develop a Citizen Involvement Program which ensures the continued participation of citizens in the land use planning process.” The city has developed a Citizen Involvement Program through Resolution 94-33. The public hearing process for the proposed map amendment and zone change included mailed and published notice to the public and property owners, and review of the proposal by the Planning Commission and the City Council, consistent with the Comprehensive Plan.

Among the policies under the city’s Citizen Involvement Program goal is one that states: “Lincoln City shall assure that a reasonable effort is made to encourage the opportunity for citizens to attend public meetings.” The Planning Commission and City Council meetings are publicized widely with hearing notices mailed to property owners in the affected area, published in *The News Guard*, and posted on the city’s website. The city holds public hearings in the evening to encourage public attendance. Moreover, for those unable to attend in person, the meetings are available to attend remotely via Zoom, televised live, streamed live over the internet, and rebroadcast on cable television. Video of meetings and the packet materials are also available on the city’s website for review, free of charge. These aforementioned items in their totality constitute a more than reasonable effort to encourage citizens to attend public meetings and meet Goal 2.

## **3. Public Services and Utilities Goal**

*“To plan and develop a timely, orderly, and efficient arrangement of public facility and services which compliment [sic] the area and serve as a framework for urban and rural development.”*

No development is allowed in the open space zone, so public facilities are not necessary. This goal is not applicable.

## **4. Urbanization Goal**

*“To promote an orderly and efficient transition of land uses from rural to urban.”*

The area affected by the proposed map amendment and zone change is within the urban growth boundary and the city limits, thereby already establishing the site as urban. The proposed amendment and zone change will not move the site out of the urban growth boundary or out of city limits back to rural. The proposal is consistent with this goal.

## **5. Natural Hazard Goal**

*“The City shall control development in hazardous areas to protect life and property from natural disasters and hazards.”*

The city’s maps show the site does not contain any natural hazards. Goal 5 is not applicable.

## 6. Housing Goal

*“To provide for the housing needs of all citizens.”*

The site is largely significant wetland and significant riparian area. Both are precluded from development. Goal 6 is not applicable.

## 7. Economy Goal

*“To support the tourist industry and achieve a degree of diversity in the community which will allow a balanced economy that will, in turn, support an adequate level of services for all members of the area.”*

The Comprehensive Plan states that the city’s primary industry is tourism and concludes that tourism will continue to function as the city’s basic industry. The site is open to the public and tourists for viewing the significant wetland, riparian area, and the vegetation and habitat contained therein. Staff finds this goal is either not applicable to the request or is met.

## 8. Aesthetic Goal

*“To develop a livable and pleasing city which enhances man’s activities while protecting the exceptional aesthetic quality of the area.”*

The site does not contain any aesthetic resources, but it is significant wetland and significant riparian area. The proposal will align the zone with the use. This will preserve the area in its natural state with the native vegetation, wetland, and habitat, all of which serve to preserve the aesthetic quality of the area. The request is consistent with the Aesthetic Goal.

## 9. Transportation Goal

*“To provide a safe, convenient and rapid transportation network to facilitate the movement of goods and people.”*

The site is significant wetland and significant riparian area, so it will remain undeveloped. The site does contain N Clancy Rd, which provides access to the adjacent rural residential sites in unincorporated Lincoln County. This goal is satisfied or not applicable.

## 10. Energy Goal

*“To conserve energy.”*

The site will remain undeveloped as a significant natural resource. No energy will be expended in development or use. The goal, therefore, is satisfied or not applicable.

## 11. Overall Environmental Goal

*“To achieve a balance between the need to provide housing and services and the need to protect and enhance the natural environment of the city.”*

The entire site will be preserved as a significant natural resource in its natural state. This goal is satisfied.

## 12. Shoreland, Beaches, Dunes, Estuary, and Ocean Resources Goal

*“To conserve, protect, and enhance the coastal resources of the city.”*

The site does not contain any shoreland, beaches, dunes estuaries, or ocean resources and is more than a mile from the Pacific Ocean. Rezoning of the site will not have any impact on the city’s coastal resources; therefore, the proposed request is consistent with this goal or this goal is not applicable.

## **B. Statewide Planning Goals**

**Goal 1 – “Citizen Involvement”** “To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.”

The application for amending the comprehensive plan map and changing the zoning was available at no cost on the city’s website and also available for public review and purchase at the counter. Staff was available to explain the proposal and technical information. The city published hearing notices in the local newspaper in accordance with notice requirements and mailed notices to impacted property owners. The findings concerning the Comprehensive Plan Citizen Involvement are incorporated herein by this reference. Staff made its report on the land use proposals available on the city’s website in advance of the meeting. The request is consistent with Goal 1.

**Goal 2 – “Land Use Planning”** “To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.”

The City Council adopted the Lincoln City Comprehensive Plan and its implementation measure, the Lincoln City Zoning Ordinance, after public hearings and has reviewed them on a periodic cycle to take into account changing public policies and circumstances. Citizens and affected governmental units had opportunities for review and comment during preparation, review, and revision of the plan and implementing ordinances. Review of this proposed rezoning in accordance with the Lincoln City Comprehensive Plan and the applicable zoning ordinance provisions establishes conformance with this goal.

**Goal 3 – “Agricultural Lands”** “To preserve and maintain agricultural lands.”

The area affected by the proposed rezoning is within the city’s urban growth boundary. The area is currently designated and zoned for urban development and will remain as such, any rezoning notwithstanding. The rezoning will not affect agricultural lands; therefore, Goal 3 is not applicable.

**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.”

The area affected by the proposed rezoning is within the city’s urban growth boundary and currently zoned for urban development. The affected area does not contain any designated forest lands; therefore, Goal 4 is not applicable.

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

The proposal will preserve the site as an open space, which will also protect the natural resources on the site and conserve the scenic area on the site. The proposal is consistent 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.”

The proposal will preserve the site as a significant natural resources, thus preventing development that would harm the air, water, or land resources quality. The proposed request is consistent with Goal 6.

**Goal 7 – “Areas Subject to Natural Disasters and Hazards”** “To protect people and property from natural hazards.”

The city’s maps show the site is does not contain any natural disaster and hazards areas. The proposal is consistent 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.”

The site will be preserved as an undeveloped open space for the viewing pleasure of residents and visitors as passive recreation. The proposal is consistent 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.”

The area affected by the proposed rezoning is within the city’s urban growth boundary and proposed for use as open space. The Comprehensive Plan states that the city’s primary industry is tourism and concludes that tourism will continue to function as the city’s basic industry. A preserved open space that is open to the public is a feature utilized by residents and an added amenity for tourists to increase visitors to this area of town. Staff finds this goal is either not applicable to the request or is met. The proposed rezoning is consistent with Goal 9.

**Goal 10 – “Housing”** “To provide for the housing needs of citizens of the state.”

The site is significant wetland and significant riparian area, both of which are precluded from development. Goal 10 is not applicable.

**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.”

The site is significant wetland and will remain undeveloped in its natural setting. Utilities and services are not necessary for open space. The request is consistent with Goal 11, or Goal 11 is not applicable.

**Goal 12 – “Transportation”** “To provide and encourage a safe, convenient and economic transportation system.”

The site is significant wetland and will remain undeveloped. Residents and visitors can access the site via unimproved N Clancy Rd. The request is consistent with Goal 12.

**Goal 13 – “Energy Conservation”** “To conserve energy.”

The site will remain undeveloped as open space. No energy will be expended in development or use. The site is within walking distance of businesses, residential uses, and hotels and motels, which decreases the use of automobiles to utilize the open space and thereby conserves energy. The goal, therefore, is satisfied or not applicable.

**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.”

The area affected by the proposed map amendment and zone change is within the urban growth boundary and the city limits thereby already establishing it as urban. The proposed amendment and zone change will not change the already-existing urban designation by removing it from city limits or the urban growth boundary, nor will it prevent more urban development of the surrounding area. The proposed amendment and zone change are consistent with Goal 14.

**Goal 15 – “Willamette 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.”

The site is not located within the Willamette River Greenway, nor in proximity to the Willamette River Greenway and thus the proposed amendment and zone change will have no impact to the Willamette Greenway. Accordingly, Goal 15 is not applicable.

**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.”

The proposal does not affect any areas adjacent to the Siletz Bay estuary; therefore, Goal 16 is not applicable.

**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.”

The city’s coastal shorelands are not impacted by the proposed request since the site does not contain any coastal shorelands, nor is the site in proximity to any coastal shorelands. The findings concerning the city’s Shoreland, Beaches, Dunes, Estuary and Ocean Resources goal are incorporated herein by this reference. Goal 17 is met or not applicable.

**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.”

The proposed rezoning does not affect any areas located within a beach or active dune area. The findings concerning the city’s Shoreland, Beaches, Dunes, Estuary and Ocean Resources goal are incorporated herein by this reference. Goal 18 is met or not applicable.

**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.”

Since the area of the proposed amendment and zone change is on the dry land area of the city, the proposal will not affect the near shore, ocean, and continental shelf. The findings concerning the city’s Shoreland, Beaches, Dunes, Estuary and Ocean Resources goal are incorporated herein by this reference. Goal 19 is met or not applicable.

# Critical Areas Assessment The Villages Lincoln City

Prepared for:  
City of Lincoln City, Oregon

August 31, 2022  
PBS Project 74260.000



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## 1 INTRODUCTION

The City of Lincoln City (City) contracted the services of PBS Engineering and Environmental Inc. (PBS) to complete a critical areas assessment for approximately 342 acres of land that were recently acquired by the City (Figure 1). The purpose of this critical areas assessment was to inventory, map, and examine the extent of natural resources on the site that could affect future development of the property. This information was then utilized to inform potential land use decisions based on the extent and sensitivity of existing resources.

This assessment includes a desktop evaluation of geologic conditions and potential hazards on the site, and the on-site mapping and evaluation of wetlands and surface waters. A complete Geological Hazards Assessment is located in Appendix A. The presence of these features, either alone or in combination, represent significant hurdles to intensive development of the majority of the site. The most suitable land for higher-intensity development types such as residential are located in the east-central portion of the project area. Due to the extent of sensitive natural resources across large portions of the site, the most dominant recommended land uses are of lower intensity, such as open space or parks land.

The details of the wetland and surface water assessment are below.

## 2 PROJECT GOAL

The goal of this project is to provide a series of planning recommendations based on the existing conditions of the site. These recommendations are based on the risks associated with development within geological hazard areas, the sensitivity of the existing streams and wetlands within the project area to disturbance, the suitability of different land uses given the character of the site, and existing surrounding land uses and infrastructure.

## 3 ASSESSMENT METHODOLOGY

The natural resource assessment was completed in two phases. The first phase was completed through compiling the existing technical information available for the project area to roughly determine the likely types and extents of resources on the site. This desktop assessment allowed PBS biologists to accurately plan field investigation methods, prioritize individual areas based on resources likely present, and establish data collection protocols and data dictionaries to map resources accurately and effectively in a timely manner.

Following the desktop assessment, field work was conducted on the site between July 11 and July 15, 2022. Staff that conducted the fieldwork included Professional Wetland Scientist (PWS) Brian Bieger, PWS Robert Phipps, and staff scientist Masten Summerfield. All the areas that contained suspected waterways and/or wetlands were traversed by foot.

### 3.1 Wetland Delineation

Wetland boundaries were delineated in the field by PWS Brian Bieger using the routine approach of the US Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Supplement* (Version 2.0) (Supplement) (USACE, 2010). Soils, vegetation, and indicators of hydrology were recorded at sample plot locations. Official wetland data sheets were not completed but field notes indicating recorded data are located in Appendix B. Wetland plant ratings were assigned based on the *2016 National Wetland Plant List* (Lichvar et al., 2016). No modification of the standard methodologies was necessary during the delineation. Wetland boundaries and sample plot locations were recorded in the field using a Trimble Geo 7X handheld GPS unit. Post processing and error correction of data collected in the field yielded an accuracy of plus or minus ( $\pm$ ) 3 feet for the vast majority of the data. There were some locations in

the south-central portion of the site where stream locations had to be slightly adjusted based on lidar topographic data.

### 3.2 Surface Waters

The boundaries of non-wetland waters were based on the ordinary high water mark (OHWM) pursuant to field indicators described under Oregon Administrative Rule (OAR) 141-085-0515(3)(a-e) (State of Oregon 2022) and Regulatory Guidance Letter No. 05-05 (Riley, D. 2005). All of the waters within the project area had very clear breaks between bed and bank. The left and right bank locations were recorded for all streams that had a width greater than 10 feet. Due to the standard error of the GPS unit, only the centerline of waters less than 10 feet were recorded in the field.

## 4 DESKTOP ASSESSMENT

A review of available existing information was completed prior to the site visit. This included a review of a variety of information sources indicative of natural resources on the site, such as US Fish and Wildlife Service (USFWS) national wetland inventory (NWI) maps, Natural Resource Conservation Service (NRCS) soil maps, LandFire vegetation maps, current aerial photographs, Oregon Department of Fish and Wildlife (ODFW) online mapping utilities, and historic aerial photographs.

### 4.1 Landscape Setting

The project area is located within Ecoregion IV 1a – Coastal Lowlands (USGS 2022). This ecoregion is characterized by heavy rains and evergreen forests. Coastal lowlands have a mean minimum and maximum temperatures in January of 36°F and 50°F, and 52°F and 68°F in July. Mean annual precipitation in the ecoregion is 60 to 85 inches, often with fog (Environmental Protection Agency 2022). Dominant landcover includes a spruce, cedar and hemlock forest, wetland, residential, recreational, pastureland, and port development.

The project area is situated within a deciduous forest and riparian areas. Both vegetation communities are typically found in this ecoregion and are key habitats for the region.

### 4.2 Topography

The topography of the project area is diverse and wide ranging and includes gently sloping areas, steep to very steep slopes, numerous small drainage valleys, and hill tops (Figure 2). A more thorough discussion of the topography of the site in relation to slope stability is found in the Geological Hazards Assessment in Appendix A. While the site contains a diversity of slopes, in general the overall topography is best described as steep to very steep. This steep topography would lend itself to the formation of numerous small drainages and tributaries when subject to regular precipitation events. This was confirmed during the field work as many concave landscape features contained drainage channels.

### 4.3 Soils

According to the NRCS (NRCS 2022) there are seven soil mapping units within the project area: Bentilla silty clay loam 3 to 12% slopes, Brenner silt loam 0 to 2% slopes, Fendall-Winema silt loams 15 to 35% slopes, Nelscott loam 12 to 50% slopes, Neskowin-Salander silt loams 35 to 65% slopes, Tolovana-Reedsport complex 35 to 60% slopes, and Winema-Fendall silt loams 3 to 15% slopes (Figure 3). These different soil types are described below.

**5C—Bentilla silty clay loam, 3 to 12% slopes.** The Bentilla component makes up 85% of the map unit. This component is on terraces. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell

potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches (depth from the mineral surface is 28 inches) during January, February, March, April, May, November, and December. This soil does not meet hydric criteria.

**9A—Brenner silt loam, 0 to 2% slopes.** The Brenner component makes up 80% of the map unit. This component is on floodplains. The parent material consists of recent mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is frequently flooded and ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, December. This soil meets hydric criteria.

**19E—Fendall-Winema silt loams, 15 to 35% slopes.** The Fendall component makes up 50% of the map unit. This component is on hillslopes Coast Range mountains. The parent material consists of colluvium and residuum derived from sedimentary rock. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.

**42E—Nelscott loam, 12 to 50% slopes.** The Nelscott component makes up 85% of the map unit. This component is on marine terraces. The parent material consists of loamy eolian deposits over stratified marine deposits derived from mixed sources. Depth to a root restrictive layer, ortstein, is 24 to 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches (depth from the mineral surface is 32 inches) during January, February, March, November, and December. This soil does not meet hydric criteria.

**45G—Neskowin-Salander silt loams, 35 to 65% slopes.** The Neskowin component makes up 50% of the map unit. This component is on headlands. The parent material consists of colluvium derived from volcanic rock. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.

**56G—Tolovana-Reedsport complex, 35 to 60% slopes.** The Tolovana component makes up 50% of the map unit. This component is on mountain slopes, the Coast Range mountains. The parent material consists of colluvium and residuum derived from tuffaceous sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.

**64C—Winema-Fendall silt loams, 3 to 15% slopes.** The Winema component makes up 45% of the map unit. This component is on hillslopes. The parent material consists of colluvium derived from sedimentary rock. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is moderate. This soil is not flooded. It is not

ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.

Brenner silt loam is the only unit classified as hydric soil in the Lincoln County soil survey. Hydric soil units are typically identified within areas that contain, or had contained, a significant amount of wetlands. The Brenner silt loam soils are mapped in the extreme eastern portion of the project area within a known wetland area (Figure 3). It is interesting to note that there are no hydric soils located within the western portion of the site within the floodplains of Logan Creek.

#### 4.4 National Wetland Inventory (NWI) Maps

NWI maps (USFWS, 2022) are created by the USFWS from analysis of aerial imagery. The purpose of NWI maps is to identify wetlands and deepwater habitats on a course scale. NWI maps classify wetlands according to the Cowardin classification system (Cowardin 1979).

The NWI maps indicate the potential existence of numerous different waterbodies throughout the project area (Figure 4). The main waterways are the mainstem Logan Creek and its tributaries within the western half of the project area and Rowdy Creek and its tributaries in the eastern end of the site. These are identified as riverine wetlands under the Cowardin system. The NWI map indicates potentially significant wetlands within both watersheds. The large palustrine wetland identified within the eastern portion of the site is a headwater to Rowdy Creek. The NWI polygons shown in Figure 4 are summarized in Table 1 below.

**Table 1. National Wetland Inventory Wetlands**

NWI Code	Code Definition
R5UBH	Riverine, unknow perennial, unconsolidated bottom, permanently flooded
R4SBC	Riverine, intermittent, streambed, seasonally flooded
R3UBH	Riverine, upper perennial, unconsolidated bottom, permanently flooded
PSSC	Palustrine, scrub-shrub, seasonally flooded
PUBH	Palustrine, unconsolidated bottom, permanently flooded
PUBHh	Palustrine, unconsolidated bottom, permanently flooded, diked/impounded
PSS1FH	Palustrine, scrub-shrub, broad-leaved deciduous, semi-permanently flooded, diked/impounded
R2UBH	Riverine, lower perennial, unconsolidated bottom, permanently flooded
PSS1Ch	Palustrine, scrub-shrub, broad leaved deciduous, seasonally flooded, diked/impounded
PSS1C	Palustrine, scrub-shrub, broad leaved deciduous, seasonally flooded

It should be noted that NWI wetland maps are created from aerial photograph interpretation and are not meant to show the extent of jurisdictional wetlands and waterbodies. Past experience has shown that the NWI wetland maps are quite conservative. Wetlands delineated in the field are typically larger or more extensive than those shown in NWI maps. Additionally, many wetlands that are mapped as palustrine (terrestrial, non-tidal) are actually riverine in nature, as their main source of hydrology is from seasonal overbank flooding and hyporheic zone saturation.

#### 4.5 Precipitation Data and Analysis

Precipitation data was obtained from the NRCS WETS website for the OTIS 2 station (NRCS 2022). As indicated in Table 2, cumulative precipitation was well above normal range in the three-month period leading up to the field study date.

**Table 2. Precipitation Data for the Preceding Three Months**

Prior Month	WETS Rainfall Percentile (in.)		Measured Rainfall (in.)	Condition: Dry, Wet, Normal	Condition Value: (1=dry, 2=normal, or 3=wet)	Month Weight	Multiply Previous Two Columns
	30th	70th					
June	2.50	4.56	5.18	Wet	3	3	9
May	3.64	6.13	11.76	Wet	3	2	6
April	5.63	8.78	11.69	Wet	3	1	3
						<b>Sum</b>	<b>18</b>
Rainfall of prior period was: <b>drier</b> than normal (sum is 6–9), <b>normal</b> (sum is 10–14), <b>wetter</b> than normal (sum is 15–18).							<b>Wetter</b>

**WETS Station: OTIS 2 NE, 1981–2010**

**Measured Rainfall: OTIS 2 NE, April 2022–June 2022**

**Data From: <http://agacis.rcc-acis.org/?fips=41041>**

Although above normal precipitation was recorded prior to the fieldwork, it was determined that routine wetland delineation methods could be utilized. This is because as the field work was completed in July, which is typically when wetland water levels start to decline.

#### 4.6 Vegetation

To get an idea of the existing vegetation patterns within the project area, vegetation polygons were downloaded from LANDFIRE (LF) (Landfire 2022). LF is a collaboration between the US Department of Agriculture, the US Department of the Interior, and the Nature Conservancy. LF has created numerous different vegetation maps that are generated through predictive landscape models, field-references data, satellite photos, and biophysical gradient layers using classification and regression trees. These maps represent some of the highest detail vegetation maps publicly available. The vegetation maps for the Project area are represented in Figure 5.

There are multiple vegetation types within the Project area: Sitka spruce forest, dry-mesic Douglas-fir-western hemlock forest, mesic-wet Douglas-fir-western hemlock forest, broadleaf forest, lowland riparian forest, temperate urban deciduous forest, temperate urban evergreen forest, temperate developed evergreen forest, and lowland mixed hardwood-conifer forest. While the LF maps have broken down the vegetation into numerous different classes, at a very basic level there are two main vegetation types: coniferous forests and deciduous forests. This information was useful to focus field observations in areas that would likely contain wetlands and/or surface waters as these areas are typically (but not always) located under deciduous canopy layers.

#### 4.7 Fish and Wildlife

The project area currently exists in a relatively undeveloped state with vegetation communities that are dominated by native species. In addition, the interspersed of different habitats on the site (wetland, upland, riparian) creates a variety of different edge habitats that are universally regarded as valuable to a wide variety of wildlife species. These conditions combine to provide habitat for a variety of wildlife species that are both widespread and common in addition to more sensitive species whose populations have been declining. In

general, the loss or degradation of key habitat parameters has played a role in the decline of most sensitive wildlife species in the Pacific Northwest. While a thorough examination of the presence or absence of wildlife species on the site is outside the scope of this report, it is important to identify potentially important wildlife species that could utilize the site.

While there are no land use regulations that dictate development activities to wildlife species not covered under the federal Endangered Species Act (ESA), the potential presence of sensitive or priority wildlife should be considered in planning activities. This section provides a list of wildlife species that have been identified as conservation priorities or species of concern by the Oregon Department of Fish and Wildlife (ODFW). These species are collectively identified as Strategy Species by ODFW.

Strategy species include those terrestrial, aquatic, and avian species that have the greatest conservation need in the State of Oregon. The potential for these species to be located on the site was determined through the use of the ODFW Compass application (ODFW 2022). This website allows users to identify which habitat types and corresponding species may be present within a pre-designated area. In addition to highlighting particular habitat elements that should be recorded during the on-site mapping activities, this information is useful for making land use planning decision. The following strategy species have been identified as having the potential to occur on the site.

#### 4.7.1 Birds

- Peregrine Falcon (American) (*Falco peregrinus anatum*)
- Black Brant (*Branta bernicla nigricans*)
- Marbled Murrelet (*Brachyramphus marmoratus*)
- Northern Spotted Owl (*Strix occidentalis caurina*)
- Olive-Sided Flycatcher (*Contopus cooperi*)
- Purple Martin (*Progne subis arboricola*)

#### 4.7.2 Mammals

- California Myotis (*Myotis californicus*)
- Hoary Bat (*Lasiurus cinereus*)
- Long-legged Myotis (*Myotis Volans*)
- Red Tree Vole (*Arborimus longicaudus*)
- Silver-Haired Bat (*Lasionycteris noctivagans*)

#### 4.7.3 Amphibians

- Clouded Salamander (*Aneides ferreus*)
- Coastal Tailed Frog (*Ascaphus truei*)
- Southern Torrent Salamander (*Rhyacotriton variegatus*)

## 5 ON-SITE ASSESSMENT RESULTS

Site visits were completed from July 11 to July 15, 2022, by PWS Brian Bieger, PWS Robert Phipps, and staff biologist Masten Summerfield. The primary objectives during the field work were mapping surface water channels, delineating, and mapping wetlands.

The primary water features within the project area are Logan Creek and its numerous tributaries and multiple wetlands. Wetlands are primarily located along the creek and its tributaries.

## 5.1 Existing Land Use

The project area is currently used as public recreation with hiking trails and viewpoints. Some of the public trails are apparently constructed over public sewer lines based on their orientation and aboveground manholes. While the site was likely logged in the past, the adjacent land uses included low-density residential, open space, and a high-traffic freeway.

## 5.2 Macro Vegetation Types

The area includes three main vegetation types. While the boundaries between the different types present within the project area can become somewhat blurred, the existing vegetation communities could be coarsely divided into separate types based on their location, understory vegetation, and tree canopy composition. Based on the observation of these patterns in the field, the vegetation was divided into three categories: Coniferous forestland, riparian areas, and wetlands.

### 5.2.1 Coniferous Forestland

Vegetation of the coniferous forestland areas is dominated by species that include: Sitka spruce (*Picea sitchensis*), Douglas fir (*Pseudotsuga menziesii*), sword fern (*Polystichum munitum*), cascara (*Rhamnus persiana*), deer fern (*Blechnum spicant*), lady fern (*Athyrium filix-femina*), and big leaf maple (*Acer macrophyllum*), vine maple, bracken fern (*Pteridium aquilinum*), Salal (*Gaultheria shallon*), Indian plum (*Oemleria cerasiformis*), western hemlock (*Tsuga heterophylla*), beaked hazelnut (*Corylus cornuta*), and baldhip rose (*Rosa gymnocarpa*).

### 5.2.2 Riparian Areas

The overstory within the riparian areas throughout the site are dominated by red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*). Understory is dominated by a mixture of native shrubs and emergent vegetation including: skunk cabbage, red elderberry (*Sambucus racemose*), salmonberry (*Rubus spectabilis*), common horsetail (*Equisetum arvense*) and pacific nine bark, and stinging nettle, redwood sorrel (*Oxalis oregana*), piggy-back plant (*Tolmiea menziesii*),

### 5.2.3 Wetlands

Wetland vegetation is dominated by a variety of plant and tree species that include creeping buttercup (*Ranunculus repens*), western buttercup (*Ranunculus occidentalis*) Martens' rush (*Juncus mertensianus*), soft rush (*Juncus effusus*), slough sedge (*Carex obnupta*), small-fruited bullrush (*Scirpus microcarpus*), awl-fruited sedge (*Carex stipata*), skunk cabbage (*Lysichiton americanus*), and false lily of the valley (*Maianthemum dilatatum*).

## 5.3 Streams

The mainstem of Logan Creek, and a total of seven separate tributaries to the creek, were mapped within the western half of the project area (Figure 6). The mainstem of Rowdy Creek was found not to occur within the project area but two tributaries to the Creek were mapped in the easternmost portions of the project site (Figure 6).

Logan Creek initiates within the northern portions of the site within steep ravines. The channel averages 2 to 3 feet in width for approximately 800 feet and increases in size when the topography becomes less steep. From this point the creek ranges between 4 and 8 feet in width. The depth of the creek ranged from 6 inches in the northern portions of the site up to 18 inches in the lowest portion of the creek immediately before existing the study area. This is depicted in Figure 6 as the mainstem Logan Creek. The creek is a riffle pool complex with pools being infrequent and shallow. Within the project area, the creek is too small to transport large woody debris (LWD). LWD recruitment into the stream channel in several areas resulted in the creek meandering around the LWD. The substrate is predominantly a mixture of small gravels and cobbles with

infrequent patches of fine sediments. These silty areas were limited to isolated areas with large amounts of recently deposited vegetation, and to the lowest reaches of the stream as they flowed through wetlands. Photographs of the mainstem Logan Creek are presented below.



Photograph 1. Lower Logan Creek



Photograph 2. Lower Logan creek



Photograph 3. Upper Reach of Logan Creek



Photograph 4. Logan Creek flowing through Wetland B

All of the tributaries mapped within the project area have similar characteristics. The tributaries were characterized by narrow, moderately incised channels with substrates dominated by various sizes of cobble. The average width of the tributaries ranged from 1 to 3 feet and depths were generally under 8 inches at the time of the site visit. While formal measurements of channel slope were not recorded, most of the tributaries had gradual enough slopes to allow fish usage. Photographs for the on-site tributaries are presented below.



Photograph 5. Tributary with steep banks



Photograph 6. Typical tributary substrate



Photograph 7. Typical tributary channel form



Photograph 8. Lower tributary

All of the streams had visible bed and banks and displayed other characteristics that made identification of the OHWM in the field straightforward. Tables 3 and 4 below summarize the indicators that were observed within those areas identified and recorded as streams.

**Table 3. Oregon Department of State Lands Ordinary High Water Mark (OHWM) Indicators**

<b>OHWL Field Indicators</b>	<b>Occurs Within Study Area?</b>
Clear, natural line impressed on the shore	Yes, channel is incised with vertical banks.
Change in vegetation from riparian (e.g., willows) to upland (e.g., oak, fir) dominated	Yes, generally riparian areas had greater amounts of Facultative (FAC) and Facultative Wet (FACW) vegetation.
Textural change of depositional sediment or changes in the character of the soil (e.g., from sand, sand and cobble, cobble and gravel to upland soils)	Yes, silt loams and loams transitioned to bed material in all locations.
Elevation below which no fine debris (needles, leaves, cones, and seeds) occurs	Yes, all waterways were clear of terrestrial deposits.
Presence of litter and debris, water-stained leaves, water lines on tree trunks	No
Other appropriate means that consider the characteristics of the surrounding areas	No

**Table 4. USACE OHWM Indicators**

<b>OHWM Field Indicators</b>	<b>Occurs Within Study Area?</b>
Natural line impressed on the bank	Yes, clear line between aquatic and terrestrial habitat.
Shelving	No
Changes in the character of soil	Yes, clear change in soils from sediment deposition.
Destruction of terrestrial vegetation	None observed.
Presence of litter and debris	No vertical banks.
Wracking	Yes, only in selected areas. Streams too narrow to distribute wood.
Vegetation matted down, bent, or absent	None observed.
Sediment sorting	Yes
Leaf litter disturbed or washed away	No leaf litter on site.
Scour	Yes, incised channel
Deposition	Very few pockets of out of channel deposition noted.
Multiple observed flow events	N/A
Bed and banks	Yes, clearly defined limits of channel.
Water staining	None observed.
Change in plant community	Yes, absence of plant community in channel.

#### 5.4 Wetlands

A total of six individual wetlands were identified and delineated within the project area (Figure 6). All of the wetlands would be classified as palustrine emergent wetlands, as the dominant vegetation class that is rooted within the wetland is emergent. Some of the wetlands contain shrub-scrub layer vegetation along the margins of the wetland (Wetlands A and B) but the proportion of this vegetation is not large enough to warrant a dual emergent and shrub-scrub classification according to the Cowardin system. All the wetlands on the site are associated with streams and riparian corridors, it is believed that overbank flooding is not the principle source of hydrology for the wetlands. All the identified wetlands are situated within depressional bottomlands or at the toe of steep slopes with signs of subsurface groundwater seeps.

Wetland A and B are the two most significant wetlands within the project area and are described individually below. The remaining wetlands (C through F) are very small emergent wetlands located immediately adjacent to surface waters on the site. These wetlands, because of their very small size (less than 0.10 acre), provide very little in terms of quantifiable wetland functions. For descriptive purposes these wetlands are lumped together.

#### 5.4.1 Wetland A

Wetland A is located along the southeastern boundary of the project area and is situated within a broad sloping depression that drains to the north. The wetland is located between the toe of steep slopes on the west and Highway 101 road prism to the east (Figure 7). This wetland is receiving hydrologic inputs from groundwater. There are several areas of ponding within the wetland but there was not a well-defined channel within the project area.

Vegetation within the wetland is dominated by soft rush, slough sedge, spike rush (*Eleocharis palustris*), cattail (*Typha latifolia*), and soft-stem bullrush (*Schoenoplectus tabernaemontani*). Shrub layer vegetation includes hooker willow (*Salix hookeriana*), spirea (*Spirea douglasii*), Nootka rose (*Rosa nootkana*), and Pacific willow (*Salix lasiandra*).



Photograph 9. Wetland A, facing north

#### 5.4.2 Wetland B

Wetland B is located in the western most portion of the project area (Figure 8). This palustrine emergent wetland is located within depressional areas on both sides of the Logan Creek channel. Wetland B within the project area is supported by runoff and seeps from the adjacent slopes. As you continue downstream, however, long-term sediment transport within Logan Creek has resulted in the formation of a large riverine wetland where the channel of Logan Creek has become difficult to discern.

Wetland B vegetation is dominated by soft-stem bullrush, small-fruited bullrush, cattail, reed canarygrass, slough sledge, and skunk cabbage. Photographs of Wetland B are below.



Photograph 10. Wetland B with Logan Creek



Photograph 11. Wetland B typical vegetation

#### 5.4.3 Wetlands C Through F

Wetlands C through F exist as extremely small palustrine wetlands located adjacent to either the mainstem Logan Creek or its tributaries. These wetlands are hydrologically supported by seeps originating at the base of slopes, erosion rills, or historic channel scars. Vegetation within these wetlands is dominated by skunk cabbage, slough sedge, and false lily of the valley. Photographs of these wetlands are below.



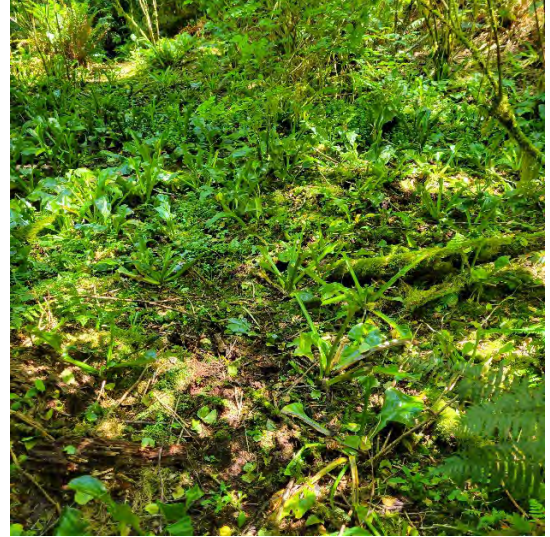
Photograph 12. Wetland at toe of slope



Photograph 13. Slough sedge-dominated wetland



Photograph 14. Wetland in channel meander scar



Photograph 15. Wetland within hillside seeps

### 5.5 Other Notable Features

Attention was paid toward identifying and recording any significant landforms or resources during the fieldwork. These features could range from interesting natural resource features to hazards to be avoided. The only two notable features identified were the knoll and a grove of mature hemlock trees (Figure 6). The knoll is well known and heavily used by local and visiting hikers. The hemlock grove has no existing trails leading in or out of it, but future hiking trails in the area could be constructed for visitors to admire. Photographs of these features are presented below.



Photograph 16. The Knoll via drone



Photograph 17. Hemlock grove

## 6 BUFFER FUNCTIONS

In the context of development or the harvesting of natural resources, buffers that exist between the outer edge of the sensitive resource and the outer edge of the development are intended to “maintain or enhance the structural and functional integrity of riparian habitat and associated aquatic systems needed to perpetually support fish and wildlife populations on both site and landscape levels” (Knutson 1997). The majority of research that evaluates the effectiveness of different buffer widths has focused on stream buffers. However, buffers on wetlands and streams provide similar functions as adjacent development can have the same negative effects on these systems. The principal functions of buffers on these systems are covered below.

### 6.1 Pollutant and Sediment Removal

Riparian areas are responsible for reducing the concentrations of pollutants from upland areas before they reach bodies of water or wetlands. Buffers reduce non-point source water pollutants like sediments, pesticides, pathogens, excess nutrients, and excess metals through increased soil infiltration, decreased runoff, and vegetation (Quinn 2020). Buffer vegetation aids in the removal of sediments. Development that compacts soils and impacts vegetation can increase the amount of sediment in waters. Logging (Wohl 2014), and road and trail construction can increase stream sedimentation while decreasing the riparian area’s ability to remove sediments (Lewis 1998; Gomi et al. 2005; CBOF TAC 2008).

Slopes can contribute to both pollutants and sediments in waters (Quinn 2020). When slopes are disturbed, the soil is compacted and vegetation is lost, resulting in increased erosion and runoff of pollutants and sediments. The steeper the slope, the greater the opportunities are for runoff triggered erosion and sediment deposition in streams and wetlands. Large, undisturbed riparian buffers can aid in the protection of steep slopes and prevent the increased erosion and runoff associated with disturbed slopes.

### 6.2 Nutrient Dynamics

Riparian areas and wetlands play a vital role in the nutrient dynamics of a watershed. They mediate the movement and transportation of nutrients between upland areas and water. Nutrients can end up in streams through organic materials like leaf litter, water and air movement, and by animals. Riparian areas are able to hold onto the nutrients from upland areas through biological uptake (Quinn 2020). Biological sequestration of nutrients is one of the principle functions of wetlands. Anthropogenic activities like agriculture and urbanization can alter nutrient cycles by decreasing storage durations and allowing higher levels of nutrients to flow in the subsurface level, resulting in increased nutrient levels in streams and other bodies of water (Tague and Grant 2004). Urbanization in particular can have dramatic negative effects on stream and wetland nutrient dynamics due to fertilizer runoff and uncontrolled stormwater outflow to aquatic resources. Increased nutrient loads to aquatic systems can cause algae blooms that harm aquatic organisms through artificially suppressed oxygen levels and in some cases, promulgation of toxic algae blooms. Mature buffers vegetated with multiple stratified layers of vegetation also increase nutrient cycling functions by accumulation of leaf litter, reduced runoff velocities, and attenuating organic exports to aquatic systems. A wider buffer typically increases the amount of vegetation, resulting in higher levels of nutrient uptake and storage.

### 6.3 Micro-Climate Maintenance

Riparian areas help control the temperature of water through vegetation and soil filtration. Tall trees and other vegetation in riparian areas dramatically reduces solar irradiation resulting in lower temperatures. In addition, evapotranspiration of plants results in the evaporation of water which further reduces temperatures.

Nearby land use can strongly influence the riparian area's ability to control and influence stream temperatures (Quinn 2020). Disturbances through urbanization can cause the removal of shade, heat island effects, and warm wastewater runoff from impervious surfaces. These factors will likely increase stream temperatures (Kinouchi et al. 2006).

The cool microclimate along riparian corridors is utilized by a wide variety of terrestrial wildlife to reduce heat stress and energy expenditure. To protect stream temperatures in urban settings, conservation efforts should be focused on maintaining the riparian areas functions, minimizing anthropogenic changes to the stream and its hydrology, and protecting the connectivity of the watershed (WDFW 2020).

#### **6.4 Large Woody Debris Recruitment**

Along with temperature control, trees provide another vital role in riparian functions. When trees fall in riparian areas, there is a chance they will fall over or into streams and provide wood for habitat. LWD plays a large role in the structure, composition, and function of streams, even small streams (Montgomery and Buffington 1997; Bilby and Bisson 1998). LWD recruitment, transport and distribution are some of the significant factors in the development of diverse instream habitats. These habitats are created through changing instream flow patterns and altering the hydrologic sorting of bedload materials.

Development can decrease the amount of instream wood by lowering the number of trees in riparian areas. Current day forest management practices work to improve instream wood by leaving 23 to 65 trees per acre in the riparian area (WFPB 1987), and they aim to create fish habitat (WDFW). A wide buffer would increase the total amount of large trees in the riparian areas, increasing the opportunity for more trees to fall and provide habitat.

#### **6.5 Maintenance of Native Vegetation**

There is a positive correlation between the width of riparian buffers and the prevalence of nonnative and invasive vegetation. Land clearing and other vegetation disturbance activities present the opportunity for the rapid establishment of invasive vegetation. This is readily observed throughout the Pacific Northwest where wetlands are dominated by reed canarygrass, and riparian corridors become monocultures of Himalayan blackberry. It has been shown that native vegetation is negatively affected by the edge effect at the boundary between undisturbed and developed or otherwise cleared landscapes. Herbaceous vegetation native to temperate forests suffer from lower dispersal rates, slower growth rates, and lower reproductive rates (Ferris 2012). Buffer widths of at least 75 feet were shown to have the potential to enhance habitat quality, but the data showed that corridors less than 150 feet would not exclude all invasive plants.

#### **6.6 Allowance for Channel Migration**

While wetland areas are for the most part fixed in a particular location based on hydrologic inputs, streams readily meander across their floodplains. These floodplains are also referred to as the Channel Migration Zone (CMZ). The CMZ represents the limits of the potential future channel locations. This is based on several factors that include the discharge of the stream, slope, and geology. In general, larger, higher discharge streams in low gradient environments have the highest potential for channel migration. Smaller streams in steeper environments that have less potential to transport and sort LWD have smaller ranges of channel migration.

### **7 LAND USE INTENSITIES**

Appropriate buffer distances to protect natural resource functions are based on the functions currently provided by on-site resources, their sensitivity to disturbance, and the intensity of the proposed developments. Higher intensity land uses have been shown to require wider buffer widths to protect natural resources and prevent indirect impacts (Zhang 2021)(Jiang 2019). Lower land use intensities have less potential to negatively affect adjacent natural resources and therefore require narrower buffers to prevent

indirect impacts. The buffer widths and land use recommendation that follow in this report are based on the land use intensity schematic. Land use intensities classifications and suitable examples are provided in Table 5 below.

**Table 5. Land Use Intensity Classifications**

Intensity Classification	
High Intensity	Industrial developments
	Retail developments
	High-density Residential developments (>2 units per acre)
	High-Intensity agriculture (row crops)
	Silviculture
Moderate Intensity	Low-density residential (<2 units per acre)
	Low-intensity agriculture (orchards, hay fields, hobby farms)
	Utility Corridors
Low Intensity	Open space
	Trails
	Public Parks

## 8 SITE-SPECIFIC BUFFER RECOMMENDATIONS

The above sections provide an overview of various functions for all streams and wetlands and classifies the intensities of different land uses. Appropriate buffer distances for the Villages Project are intended to maintain the existing functions of the streams and wetlands and prevent incidental impacts from adjacent development. The recommended buffers consider the existing wetland and stream functions and their susceptibility to impacts from development.

One of the primary factors in evaluating susceptibility of natural resources to indirect impacts is the adjacent slopes. While steeper areas require smaller buffer widths to provide functions such as micro-climate maintenance and CMZs, they also require greater buffer widths to prevent hydrologic impacts and water quality impacts. Most of the project area would be classified as steep to extremely steep. Figure 9 presents the slopes on the site classified into four separate brackets. Slopes greater than 15% are generally regarded as having a greater potential for impacts to water quality. This relates to erosion from precipitation and the ability of vegetation to attenuate runoff from natural and constructed surfaces.

However, the majority of the site is not suitable for any form of development outside of perhaps hiking trails due to both the extreme slopes on the site and the presence of geological hazards identified within the Geologic Hazards Areas report. As such, buffers extending from the wetland and streams on the site can be within the lower range of suitable widths because high-intensity developments are not feasible for the majority of the site. The following buffer recommendations for mapped natural resources and bullet lists of contributing factors are detailed below. All buffer distances are measured horizontally from the edge of the resource. A map of the proposed buffers is presented in Figure 10.

### 8.1 Wetland A Buffer

Wetland A represents a large high-quality wetland that provides numerous functions for the watershed. These include sequestration of pollutants, groundwater discharge, support of diverse native vegetation communities, support of rare habitat types, and suitable habitat for a wide variety of wildlife species.

The recommended buffer width for Wetland A is 200 feet. This is the widest recommended buffer within the project area and the rationale for this buffer width includes:

- Steep side slopes adjacent to the wetland

- Low amounts of non-native vegetation
- Use of the wetland as a migration corridor by wildlife as evidence by numerous tracks and scat identified in the field
- The existence of roads that cross the wetland

## 8.2 All Remaining Wetlands

All of the remaining wetlands except Wetland B consist of extremely small and narrow wetlands that are located directly adjacent to Logan Creek or its tributaries. While Wetland B extends off site and becomes a wide, diverse, and highly functional wetland, the portions within the project area are relatively narrow and are currently bordered by an existing road. Given these factors, the riparian buffers that extend from the surface waters should be adequate to protect the functions of Wetlands B through F. Therefore, PBS recommends that buffers for these wetlands are unnecessary.

## 8.3 Mainstem Logan Creek

Logan Creek conveys surface waters from all the tributaries on the site and provides habitat for a variety of fish and wildlife species. The lower portions of Logan Creek have been identified by the ODFW as having the potential to provide habitat for migratory salmonids. It should be noted that at this time, culverts downstream from the project area represent significant hurdles to fish accessing the portions of Logan Creek within the project site. A 150-foot buffer is recommended for Logan Creek. The factors for this buffer include:

- Steep adjacent slopes to the stream
- Maintenance of the CMZ, especially in the lower reaches of the project area
- Maintain LWD recruitment
- Use of the mainstem corridor for migrating wildlife
- Maintenance of micro-climate

## 8.4 Tributaries

There are numerous tributaries that were mapped throughout the project site (Figure 6). These tributaries are generally less than 5 feet wide and while they do provide habitat for aquatic or semi-aquatic wildlife, it was not determined if they were being utilized for fish species. It is likely that the tributaries located in the upper reaches of the drainages on the site go dry during the later summer months. PBS is recommending a buffer width of 100 feet for all the tributaries on the site. The factors that influenced this determination are:

- Steep adjacent slopes
- Maintenance of microclimate
- Limited CMZ due to steep topography and limited stream discharge
- Tributaries not likely utilized by fish

## 9 LAND USE RECOMMENDATIONS

Proposed land use recommendations presented in Figure 11 consider both natural resources and mapped geologic hazards. It is important to realize that the Geologic Hazards Assessment looks at the risks involved with the construction of structures such as roads, houses, and utilities. The land use polygons shown in Figure 11 are larger than those shown in the Geologic Hazard Assessment as land uses such as residential developments and attendant transportation features can include setbacks and lot areas that do not involve the construction of structures.

The low Intensity polygons are identified within areas of moderate slopes and outside of the central core of the property that contains the bulk of the streams and tributaries. The low intensity areas could support recreational opportunities in the form of trails, park areas, and dispersed camping areas.

Given the steep nature of the project site, potential areas for high-intensity development are limited to one central area located in the approximate center of the site (Figure 11). Higher intensity developments are shown within areas of moderate slope that are also near adjacent existing utilities. The bulk of the high-intensity polygons do not include any identified geologic hazards. While there are a few small pockets of moderate slopes elsewhere in the project area, development in these areas would result in a substantial decline in natural resource functions and values. Development of these small pockets, even for low-density residential would require riparian area impacts, stream crossings, disruption of wildlife migration corridors, create a vector for non-native vegetation establishment, and creation of potential water quality risks.

To reduce confusion and at the same time provide more focused land use recommendations for the City, the land use intensities outlined above were converted to existing City zoning classifications. These conversions are summarized in Table 6.

**Table 6 – Zoning Designations**

<b>Suggested Intensity of Land Use</b>	<b>Existing Zoning Designation</b>
No Intensity / No land Use	Open Space (OS)
Low Intensity	Parks (P)
High Intensity	Residential (All residential zones)

The resulting zoning recommendations for the project site are presented in Figure 12. The appropriate low-intensity land uses would fall under the Parks zone. The residential zoned areas displayed within Figure 12 do not indicate a particular density of residential development. Any residential density is suitable in this area as the area, by nature of the presence of adjacent geologic hazards, is already outside of the mapped natural resource buffers.

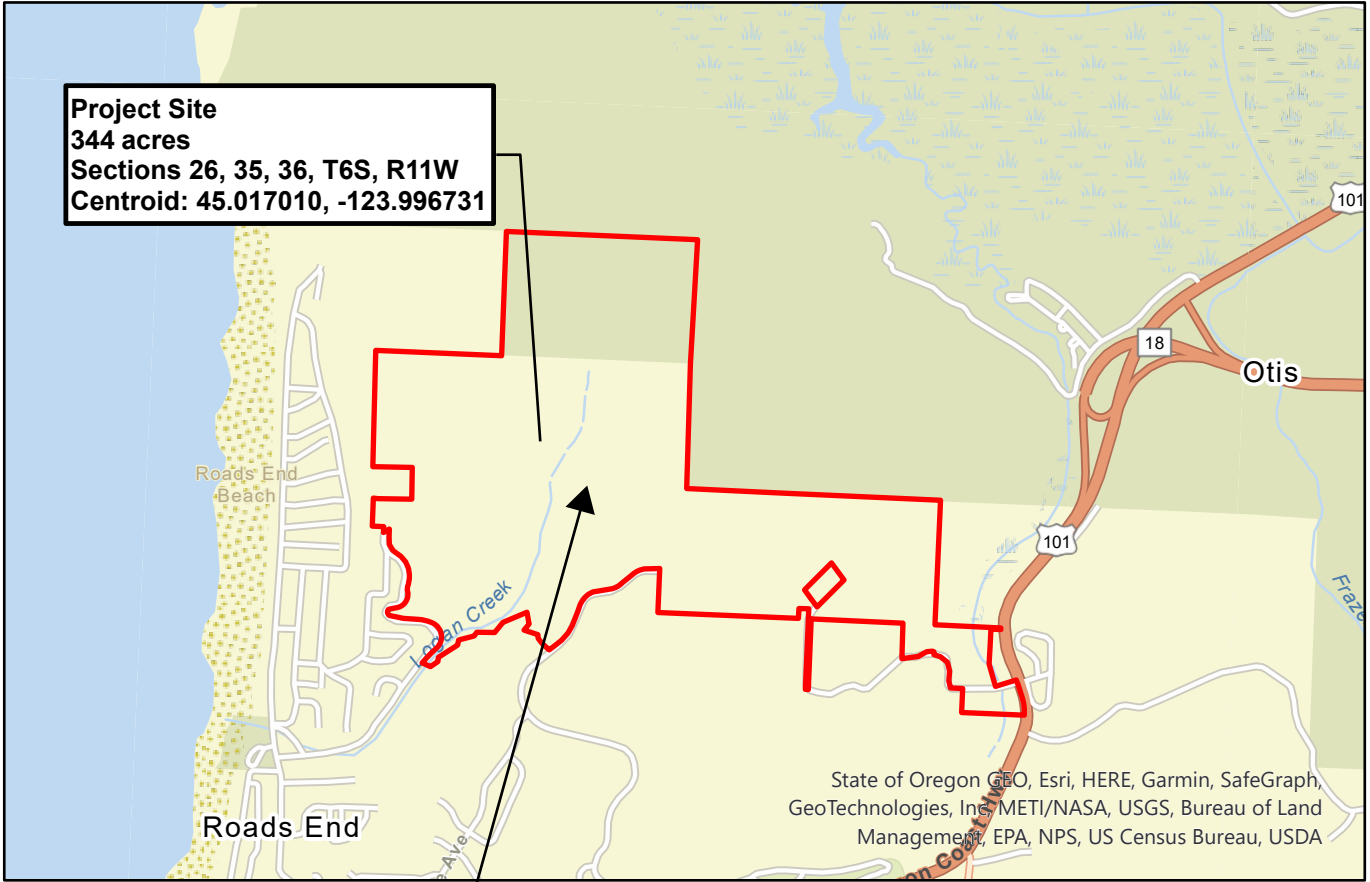
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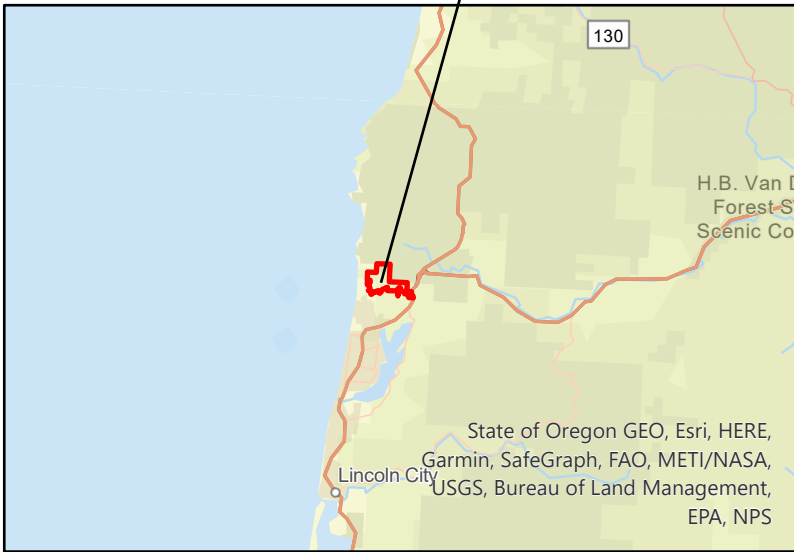
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**Project Site**  
344 acres  
Sections 26, 35, 36, T6S, R11W  
Centroid: 45.017010, -123.996731



SOURCE: ESRI Open Source Shape Files.



### Legend

 Project Area



0 2,000 4,000 Feet

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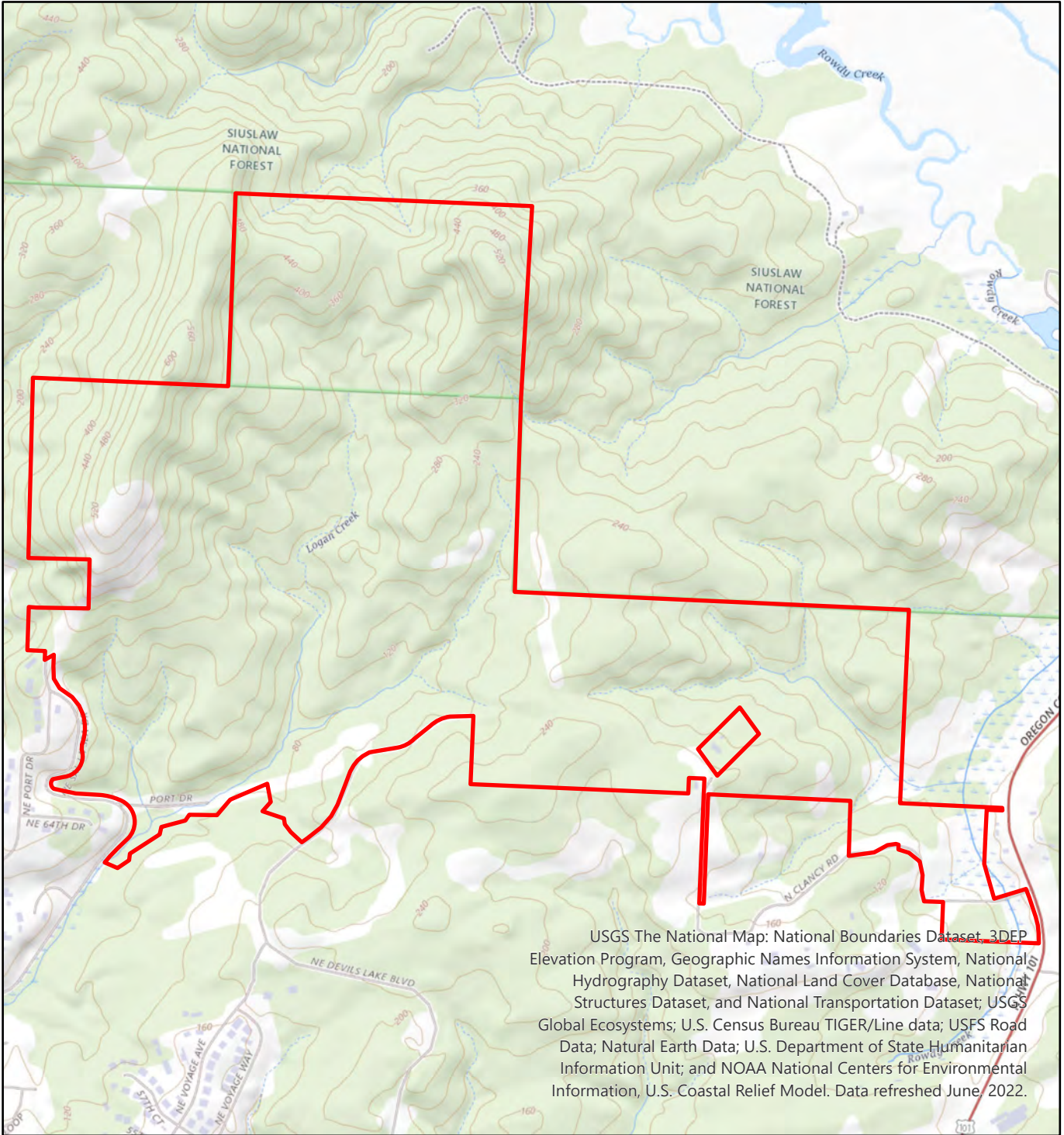


## LOCATION MAP

THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
WETLANDS AND WATERS DELINEATION

AUGUST 2022  
74260.000  
FIGURE

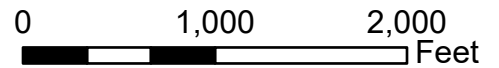
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SOURCE: ESRI USGS Topographic Shape File.

**Legend**

- Project Area
- 40-Foot Contours

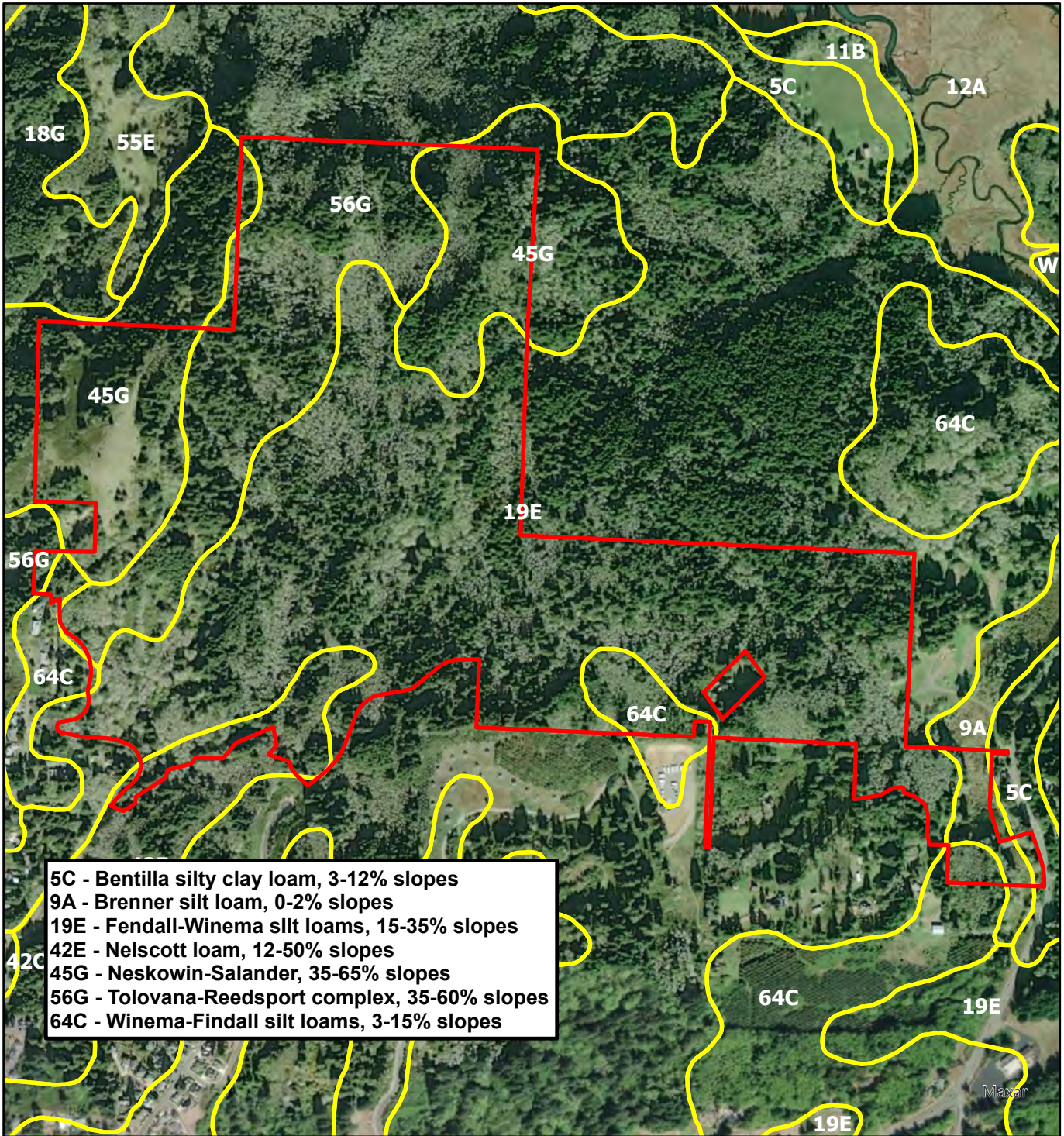


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**TOPOGRAPHIC MAP**  
 THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
 WETLANDS AND WATERS DELINEATION

AUGUST 2022  
 74260.000  
 FIGURE

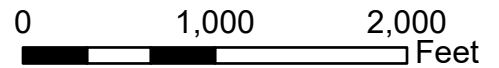


5C - Bentilla silty clay loam, 3-12% slopes  
 9A - Brenner silt loam, 0-2% slopes  
 19E - Fendall-Winema silt loams, 15-35% slopes  
 42E - Nelscott loam, 12-50% slopes  
 45G - Neskowin-Salander, 35-65% slopes  
 56G - Tolovana-Reedsport complex, 35-60% slopes  
 64C - Winema-Findall silt loams, 3-15% slopes

SOURCE: NRCS Shape File.

### Legend

- Project Area
- NRCS Soil Polygons



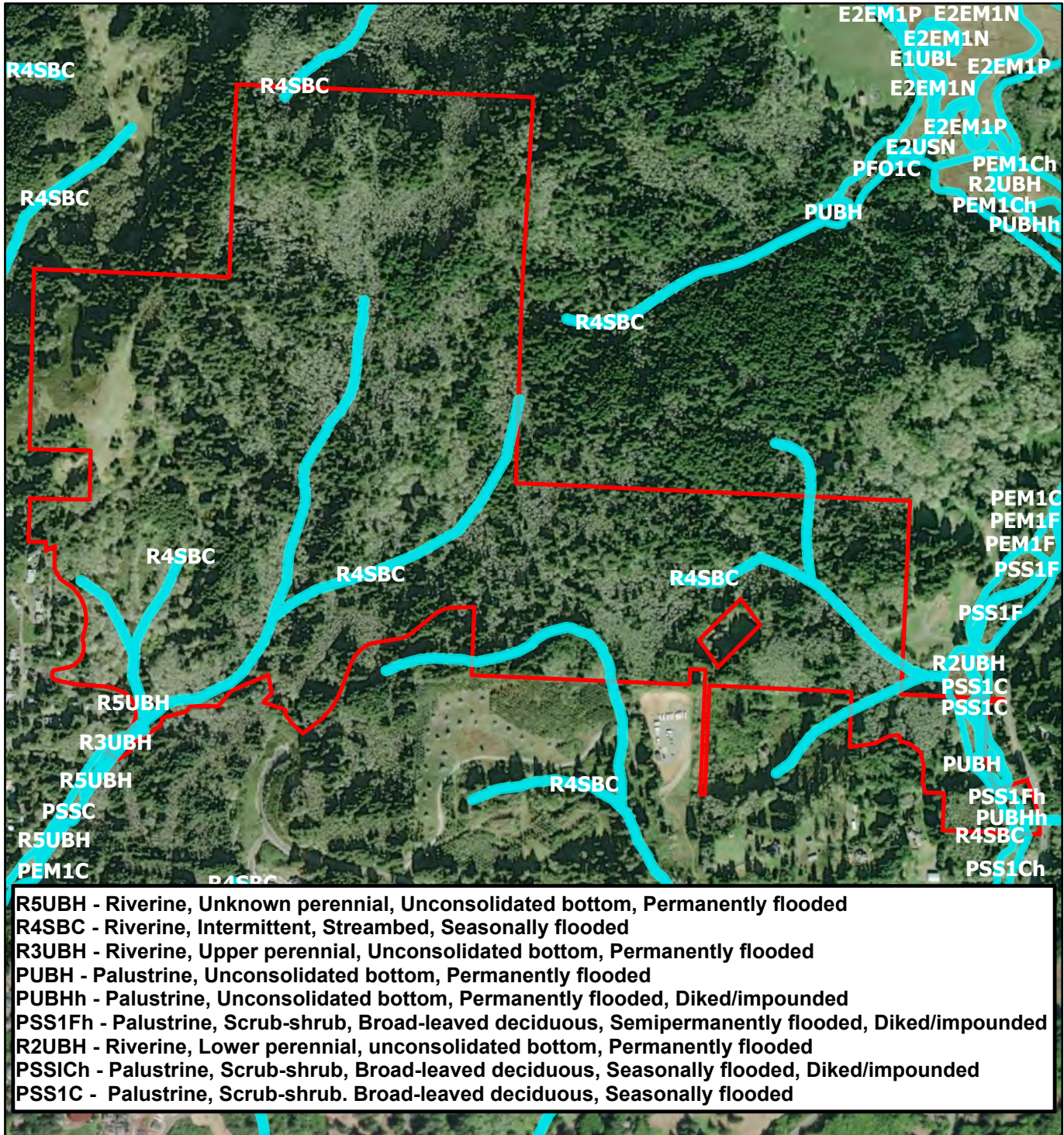
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## NRCS SOILS MAP

THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
WETLANDS AND WATERS DELINEATION

AUGUST 2022
74260.000
FIGURE



**R5UBH** - Riverine, Unknown perennial, Unconsolidated bottom, Permanently flooded  
**R4SBC** - Riverine, Intermittent, Streambed, Seasonally flooded  
**R3UBH** - Riverine, Upper perennial, Unconsolidated bottom, Permanently flooded  
**PUBH** - Palustrine, Unconsolidated bottom, Permanently flooded  
**PUBHh** - Palustrine, Unconsolidated bottom, Permanently flooded, Diked/impounded  
**PSS1Fh** - Palustrine, Scrub-shrub, Broad-leaved deciduous, Semipermanently flooded, Diked/impounded  
**R2UBH** - Riverine, Lower perennial, unconsolidated bottom, Permanently flooded  
**PSS1Ch** - Palustrine, Scrub-shrub, Broad-leaved deciduous, Seasonally flooded, Diked/impounded  
**PSS1C** - Palustrine, Scrub-shrub, Broad-leaved deciduous, Seasonally flooded

SOURCE: USFWS Shape Files.

**Legend**

- Project Area
- NWI Wetland Polygons

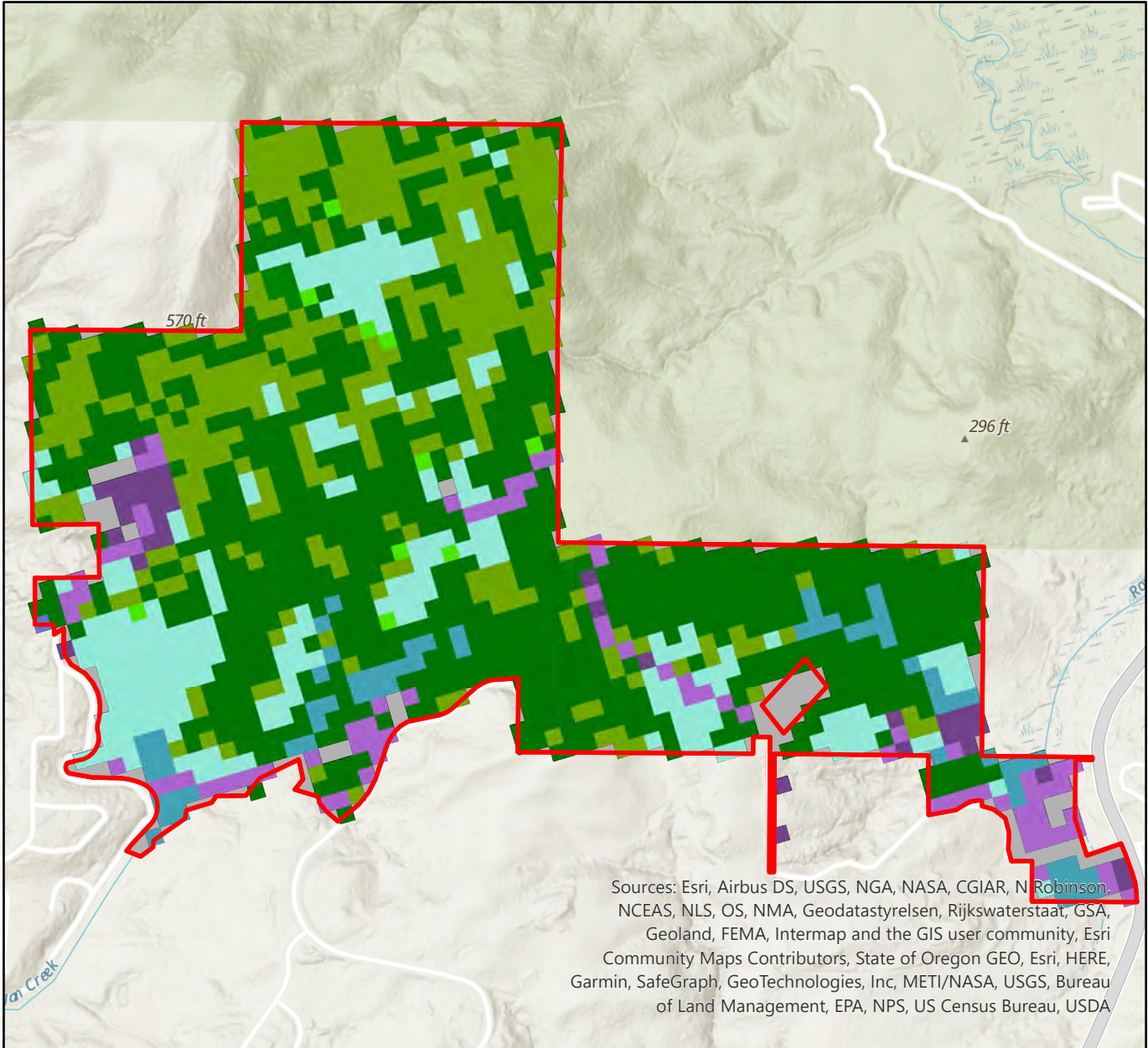
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**NWI MAP**  
 THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
 WETLANDS AND WATERS DELINEATION

AUGUST 2022  
 74260.000  
 FIGURE

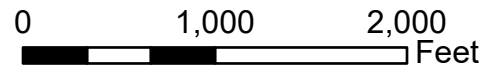
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SOURCE: USDA LANDFIRE Shape Files.

### Legend

- Project Area
- Vegetation Type**
- Sitka Spruce Forest
- Dry-Mesic Douglas-fir-Western Hemlock Forest
- Mesic-Wet Douglas-fir-Western Hemlock Forest
- Broadleaf Forest
- Lowland Riparian Forest
- Temperate Urban Deciduous Forest
- Temperate Urban Evergreen Forest
- Temperate Developed Evergreen Forest
- Lowland Mixed Hardwood-Conifer Forest
- Project Area

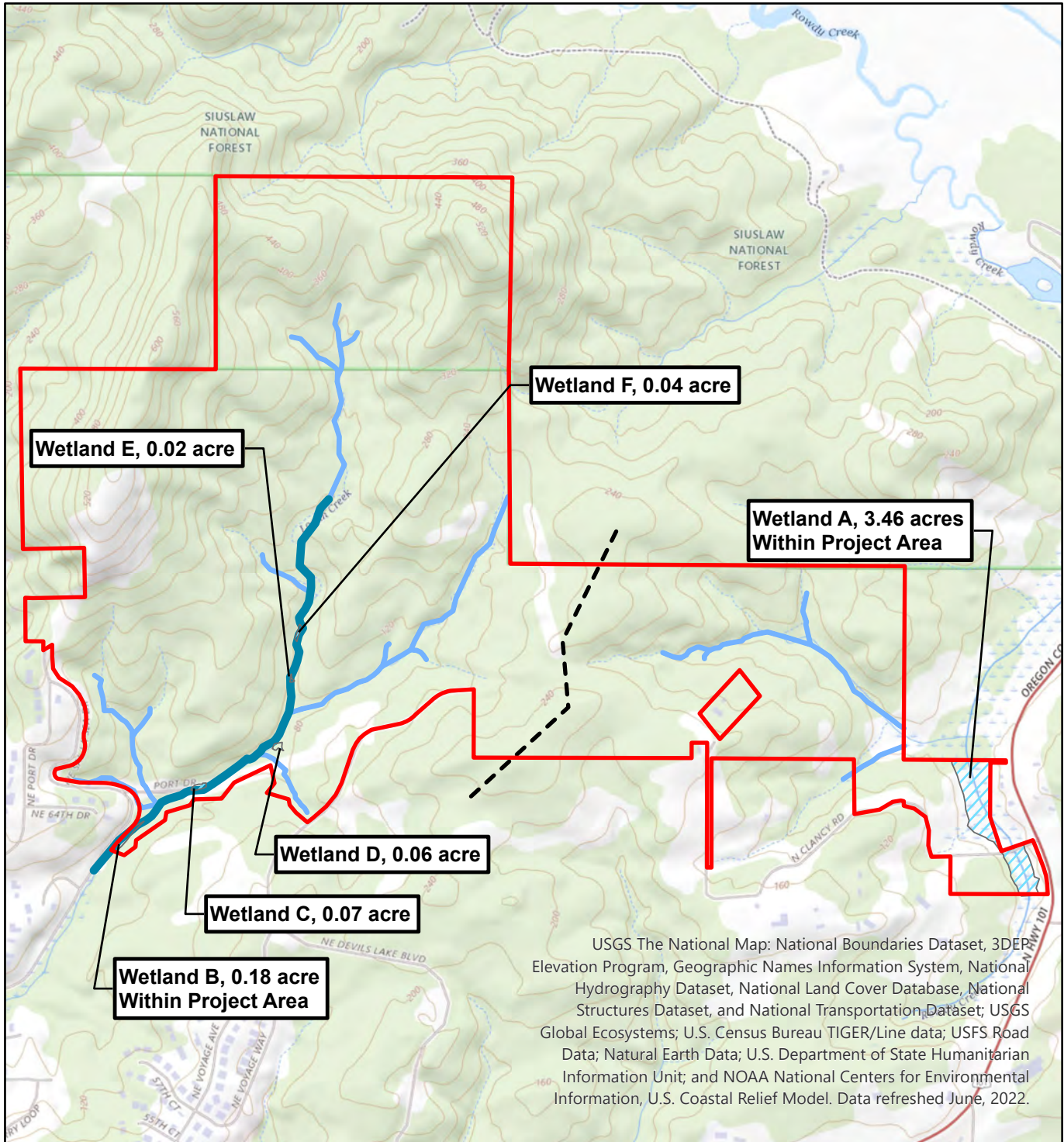


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**USDA LANDFIRE VEGETATION MAP**  
 THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
 WETLANDS AND WATERS DELINEATION

AUGUST 2022  
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 FIGURE

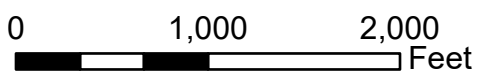


USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2022.

SOURCE: PBS Generated Shape Files.

### Legend

- Project Area
- Wetlands
- Mainstem Logan Creek
- Tributaries
- Approximate Watershed Division



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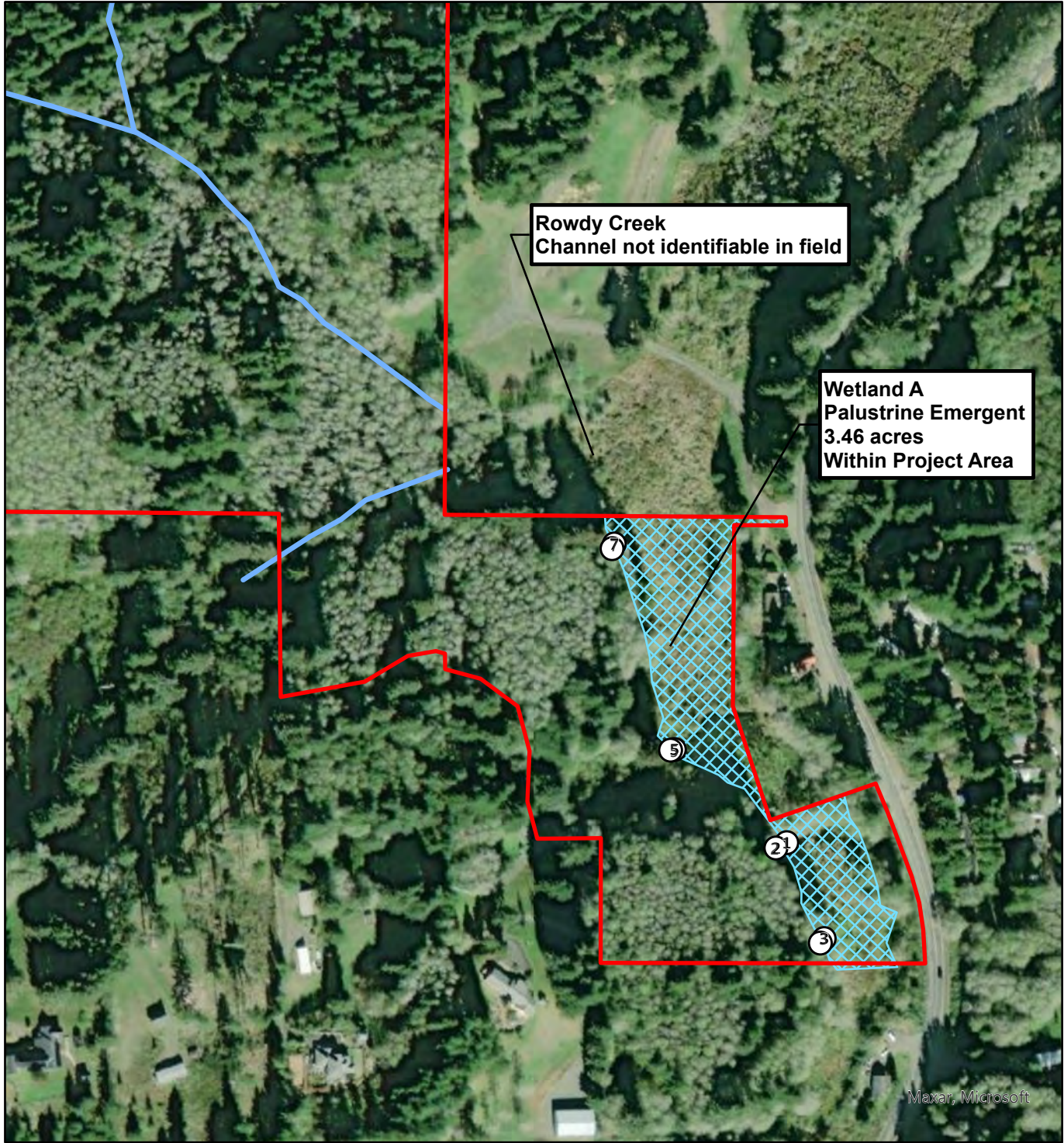


## MAPPED STREAMS AND WETLANDS

THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
WETLANDS AND WATERS DELINEATION

AUGUST 2022  
74260.000  
FIGURE

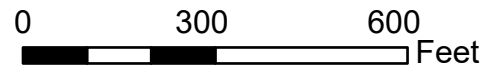
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SOURCE: USFWS Shape Files.

### Legend

- Project Area
- Wetlands
- Sample Plots
- Tributaries



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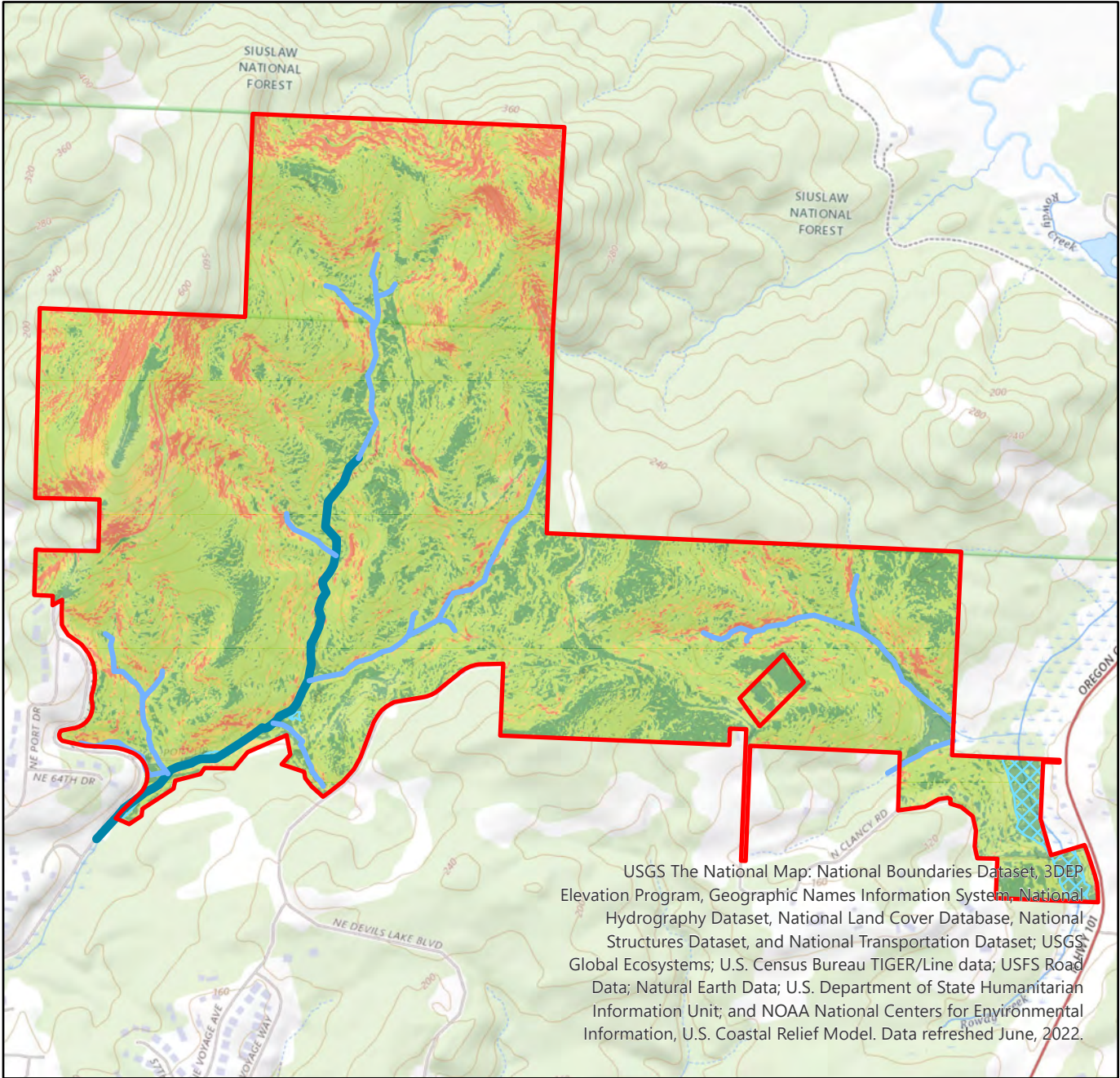


## EASTERN WETLAND

THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
WETLANDS AND WATERS DELINEATION

AUGUST 2022  
74260.000  
FIGURE





USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2022.

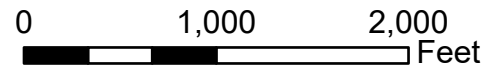
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### Legend

- Project Area
- Tributaries
- Mainstem Logan Creek
- Wetlands

### Percent Slope

- Value
- 0 - 15%
  - 15 - 45%
  - 45 - 60%
  - 60 - 250%



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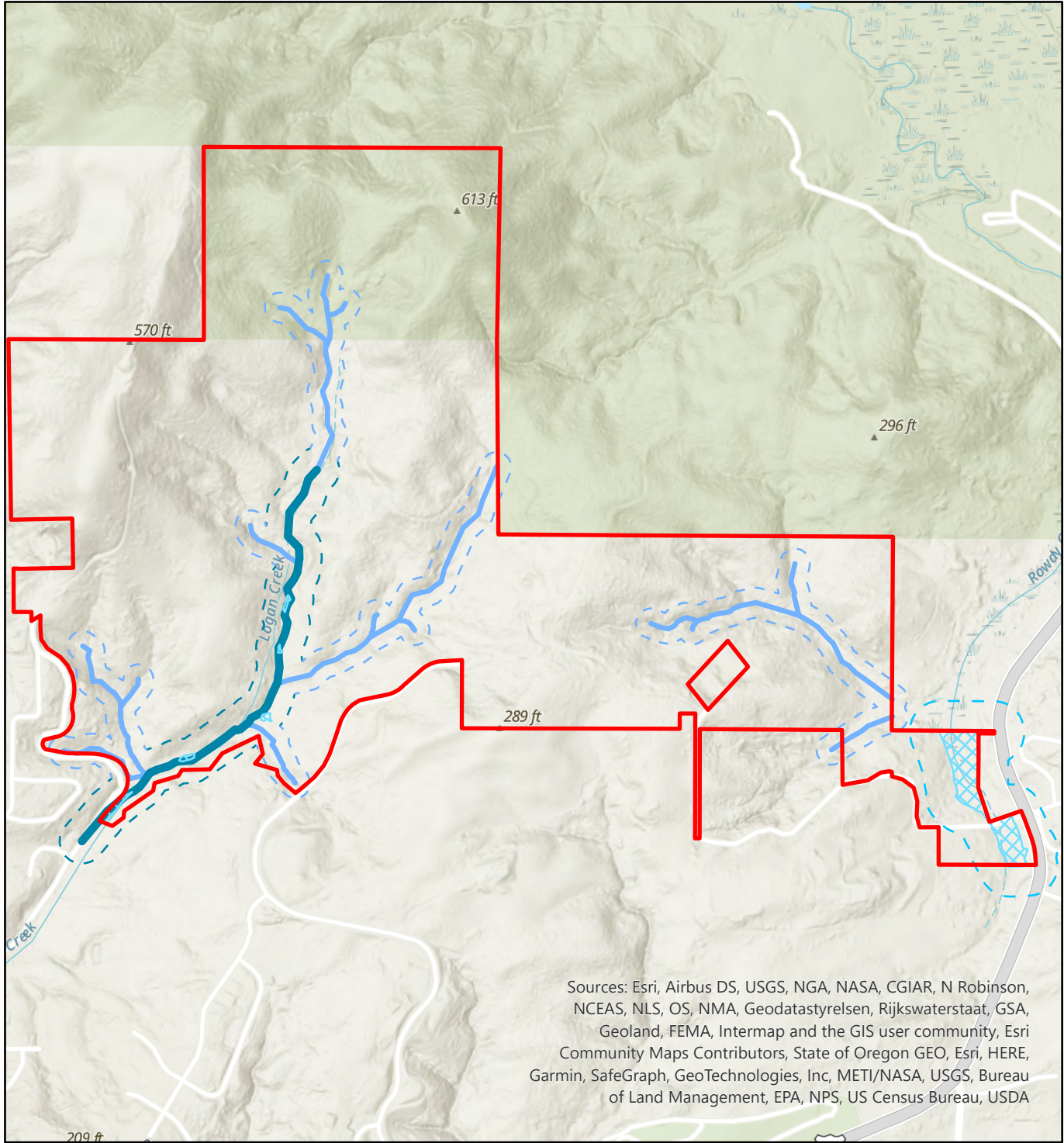


## MAPPED SLOPES

THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
WETLANDS AND WATERS DELINEATION

AUGUST 2022  
74260.000  
FIGURE

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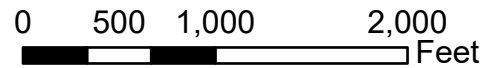


Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, State of Oregon GEO, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

SOURCE: PBS Generated Shape Files.

### Legend

- Project Area
- 100 Foot Buffer
- 150 Foot Buffer
- 200 Foot Wetland A Buffer
- Wetlands
- Mainstem Logan Creek
- Tributaries



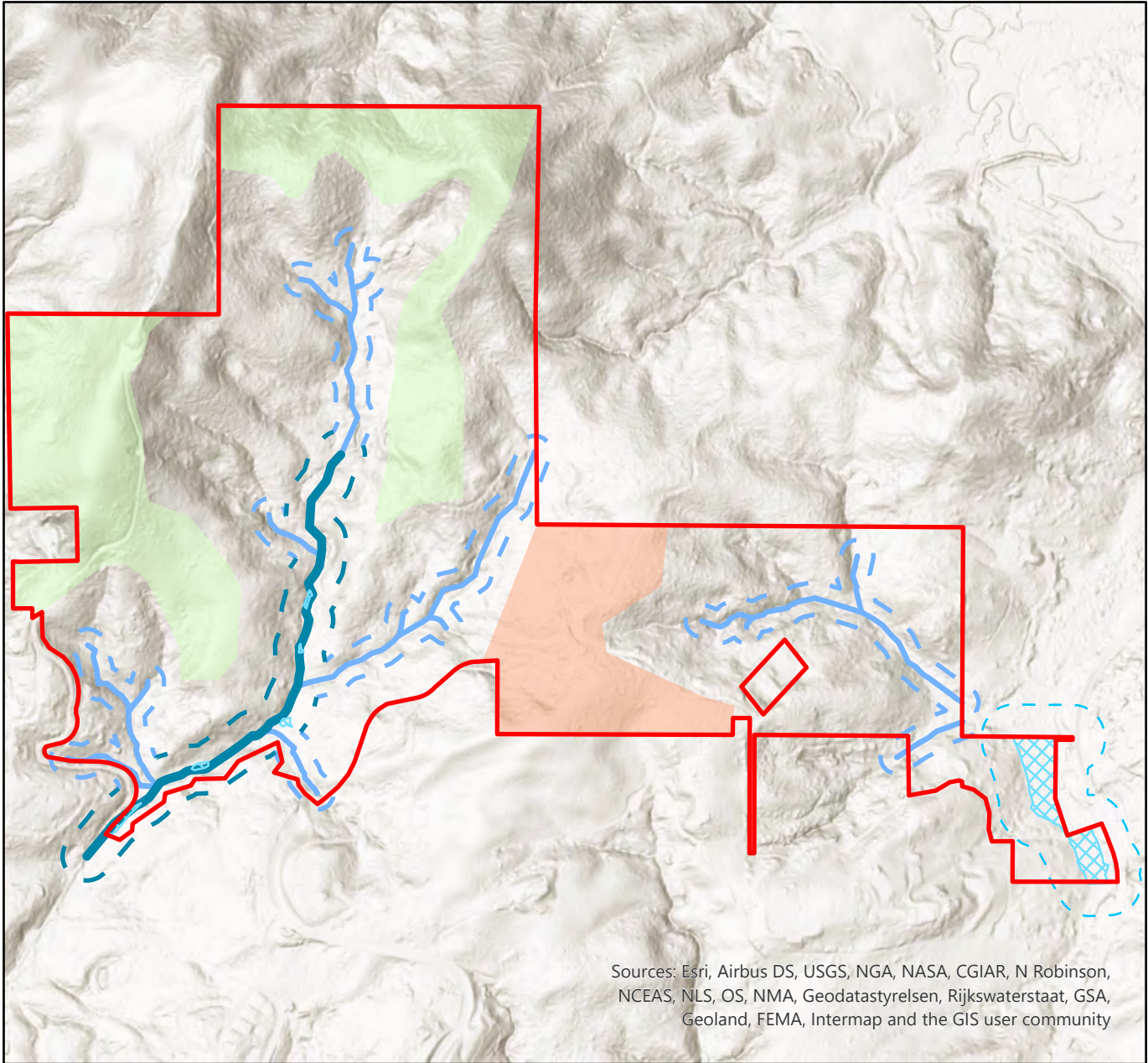
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## MAPPED BUFFERS

THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
WETLANDS AND WATERS DELINEATION

AUGUST 2022  
74260.000  
FIGURE












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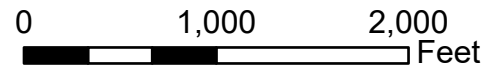
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### Legend

 Project Area	 200 Foot Wetland A Buffer
 150 Foot Buffer	 Wetlands
 100 Foot Buffer	 Mainstem Logan Creek
 High Intensity	 Tributaries
 Low Intensity	



PREPARED FOR: CITY OF LINCOLN CITY



## LAND USE RECOMMENDATIONS

THE VILLAGES AT CASCADE HEAD, LINCOLN CITY, OREGON  
WETLANDS AND WATERS DELINEATION

AUGUST 2022  
74260.000  
FIGURE



# Appendix A

## Geological Hazards Assessment

# Geologic Hazards Assessment

The Villages  
Lincoln City, Oregon

Prepared for:  
City of Lincoln City  
PO Box 50  
Lincoln City, Oregon 97367

August 22, 2022  
PBS Project 74260.000



4412 S CORBETT AVENUE  
PORTLAND, OR 97239  
503.248.1939 MAIN  
866.727.0140 FAX  
PBSUSA.COM



# Geologic Hazards Assessment

The Villages  
Lincoln City, Oregon

Prepared for:  
City of Lincoln City  
PO Box 50  
Lincoln City, Oregon 97367

August 22, 2022  
PBS Project 74260.000

Prepared by:

Reviewed by:



Exp. July 1, 2023

Shaun Cordes, RG, CEG  
Senior Engineering Geologist

Ryan White, PE, GE  
Principal Geotechnical Engineer

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## 1 INTRODUCTION

### 1.1 General

This report presents results of the PBS Engineering and Environmental Inc. (PBS) geologic hazards assessment, prepared for the City of Lincoln City, to aid with preliminary planning for The Villages development located in Lincoln City, Oregon (site). The general site location is shown on the Vicinity Map, Figure 1. The site and approximate boundaries in relation to existing and proposed site features are shown on the Site Plan, Figure 2.

### 1.2 Purpose and Scope

The purpose of PBS' services was to complete an assessment of geologic hazards and the potential impacts to future land use at the site. The intent of this report is to provide a review of applicable geologic hazards and considerations in order to assist with future planning and to guide future geotechnical engineering phases of work. ***This report should not be considered a geotechnical assessment, nor should it be used for design.*** This report has been completed as a desktop study, absent of field reconnaissance or site-specific subsurface explorations.

#### 1.2.1 Literature and Records Review

PBS reviewed previously completed reports for the project site and vicinity as well as published geologic maps of the area for information regarding geologic conditions and hazards at or near the site. Specifically, PBS reviewed the following documents:

- Snaveley, P. D., Niem, A., Wong, F. L., MacLeod, N. S., Calhoun, T. K., Minasian, D. L., and Niem, W. (1996). Geologic map of the Cascade Head area, northwestern Oregon Coast Range (Neskowin, Nestucca Bay, Hebo, and Dolph 7.5-minute quadrangles). US Geological Survey, Open-File Report OF-96-534.
- Snaveley, P. D., MacLeod, N. S., and Wagner, H. C. (1972). Preliminary bedrock geologic map of the Cape Foulweather and Euchre Mountain quadrangles, Oregon. US Geological Survey, Open-File Report OF-72-350, scale 1:48,000.

In addition, PBS acquired publicly available light detection and ranging (LiDAR) digital elevation models (DEM) from the Oregon Department of Geology and Mineral Industries (DOGAMI) LiDAR Portal, including: Neskowin OE W Quadrangle (acquisition dates August 25, 2007–August 9, 2009) and Neskowin Quadrangle (acquisition dates August 25, 2007–May 11, 2012) to evaluate surface morphology and existing slope conditions (Figure 3).

LiDAR is acquired by aerial flights, which perform a laser scan of the ground surface below. The accuracy of a LiDAR DEM is significantly affected by the presence of vegetation and the degree to which vegetation (and other non-ground features) can be excluded from the DEM. For instance, a densely vegetated area may only have three or four returns, whereas an area of bare earth, such as a beach, may have a much greater return. In areas of low vegetation (such as throughout the site) the returns are high and therefore the DEM is more accurate than in heavily vegetated areas.

## 2 SITE CONDITIONS

### 2.1 Regional Geologic Setting

Lincoln City is located within the Coast Range geologic province and positioned along the Pacific Ocean. The Coast Range is characterized by a north-south oriented mountainous region consisting of uplifted and deformed sedimentary and mafic volcanic rocks. The Coast Range is situated along the Cascadia Subduction Zone (CSZ) where oceanic rocks of the Juan de Fuca Plate are subducting beneath the North American Plate, resulting in deformation and uplift of the Coast Range, volcanism in the Cascade Range, and a clockwise

rotation of the North American Plate (Wells et al., 2002; Brocher et al., 2017; Figure 5). Bedrock within the Coast Range was largely accreted onto the North American Plate through the process of subduction and back thrusts resulting from the subsequent compression of the North American Plate. Mafic intrusions manifested throughout the Coast Range as buoyant melted rock, propagated upward through dikes and sills, which result in local and larger intrusions within the older accreted rocks.

## 2.2 Local Geology

The site is mapped as predominately consisting of sedimentary and volcanic bedrock units of the Nestucca formation (map unit Tn), porphyritic basalt and basaltic andesite dikes (map unit Tipb), and basalt of Cascade Head (map unit Tchb) (Snaveley et al., 1996; Figure 5).

### Surficial Units

An alluvial deposit is mapped within the Logan Creek drainage and described as consisting of silt, sand, and basalt gravel positioned along rivers and streams. The extent of this unit is confined to the Logan Creek and likely persists elsewhere within smaller unnamed feeder creeks and further up the reach of Logan Creek. Landslide deposits were not mapped within the site boundary at the time of geologic map publication, but two are located immediately outside of the site boundary to the south and northwest.

Please note that the published geologic map is dated 1996 and mapped at a 1:24,000 scale, before the widespread adopted use of LiDAR for geologic mapping, which is commonly used today. As such, geologic units were mapped at lower-resolution contour intervals—on the scale of 40 feet or greater. Surficial units (such as landslides and landslide scarps), which are easily distinguished within LiDAR, were commonly overlooked during this era of geologic mapping. This will be addressed in further detail within the Site Geomorphology and Surface Description and the Geologic Hazards sections of this report.

### Nestucca Formation (Tn)

The Nestucca formation is the primary bedrock unit mapped throughout the site and is described as medium- to thin-bedded siltstone with few interbeds of fine-grained sandstone up to 0.5 meters thick. Interbeds contain abundant 0.2- to 1-meter-thick tuff beds and calcareous concretions. Sandstone interbeds are irregularly bedded, glauconitic, and fossiliferous. This bedrock unit comprises the majority of the site's slopes, and outcrops mapped within and immediately adjacent to the site boundary indicate bedding in the southwest corner of the site is oriented southwest, with a northwest dip of 10 to 18 degrees in the southwest corner of the site.

### Yamhill Formation (Ty)

The Yamhill formation is mapped within the eastern-most extent of the site and is described as massive to thin-bedded, medium to light gray siltstone with minor interbeds of thin- to medium-bedded micaceous arkosic and lithic sandstone, thick- to medium-bedded basaltic sandstone with thin siltstone interbeds, and rip ups.

### Basalt of Cascade Head (Tchb)

The basalt of Cascade Head consists of subaerial flows of massive to platy, spheroidal-weathering porphyritic olivine-augite basalt, plagioclase-phyric basalt, and aphanitic basalt. Flows commonly have a scoriaceous upper surface and the basalt is locally very vesicular and rarely pillowed. Siltstone clasts and calcareous bearing concretions derived from the Nestucca formation are commonly associated with breccias in the lower part of the flow sequence. This unit coincides with a local topographic high point and is queried within the site boundary, meaning the identity of the basalt is in question and may belong to a different geologic unit.

**Porphyritic Basalt and Basaltic Andesite Dikes (Tipb)**

The porphyritic basalt and basaltic andesite dikes intruded through the Nestucca formation as Basalt of Cascade Head and consists of plagioclase bearing basalt.

**Site Structural Geology**

A strike slip fault is mapped transecting the site from the southwest to northeast within the primary drainage outlet. In addition, a thrust fault oriented northwest to southeast is located northeast of the site, indicating that the bedrock site topography is positioned within the overriding upper plate. Both faults are likely inactive as they are not included within the USGS Quaternary Faults and Fold database (USGS, 2022).

**2.3 Site Geomorphology and Surface Description**

The site is located at the northern extent of Lincoln City, Oregon, and immediately adjacent to the Pacific Ocean (approximately 1,200 feet west of the site). The site consists of heavily forested mountainous terrain with dendritic drainages that feed into Logan Creek throughout the western extent of the site and to Rowdy Creek along the eastern extent of the site (Figure 2). Two local topographic high points are located within the site, including a near-linear southwest to northeast ridge line referred to as "The Knoll" with an elevation of approximately 600 feet along the western margin of the site, and a disjointed knob with an elevation of approximately 560 feet located at northern extent of the site (NAVD 88). The lowest elevations coincide with site drainages along the southwest and southeast corners of the site (Figure 3).

The linear ridgeline of The Knoll coincides with mapped porphyritic basalt and basaltic andesite (map unit Tipb) and the disjointed knob coincides with mapped Basalt of Cascade Head (Figure 5). Pronounced hollows form the eastern flank of The Knoll and are mapped within the Oregon Department of Geology and Mineral Industries (DOGAMI) Statewide Landslide Information Database for Oregon (SLIDO) as landslide scarps with downslope deposits.

**2.3.1 Slopes**

PBS generated a slopeshade and classified slope inclinations as percent slope with the approximate horizontal to vertical slope correlation, presented on Figure 6. This provides a visual aid to understand the current site slope inclinations, draw attention to slopes of concern from a slope stability standpoint, and to identify geomorphic characteristics of landslides (scallop, irregular contours, hummocks steep scarps, etc.). Slope inclinations for this site generally range from 15% slope (<3H:1V) to 66.7% slope (1.5H:1V). Steeper slopes exceeding 66.7% observed within the site are primarily located within scarps and the west side of The Knoll.

As a general guideline, slopes less than 33% (or flatter than 3H:1V) have the lowest risk of failure, as they are generally inclined flatter than the angle of repose (approximately 66.7% slope or 1.5H:1V) and less likely to fail without influence from an extreme weather event, upslope failures, or seismic shaking. Slopes between 33% and 66.7% (3H:1V to 1.5H:1V) are a low risk and may be subjected to a higher rate of soil creep and shallow failures by changes in groundwater conditions, geologic conditions (impermeable layers directing water to the surface of a slope), or extreme weather events (high intensity rainfall or rapid snow melt), or due to seismic shaking. Slopes greater than 66.7% (> 1.5H:1V) are of moderate to high risk to shallow and deep-seated failures. Slopes greater than 100% (1H:1V) are a high risk of shallow and deep-seated failures.

Typically, slopes prone to failure have existing indications of past failures such as scarps, slide deposits, debris fields, hummocks, or scallops within a slope crest; all of which are readily distinguishable with the LiDAR DEM and the associated hillshade, slopeshade, and contours produced (Figure 6).

All slopes are typically subjected to varying amounts of soil creep (the slow process of soil gradually moving downslope under the influence of gravity), and the rate of soil creep typically increases as slope inclination increases. Slopes composed of bare soil are typically subjected to higher rates of erosion and soil creep when compared to vegetated or artificially stabilized slopes.

Changes in groundwater elevations, rainfall, snowmelt, wildfire, site grading and surface modifications during construction can increase the potential for slope movements and erosion. Seismic loading can further destabilize slopes.

### 3 GEOLOGIC HAZARDS

Geologic and seismic hazards are defined as conditions associated with the geologic and seismic environment that could adversely influence future development. PBS reviewed GIS layers in the DOGAMI HazVu GIS portal to identify geologic hazards and seismic hazards that could affect the site's development and are summarized in Table 1. These hazards should be considered during the planning process.

**Table 1. Summary of Geologic and Seismic Hazards**

Source/Hazard	Slope Stability	Adverse Soils	Volcanic Hazards	Flooding and Drainage	Erosion	Groundwater	Tsunamis	Ground Shaking	Fault Surface Rupture	Liquefaction and Lateral Spreading
Geologic	<b>H</b>	-	-	-	-	L	-	-	-	-
Seismic	<b>H</b>	-	-	-	-	-	-	M/H	-	-

- identifies hazards that are absent or not applicable at this time

L = Low level of risk

M = Moderate level of risk

H = High level of risk

Hazard levels that are bold are described in more detail in the following sections

#### 3.1 Slope Stability and Factor of Safety (FS)

Slope stability is influenced by various factors, including: (1) the geometry of the soil mass and subsurface materials, (2) the weight of soils overlying the failure surface, (3) the shear strength of soils and/or rock along the observed or potential failure surface, (4) the hydrostatic pressure (groundwater levels) along that surface, and bedrock controls such as joints, bedding planes, foliation, and zones of weakness such as shear zones and faults (active and inactive).

Stability of a slope is expressed in terms of factor of safety (FS), which is defined as the ratio of resisting forces to driving forces. At equilibrium, or incipient failure, the FS is equal to 1.0 and the driving forces are balanced by the resisting forces. Failure occurs when the driving forces exceed the resisting forces, i.e., FS less than 1.0. An increase in the FS above 1.0, whether by increasing the resisting forces and/or decreasing the driving forces, reflects a corresponding increase in the stability of the slope.

FS is calculated during a slope stability analysis using a combination of laboratory data and subsurface borings to assess subsurface conditions. This was not included within our current scope of work, and as such, FS is used for the purpose of discussion and is relative.

### **3.2 Landslide Susceptibility and Previously Mapped Landslides**

Review of the SLIDO Regional Landslide Susceptibility (scale 1:500,000) GIS layer indicates site slopes are classified as high to very high susceptibility for failure (SLIDO, 2022; Figure 7). In addition, review of the SLIDO landslide inventory indicates the presence of numerous prehistoric landslides (>150 years old) throughout the site slopes and adjacent site slopes (SLIDO, 2022 Figure 8).

Site grading and development within a mapped landslide deposit should be avoided, as the FS is likely just above 1.0 and surface modification could result in reactivation of an existing slide. Development upslope of these deposits should be avoided and will require site-specific geotechnical explorations and slope stability analyses to better understand the impacts of development and the subsurface conditions that comprise the slopes.

#### **3.2.1 Earthquake-Induced Landslides**

Earthquake-induced landslides are landslides that occur concurrently or shortly after shaking from an earthquake. They can occur within slopes that have no evidence of past landslides and can reactivate existing landslides that may appear to be at a stable state. The magnitude of the earthquake, proximity to the active fault, and the duration of shaking are the greatest factors impacting the seismic stability of slopes. A code-based Cascadia Subduction Zone (CSZ) earthquake is expected to produce severe to violent shaking throughout coastal Oregon. As a result, the slopes would likely experience earthquake-induced landslides due to current slope conditions. Implications of seismic shaking will be discussed in more detail with the discussion of our slope stability analyses.

### **3.3 Seismicity and Faulting**

#### **3.3.1 Seismic Sources**

Several types of seismic sources exist in the Pacific Northwest, which are outlined below. Volcanic sources beneath the Cascade Range are not considered further in this study, as they rarely exceed magnitude ( $M_w$ ) greater than about 5.0 and are not considered to pose a significant ground-shaking hazard to the project site due to the distance from the Cascade Mountains.

#### **3.3.2 Crustal Earthquakes and Faults**

Review of the US Geological Survey Quaternary Fault and Fold Database and Oregon HazVu indicates the site is within close proximity (less than 25 km or 15.5 miles) to several faults (USGS, 2022; Figure 9). Due to their proximity, the crustal faults could be a significant seismic source for severe ground motion in the coastal area in addition to the larger CSZ event.

**Table 2. Faults within the Site Vicinity**

<b>Fault Zone Name</b>	<b>Fault ID</b>	<b>Approximate Distance to Site (Surface Projection in km)</b>
Cascadia fold and fault belt	784	9
Unnamed offshore faults	785	19.1, 21.7
Siletz Bay faults	883	10.1, 16.2, 19.6, 20
Cape Foulweather fault	884	21.6

### 3.3.3 Cascadia Subduction Zone (CSZ) – Interface Earthquakes and Tsunamis

The CSZ represents the boundary between the subducting Juan de Fuca tectonic plate and the overriding North American tectonic plate (Figure 4). Recurrence intervals for subduction zone earthquakes are based on studies of the geologic record, with studies estimating a recurrence interval between 500 to 530 years for a full rupture event, and on the order of 300 years for smaller events exceeding  $M_w$  8.0+ (Goldfinger et al., 2012). Geologic evidence and written records from Japan suggest the most recent earthquake occurred in January 1700. The 1700 earthquake probably ruptured much of the approximate 620-mile (1,000 km) length of the CSZ and was estimated at moment magnitudes of  $M_w$  9.0. The horizontal distance from the edge of the CSZ megathrust is located approximately 160 km west of Lincoln City, Oregon. The current US Geological Survey risk-based maximum credible earthquake for CSZ megathrust is  $M_w$  9.0±0.2 (USGS, 2008).

### 3.3.4 Intraslab Earthquakes

Intraslab earthquakes occur within the subducting slab. They are problematic in the sense that they do not have a surface expression or rupture the ground surface, and their seismicity generates deformation along many faults within the slab (Kirby et al., 2002). The CSZ has generated significant intraslab destructive earthquakes including the 2001  $M_w$  6.8 Nisqually earthquake in the Puget lowland.

### 3.3.5 Historical Seismicity

Regional historical seismicity information was acquired from the Advanced National Seismic System (ANSS) Comprehensive Catalog, hosted by the Northern California Earthquake Data Center (NCEDC), and is presented on Figure 10. These data include earthquakes with magnitudes exceeding  $M$  2.5, within a 150-km (approximately 100-mile) radius of the city of Lincoln City, Oregon, and recorded between 1963 and 2017 (NCEDC, 2017). Magnitudes within the ANSS dataset are recorded as local magnitude, surface-wave magnitude, body-wave magnitude, moment magnitude, and magnitude of completeness.

## 3.4 Liquefaction Potential

Liquefaction is defined as a decrease in the shear resistance of loose, saturated, cohesionless soil (e.g., sand) or low plasticity silt soils due to the buildup of excess pore pressures generated during an earthquake. This results in a temporary transformation of the soil deposit into a viscous fluid. Liquefaction can result in ground settlement, foundation bearing capacity failure, and lateral spreading of ground. Review of DOGAMI HazVu indicates the site is not mapped within a zone of liquefaction susceptibility.

## 4 GEOLOGIC HAZARD CONCLUSIONS AND RECOMMENDATIONS

PBS has summarized our findings as follows:

- Site slopes are identified by DOGAMI as having a high or very high susceptibility to landslides.

- Mapped landslide deposits are prevalent throughout site slopes based on review of DOGAMI's landslide inventory and LiDAR review. The mapped deposits are classified as "prehistoric" and older than 150 years.
- Mapped landslides are predominantly within slopes derived from sedimentary rocks of the Nestucca formation.
- Mapped landslides consist of shallow failures and deep-seated failures.
- Review of bedrock units outside of the site indicate a higher occurrence of landslides within the sedimentary rocks of the Nestucca formation than the various basalt bedrock units, and as such, the Nestucca formation is likely a less resilient bedrock unit and weaker in strength.
- Seismic shaking could reactivate older failures and generate new failures.
- To avoid reactivating mapped landslides, site grading should be limited and should not include placing fill on mapped landslides or cutting at the toe.
- Due to the high landslide hazard at the site and presence of numerous prehistoric landslides, development should be limited to identified areas only, leaving the site mostly undeveloped and used as an open space or park.

The site consists of numerous mapped prehistoric landslides that primarily coincide with slopes composed of Nestucca formation sedimentary rocks. Review of the landslide inventory off-site and areas mapped as underlain by basalt bedrock indicates the presence of fewer landslides than areas mapped as Nestucca formation. This suggests the Nestucca formation is less resilient and likely weaker in strength or has characteristics such as a combination of joints and bedding that allows for higher occurrence of failures. It is important to note that the mapped landslides are all categorized as prehistoric (> 150 years in age); however, these have the potential to be reactivated by site grading and development without careful consideration.

Regardless, development within the site should take a cautionary approach due to the presence of numerous mapped landslides. In addition, slope failures do not appear to follow a general trend (e.g., steeper slopes more prevalent to failure). The slope failures that have occurred have done so in slopes of all inclinations, which further suggests a weak underlying geologic unit that is not favorable to development without substantial mitigation and monitoring efforts.

The area could be preserved as open-space with a network of primitive trails or be limited to select areas (Figure 11). Prior to any development or grading, evaluation of select areas should include a thorough subsurface exploration program, monitoring with inclinometers and survey points, and annual site reconnaissance performed by a certified engineering geologist.

#### 4.1 Future Geotechnical Work

Typically, geotechnical involvement occurs after a design team has been selected and an architect has drafted preliminary site layouts. We strongly recommend early involvement by the geotechnical consultant prior to preliminary planning to help prevent the City from paying unnecessary design costs as a result of misunderstanding this report and the geologic hazards throughout the site.

##### 4.1.1 Recommended Scope of Work

PBS recommends the following preliminary geotechnical scope of work.

Dedicated open space:

- Review trail networks

- Site reconnaissance

Site development with permanent structures:

- Subsurface explorations
- Slope stability analyses
- Engineering analyses
- Slope monitoring for a minimum of two years, with the installation of inclinometers and survey monuments
- Annual site reconnaissance performed by a certified engineering geologist (CEG)
- Review of preliminary grading plans and architectural drawings by a licensed geotechnical engineer (GE) **and** certified engineering geologist (CEG)

## 5 LIMITATIONS

This report has been prepared for the exclusive use of the addressee, and their architects and engineers, for aiding land use planning. This report has been prepared without site-specific geotechnical subsurface explorations, laboratory testing, or a field reconnaissance, and is a preliminary report to be used for planning purposes only. It is not intended to suffice as a site-specific geotechnical engineering report. Geotechnical evaluations will be required for future site development. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without express written consent of the client and PBS. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials, and contractors to ensure correct implementation of the recommendations.

The opinions, comments, and conclusions presented in this report are based upon information derived from our literature review. It is possible that soil, rock, or groundwater conditions could vary from mapped descriptions. If soil, rock, or groundwater conditions are encountered during construction that differ from those described herein, the client is responsible for ensuring that PBS is notified immediately so that we may reevaluate the recommendations of this report.

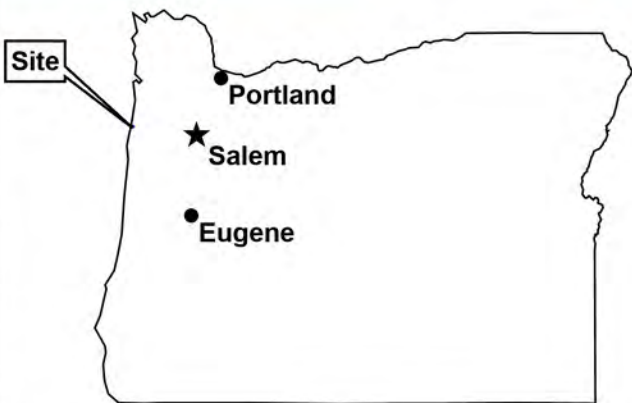
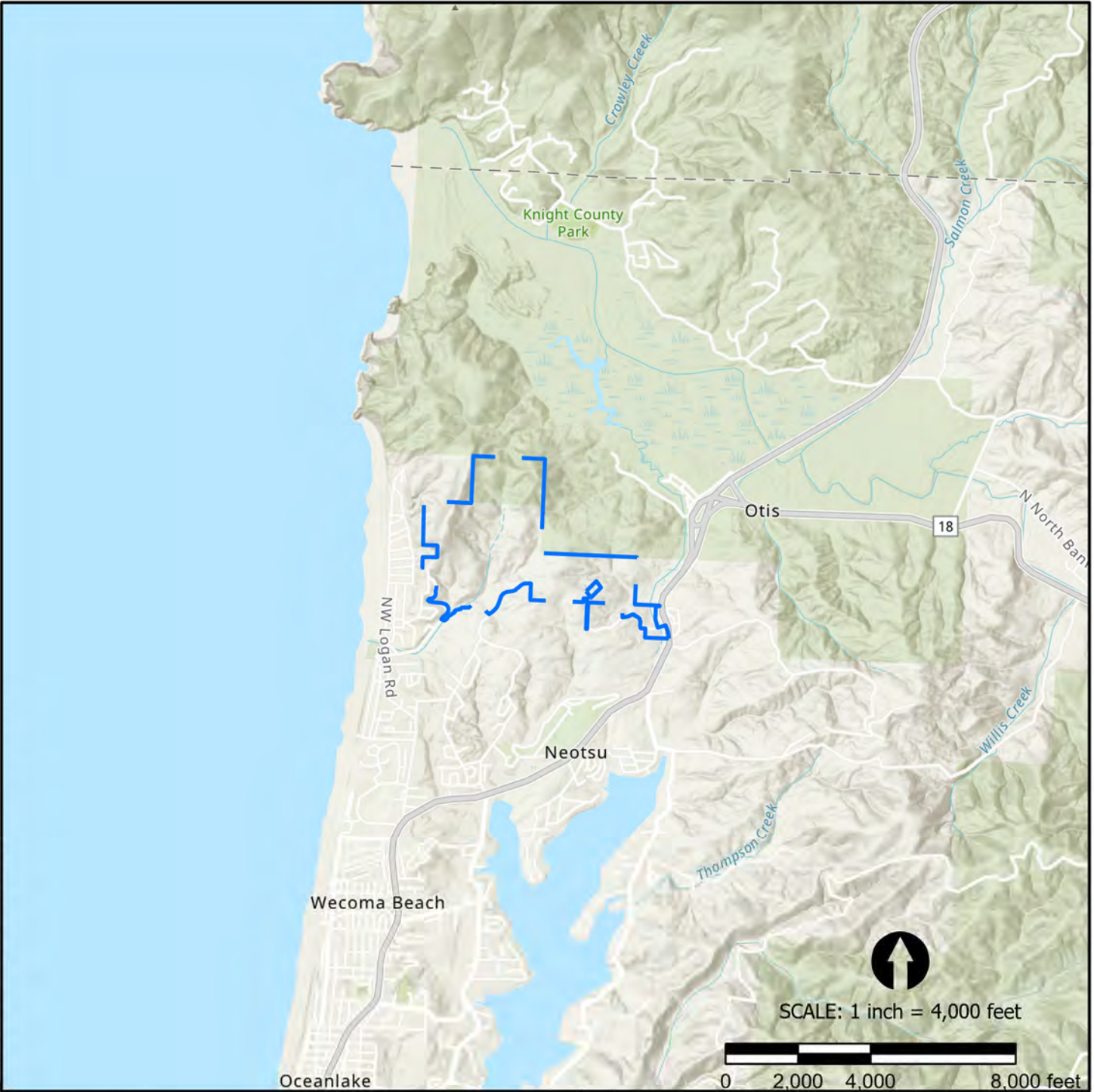
If there is a substantial lapse of time between the submission of this report and subsequent planning and development, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, or if the basic project scheme is significantly modified from that assumed, this report should be reviewed to determine the applicability of the conclusions and recommendations presented herein. Land use, site conditions (both on and off site), or other factors may change over time and could materially affect our findings; therefore, this report should not be relied upon after three years from its issue, or in the event that the site conditions change.

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# Figures

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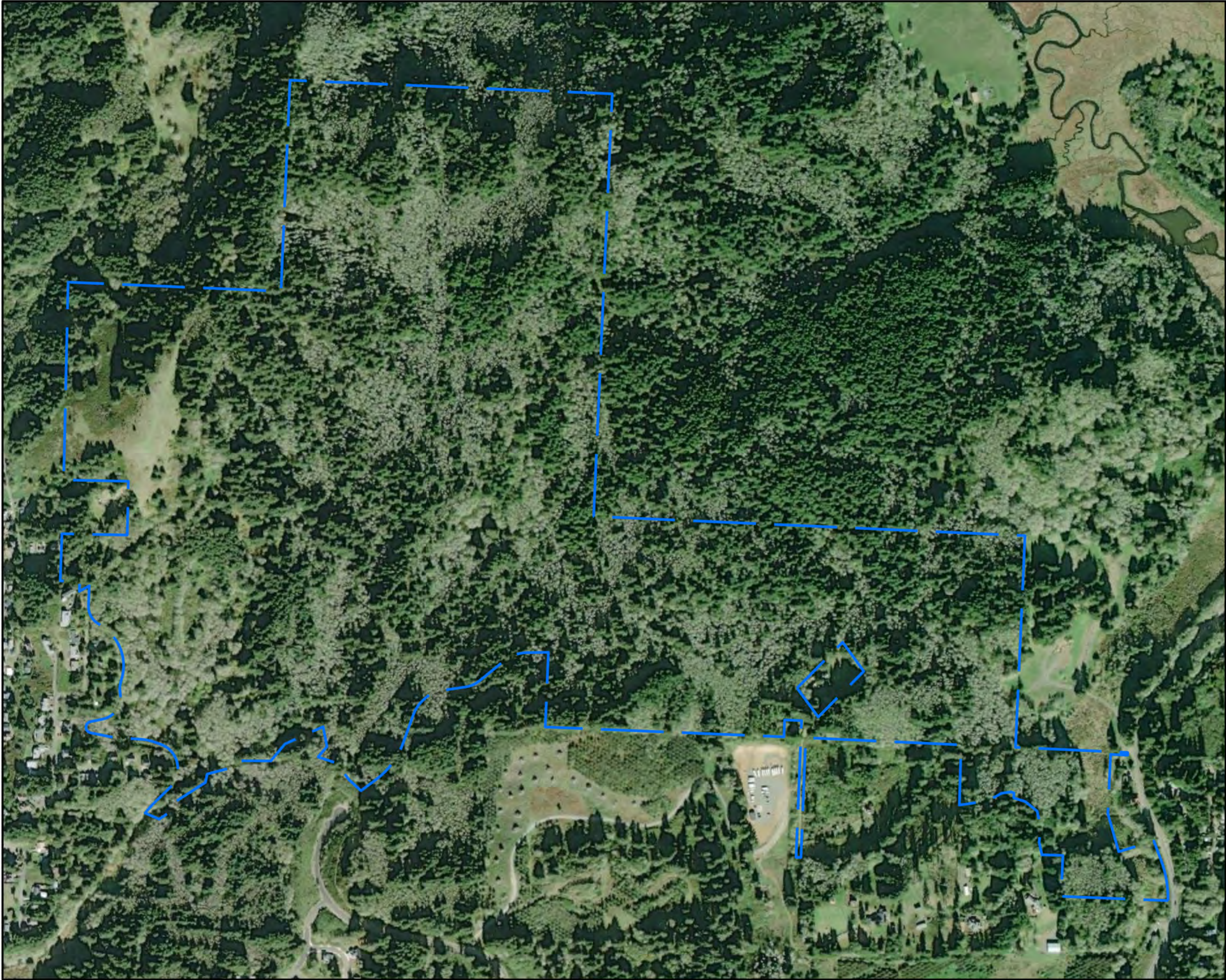
**VICINITY MAP**

**THE VILLAGES**  
**LINCOLN CITY, OREGON**

DATE: AUG 2022 · PROJECT: 74260.000



FIGURE  
**1**



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**EXPLANATION**

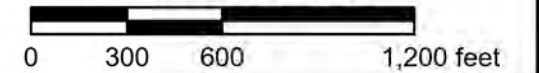
— Site boundary

Notes: ESRI imagery

Coordinate System: NAD 1983 2011 StatePlane  
Oregon North FIPS 3601 Ft Intl



SCALE: 1 inch = 600 feet



**SITE PLAN**

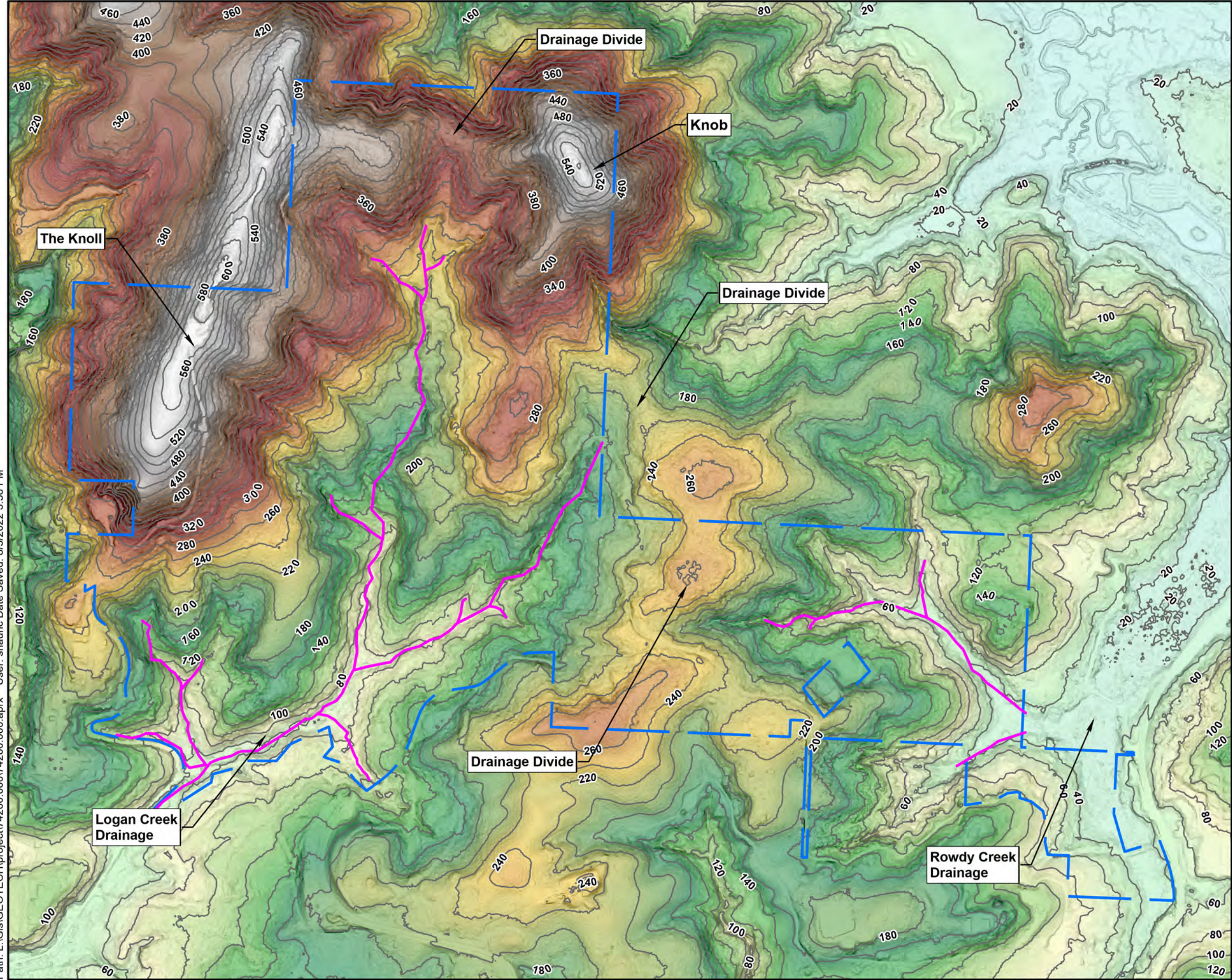
**THE VILLAGES  
LINCOLN CITY, OREGON**

DATE: AUG 2022 · PROJECT: 74260.000








FIGURE

**2**



**EXPLANATION**

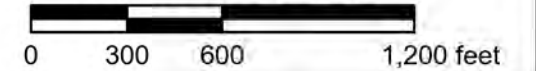
-  Creeks
-  Site boundary
-  20-foot elevation contour (NAVD 88)
- Digital Elevation Model (NAVD 88)**
-  609 ft
-  2 ft

Notes: Contours and hillshade derived from DOGAMI LiDAR DEM

Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl



SCALE: 1 inch = 600 feet



**SITE ELEVATIONS**

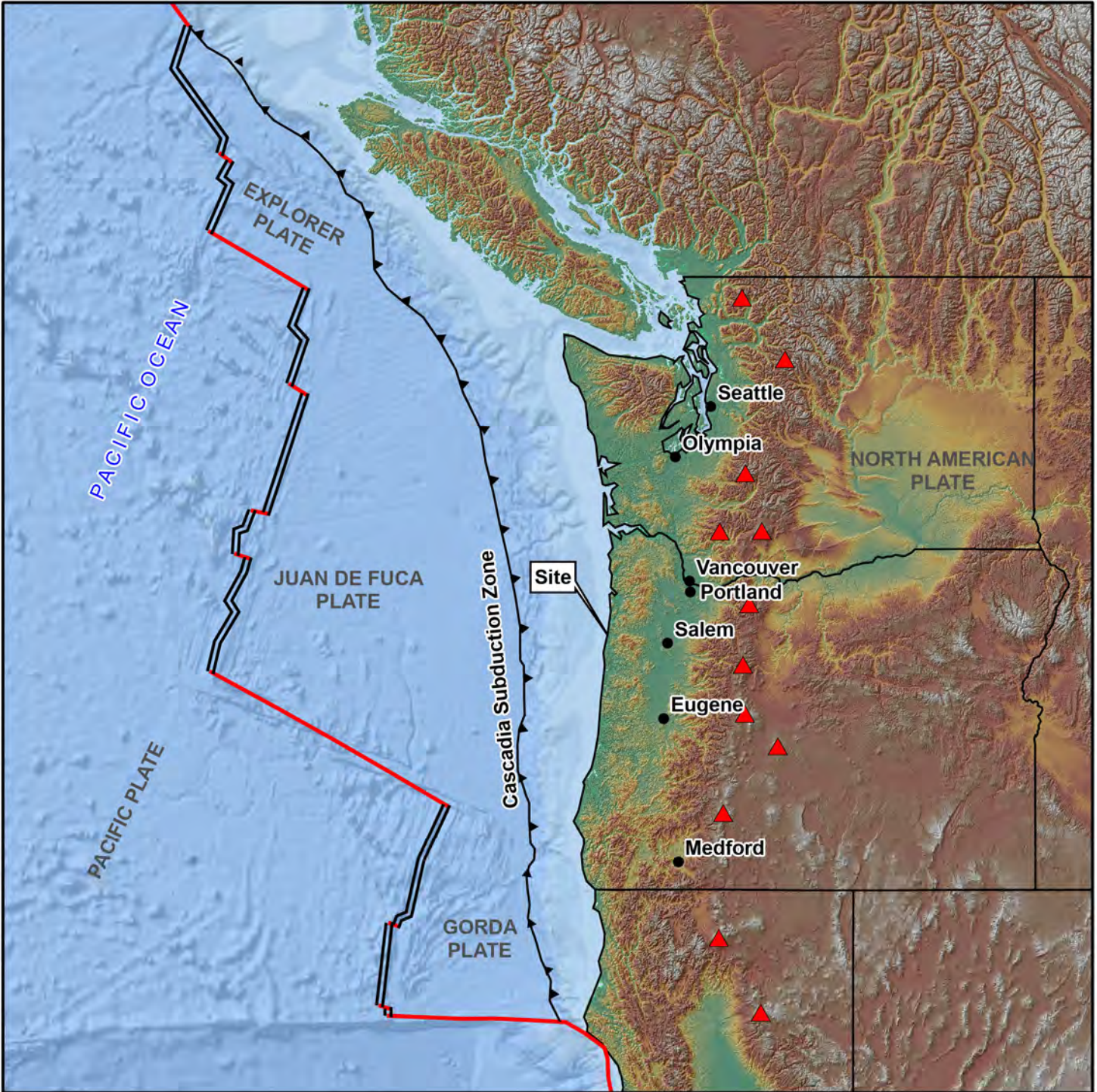
THE VILLAGES  
LINCOLN CITY, OREGON

DATE: AUG 2022 · PROJECT: 74260.000



FIGURE

**3**



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**EXPLANATION**

- ▲ Active volcano
- Transform boundary
- Spreading ridge
- ▲ Thrust fault

**TECTONIC SETTING OF THE  
PACIFIC NORTHWEST**

**THE VILLAGES  
LINCOLN CITY, OREGON**

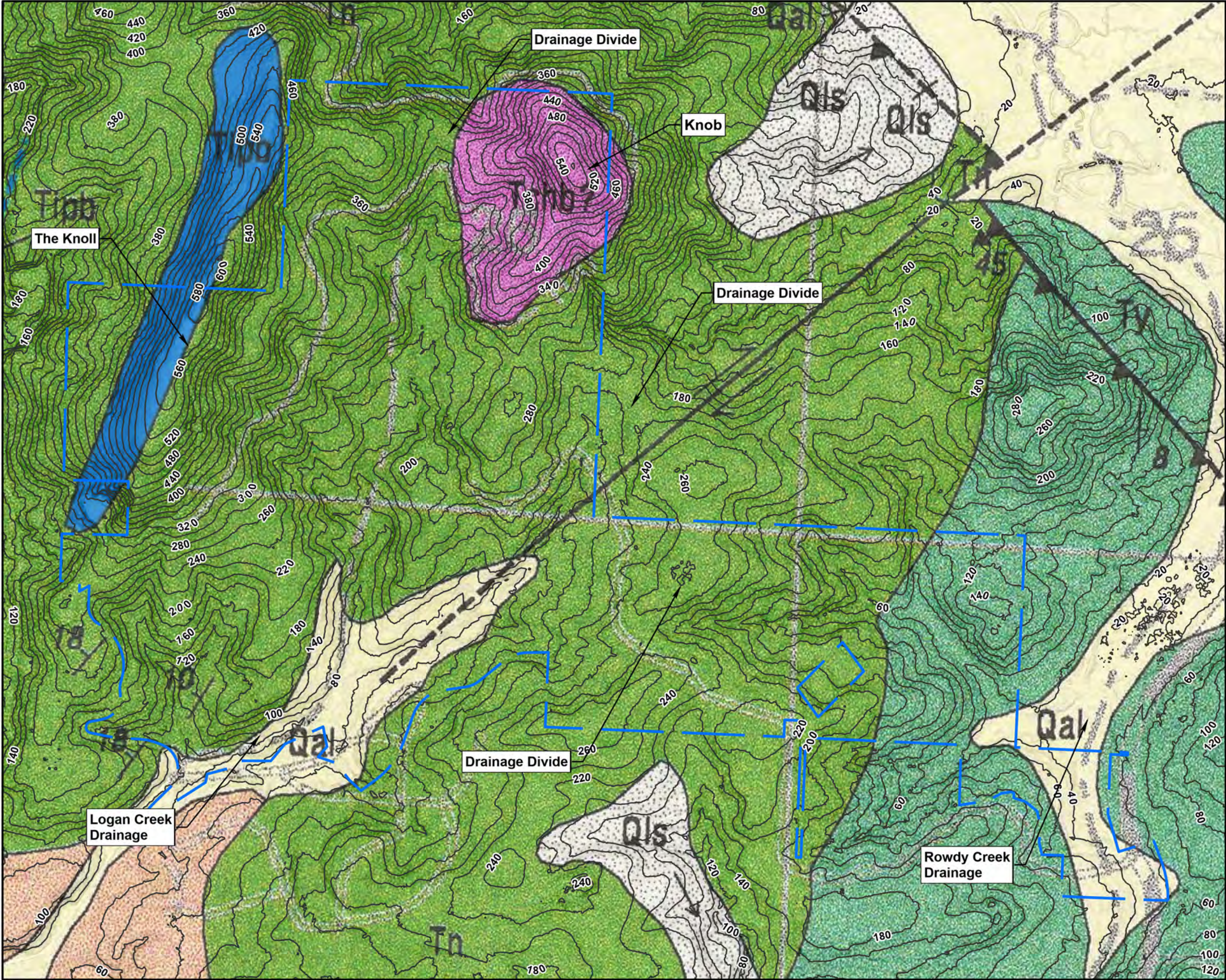
DATE: AUG 2022 · PROJECT: 74260.000



FIGURE

**4**

Notes: SRTM 30-meter DEM, ESRI World Oceans Basemap, USGS Tectonic Plate Boundaries



**EXPLANATION**

— 20-foot elevation contour (NAVD 88)

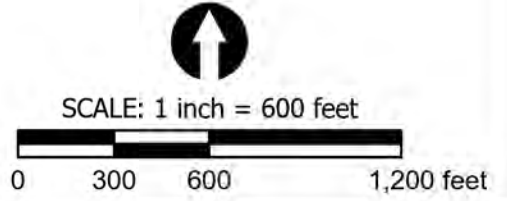
**Geologic Map Units**

- Qal - alluvial deposit
- Qls - Landslide debris.
- Tn - Nestucca formation - sedimentary rocks
- Ty - Yamhill formation - sedimentary rocks
- Tchb - Basalt of cascade head
- Tipb - Porphyritic basalt and basaltic andesite dike

- Thrust fault - sawteeth indicate upper plate.
- Strike-slip fault - arrows show relative horizontal movement.
- Geologic contact - approximately located or inferred; dashed where concealed.
- Strike and dip of beds

Notes: Site geology compiled by Snavely et al. (1996), original map scale 1:24,000

Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl



**GEOLOGIC MAP**

**THE VILLAGES  
LINCOLN CITY, OREGON**

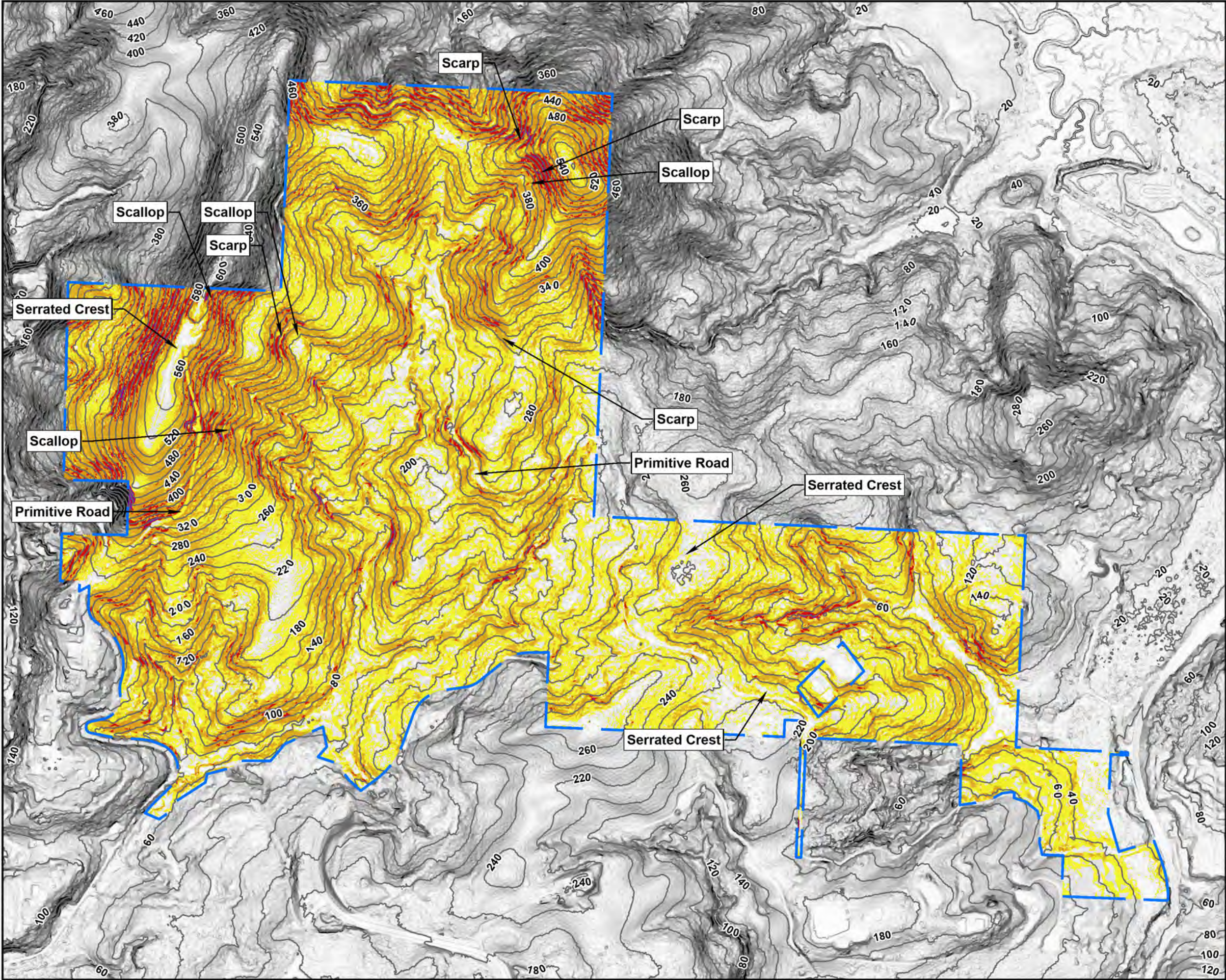
DATE: AUG 2022 · PROJECT: 74260.000



FIGURE  
**5**

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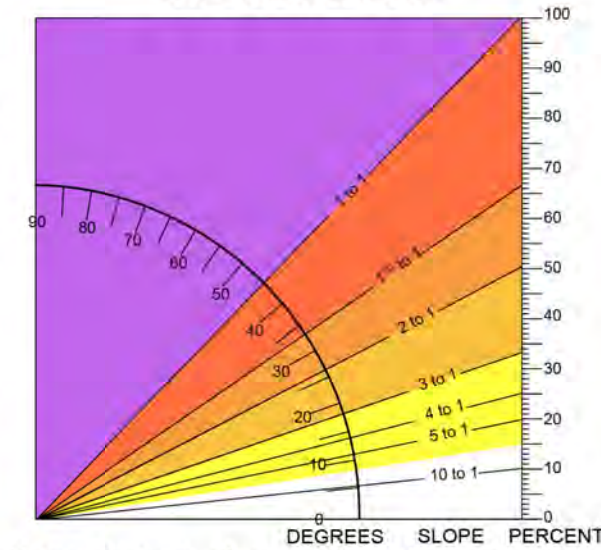
Path: L:\Gis\GEO\TECH\project\74260.000\74260.000.aprx User: shaunc Date Saved: 8/26/2022 8:42 AM



**EXPLANATION**

- Site boundary
- 20-foot elevation contour (NAVD 88)
- Slope inclinations (percent slope)**
- 15 - 33% (<3:1)
- 33 - 50% (3:1 - 2:1)
- 50 - 66.7% (2:1 - 1.5:1)
- 66.7 - 100% (1.5:1 - 1:1)
- >100% (>1:1)

**SLOPE COMPARISON CHART**

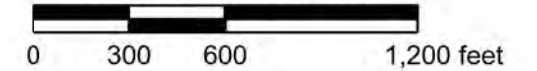


Notes: Contours, slope shade, and hillshade derived from DOGAMI LIDAR DEM

Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl



SCALE: 1 inch = 600 feet



**SLOPE INCLINATIONS**

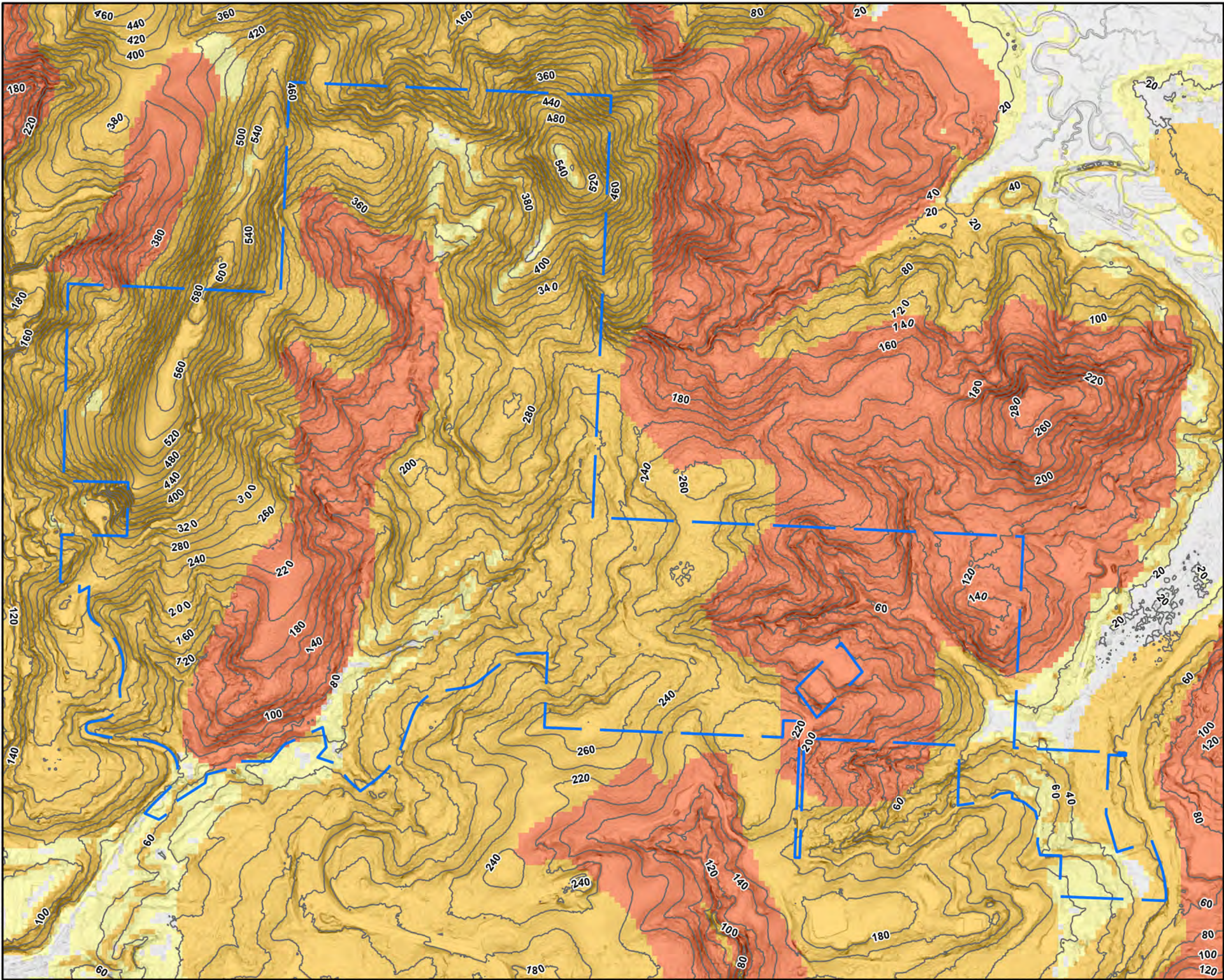
**THE VILLAGES  
LINCOLN CITY, OREGON**

DATE: AUG 2022 · PROJECT: 74260.000









FIGURE

**6**



**EXPLANATION**

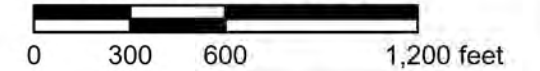
-  Site boundary
  -  20-foot elevation contour (NAVD 88)
- Regional Landslide Susceptibility**
-  Low
  -  Moderate
  -  High
  -  Very High

Notes: Contours and hillshade derived from DOGAMI LiDAR DEM, landslide susceptibility layer obtained from DOGAMI SLIDO (scale 1:500,000)

Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl



SCALE: 1 inch = 600 feet



**SLIDO LANDSLIDE SUSCEPTIBILITY**

**THE VILLAGES  
LINCOLN CITY, OREGON**

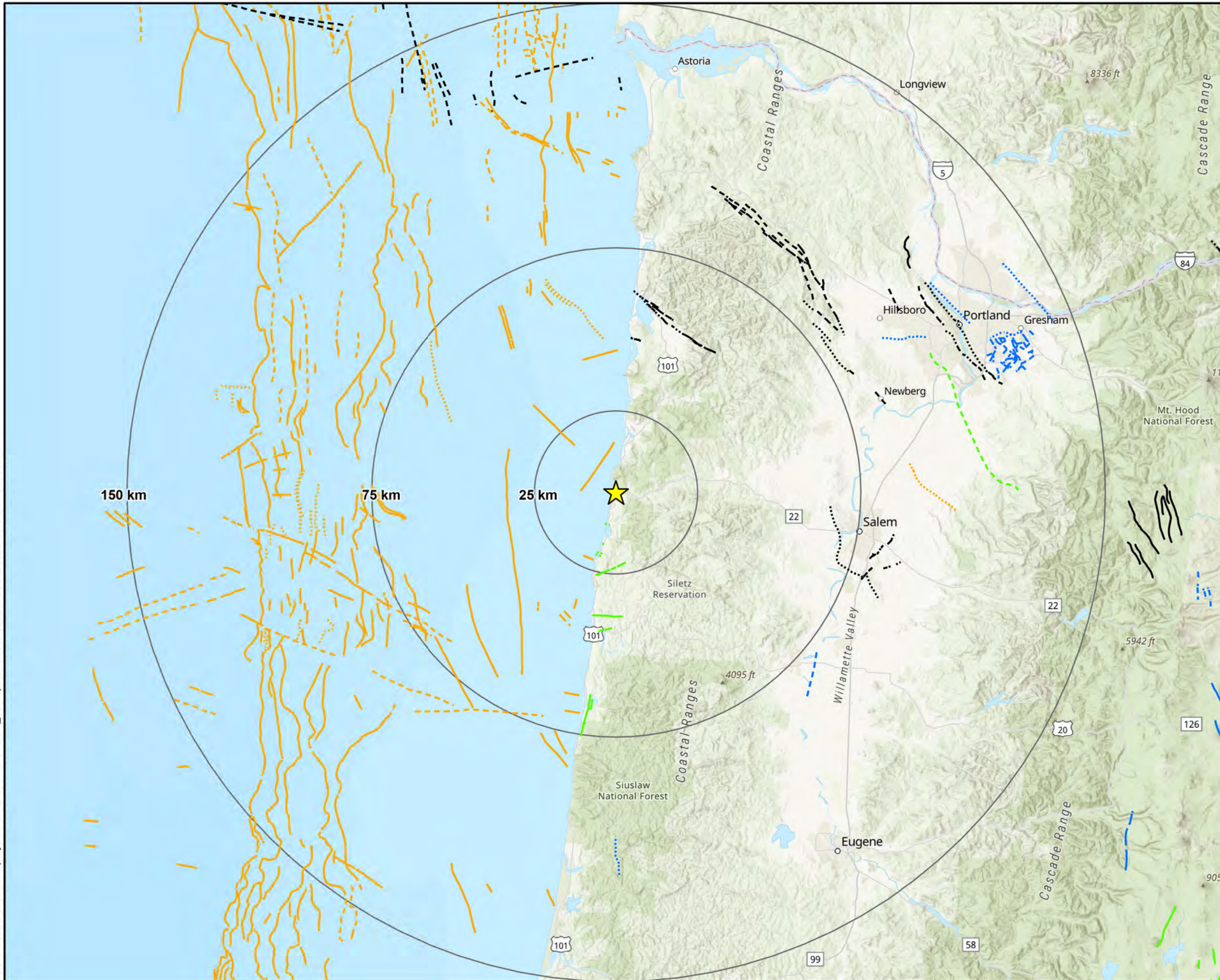
DATE: AUG 2022 · PROJECT: 74260.000





FIGURE

**7**

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**EXPLANATION**

-  Site location
-  Site proximity buffer (km)

Fault trace - solid where well constrained, dashed where moderately constrained, and dotted where inferred

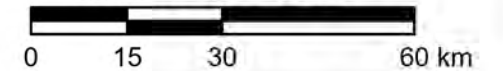
-  <15,000 years - latest Quaternary
-  <130,000 years - late Quaternary
-  <750,000 years - middle and late Quaternary
-  <1.6 million years - undifferentiated Quaternary

Notes: ESRI World Topographic basemap, USGS Quaternary Faults and Fold Database

Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl



SCALE: 1 inch = 30 km



**REGIONAL FAULT MAP**

**THE VILLAGES  
LINCOLN CITY, OREGON**

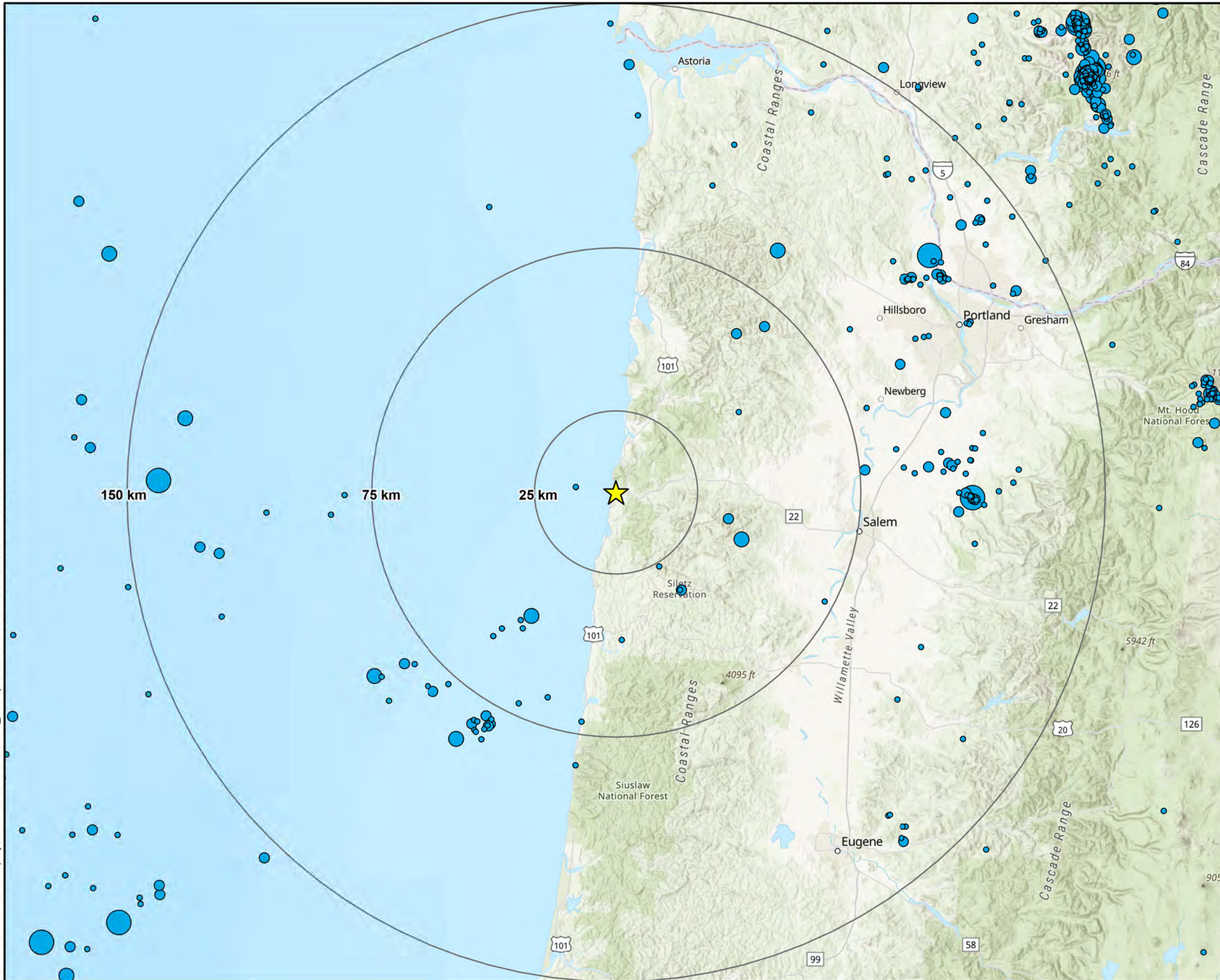
DATE: AUG 2022 · PROJECT: 74260.000





FIGURE

**9**

Path: L:\Gis\GEO\TECH\project\74260.000\74260.000\_haz.aprx User: shauncDate Saved: 8/2/2022 9:14 AM



**EXPLANATION**

-  Site location
-  Site proximity buffer (km)

**Independent seismicity (1963 - 2017)**

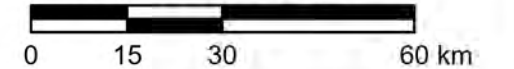
-  M 2.5 - 3.0
-  M 3.1 - 4.0
-  M 4.1 - 5.0
-  M >5.1

Notes: Historical seismicity compiled from ANSS Comprehensive Earthquake Catalog

Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl



SCALE: 1 inch = 30 km



**HISTORICAL SEISMICITY**

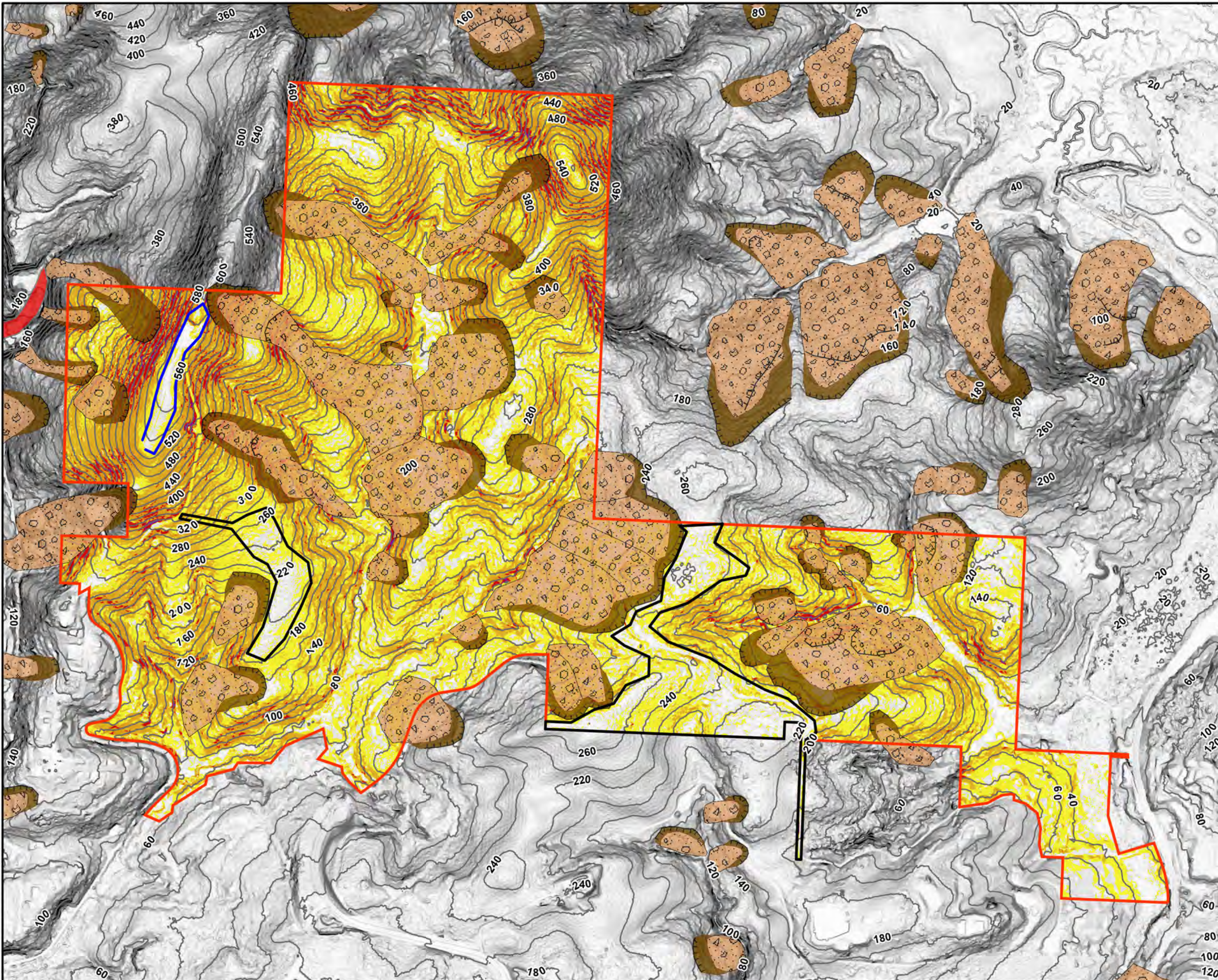
**THE VILLAGES  
LINCOLN CITY, OREGON**

DATE: AUG 2022 · PROJECT: 74260.000



FIGURE

**10**



**EXPLANATION**

- OS - Open space
- P - Park
- R-1 / P - Single-family residential or park
- 20-foot elevation contour (NAVD 88)
- Scarp
- Head Scarp
- Talus-Colluvium
- Fan
- Landslide

**Slope inclinations (percent slope)**

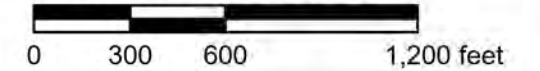
- 15 - 33% (<3:1)
- 33 - 50% (3:1 - 2:1)
- 50 - 66.7% (2:1 - 1.5:1)
- 66.7 - 100% (1.5:1 - 1:1)
- >100% (>1:1)

Notes: Contours, slope shade, and hillshade derived from DOGAMI LiDAR DEM

Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl



SCALE: 1 inch = 600 feet



**LAND USE**

**THE VILLAGES  
LINCOLN CITY, OREGON**

DATE: AUG 2022 · PROJECT: 74260.000



FIGURE

**11**

# Appendix B

Wetland Field Data

## Village

Wetland Plot 1

0-7" 10yr 1  
40% 5/6

80% elderberry

10% Skunk

10% H<sub>2</sub>O pop Parsley

7-14 10yr 4/2

20% 4/6

back to wedge  
oxsall 5 10%

Wetland plot 2

0-14" 10yr ~~4/3~~

## 3/12 Village

Wetland C

0-6 2/2 10yr

1% Redox 3/4 7.5yr

6-14 4/2 10yr

~~50%~~ ~~5/6~~  
5 5/8 7.5yr

F3

- <sup>10%</sup> ~~Skunk~~ fern 10%

- Carax slow sedge 100%

elderberry 1%

Sitka 1%

holly 1%

huckleberry 1%

hemlock 1%

texture: clay loam

# WL C cont.

Upland:  
Uniform color & texture  
0-14  
2/2 10YR 0/1. redox  
- clay loam

Scale: 1 square = \_\_\_\_\_

52

WETLAND 7-12A WETLAND

0-8" 10YR 2/1 PLOT

9-18" ~~10YR~~ DEATH 18" 7.5YR

3/2

Redox 60%

7.5 5/6

SKUNK CABOC

75%

WOOD SCEL

~~70~~ 90%

SITKE SPALL

1%

SALMON BERRY

10%

RANAWICKI

10%

CLAY LIAM

~~FE~~ SULFER

WATER OR PERM

SOILS

F7

DARK SURFACE

53

7-12A

UPLAND

1-3  
4-10

RIPARIAN / RIVERINE

LOAMY CLAY

1-3 7.5YR 3-2

4-10 10YR 3-2

Redox 10YR 5-8 2 1/2

SALMOSPORIN 30 %

LOAMY SANDS 1 %

SHALLOWS 3 %

FELDSPAR 3 %

SHALLOWS LOESS 8 %

No HYDROLOGY

56

57

WETLAND B		WETLAND PLOT
		CLAY LOAM
1-6	7.5YR 3/2	
	10R 4/4	10%
7-12	7.5YR 4/3	
	10R 4/6	5%
CAPUR	UPPER A	80%
SKUNK	CABBAGE	10%
SALMONBERRY		5%
SWGD	FERT	1%

F6

UPLAND PLOT

0-5	7.5Y5 3/3	
6-14	10YR 3/2	
	10YR 5/8	5%

SALMONBERRY	75%
SWGD FERT	40%
BO SLOPE	10%

Lincoln city, Willages road,

note 1 (5)

Floodplain wetland start  
 ⓐ toe of road slope.

Skunk cabbage.

horizontal

slough sedge.

bull rush

Creeping buttercup.

Wetland A.

Surveyed.

sloping concave depresses  
 ⓐ @ surface.

skunk  
 stony nettle  
 water parsnip

overseen 20% Ellersum

Method BWP1 (W)

0-4: 10yr 3/1 milk

5-12: 10yr 3/1 WP 5/1 5/6 10/6

100% seed canopies.

sat. to surface, areas of  
paddy, 100% H<sub>2</sub>O @ 3"WP2 (W)

0-14 10/10 3/3

70% elderberry

30% in black

10% sword fern

10% bracken fern

plot on slope

wp 3 (W)0-12 10yr ~~2/1~~ muck

30% reed

40% slunk cobbles

sat to surface H<sub>2</sub>O @ 2"wp 4 (W)0-14 10yr 3/3 ~~no hydro~~C. 60% Alder  
20% ElderberryS. 20% Cascara  
20% Elderberry  
20% Him black  
15% thimble berryPlot 3-4' higher than well  
on slope.

16

17

Wetland B is a  
 sloping emergent wetland  
 with areas of ponding  
 mostly reed but also  
 skunk, bullrush, slough  
 sedge, and essentially  
 at surface.

Back by upland slopes

Wetland B (north of road)

(up 5 @)

0-8 10yr 2/1 mile

70% reed

10% slough

sat @ surface H<sub>2</sub>O

WP 6 (U)

0-14" 10yr 3/3

40% Bucken

20% S. vernal grass

10% Creeping RL

20% smart fern

no sat / no hydro!

WP 7 (U)

0-12 10yr 2/1 mud

70% rock

30% open water

sat ↑ surface.

wet plot 8 (V)

0-12 10yr 3/3

~~plot~~ plot on slope.

Em [ 50% bracken fern  
20% sward fern

shrub [ 40% elderberry

70 ~~shrub~~ f.r

# Appendix C

## Precipitation Data

WETS Station: OTIS 2 NE, OR

Requested years: 1981 - 2011

Month	Temperature (°F)			Precipitation (inches)				
	Avg daily max	Avg daily min	Avg daily mean	Avg	30% chance will have		Avg number of days with 0.10 inch or more	Average total snowfall
					less than	more than		
Jan	48.0	37.5	42.8	14.60	10.48	17.24	18	0.2
Feb	51.2	37.5	44.3	10.52	7.13	12.57	15	0.0
Mar	54.8	38.8	46.8	10.74	8.13	12.52	17	0.1
Apr	58.1	40.3	49.2	7.51	5.63	8.78	14	0.0
May	62.4	44.1	53.2	5.17	3.64	6.13	11	0.0
Jun	65.7	48.0	56.9	3.80	2.50	4.56	7	0.0
Jul	70.3	50.2	60.3	1.38	0.70	1.66	3	0.0
Aug	71.5	50.7	61.1	1.45	0.62	1.77	3	0.0
Sep	69.6	48.1	58.9	3.07	1.29	3.73	5	0.0
Oct	61.0	44.6	52.8	7.47	4.92	8.97	12	0.0
Nov	52.0	40.2	46.1	14.62	11.07	17.04	18	0.1
Dec	46.6	36.3	41.5	14.56	10.91	17.02	17	0.1
Annual:					85.53	101.23		
Average	59.3	43.0	51.1	-	-	-	-	-
Total	-	-	-	94.88			141	0.5

GROWING SEASON DATES

Requested years of data: 1981 - 2011  
 Years with missing data: 24 deg = 1    28 deg = 1    32 deg = 1  
 Years with no occurrence: 24 deg = 17    28 deg = 6    32 deg = 0  
 Data years used: 24 deg = 30    28 deg = 30    32 deg = 30

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		

## Climatological Data for OTIS 2 NE, OR - April 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-04-01	54	34	44.0	4	0	0.03	0.0	0
2022-04-02	54	41	47.5	8	0	0.03	0.0	0
2022-04-03	54	38	46.0	6	0	0.12	0.0	0
2022-04-04	53	43	48.0	8	0	1.72	0.0	0
2022-04-05	53	37	45.0	5	0	0.11	0.0	0
2022-04-06	66	33	49.5	10	0	T	0.0	0
2022-04-07	73	41	57.0	17	7	T	0.0	0
2022-04-08	64	44	54.0	14	4	0.25	0.0	0
2022-04-09	52	38	45.0	5	0	0.28	0.0	0
2022-04-10	46	39	42.5	3	0	0.89	0.0	0
2022-04-11	49	34	41.5	2	0	1.65	0.0	0
2022-04-12	47	35	41.0	1	0	0.21	0.0	0
2022-04-13	48	32	40.0	0	0	0.86	0.0	0
2022-04-14	48	32	40.0	0	0	0.20	0.0	0
2022-04-15	50	30	40.0	0	0	0.03	0.0	0
2022-04-16	49	30	39.5	0	0	0.11	0.0	0
2022-04-17	49	30	39.5	0	0	0.09	0.0	0
2022-04-18	50	41	45.5	6	0	0.96	0.0	0
2022-04-19	49	40	44.5	5	0	0.73	0.0	0
2022-04-20	56	40	48.0	8	0	0.30	0.0	0
2022-04-21	54	43	48.5	9	0	0.84	0.0	0
2022-04-22	59	40	49.5	10	0	0.01	0.0	0
2022-04-23	60	37	48.5	9	0	T	0.0	0
2022-04-24	60	38	49.0	9	0	0.00	0.0	0
2022-04-25	55	49	52.0	12	2	0.27	0.0	0
2022-04-26	53	42	47.5	8	0	0.28	0.0	0
2022-04-27	55	42	48.5	9	0	0.29	0.0	0
2022-04-28	52	39	45.5	6	0	0.01	0.0	0
2022-04-29	56	42	49.0	9	0	0.11	0.0	0
2022-04-30	53	47	50.0	10	0	1.31	0.0	0
Average Sum	54.0	38.4	46.2	193	13	11.69	0.0	0.0

## Climatological Data for OTIS 2 NE, OR - May 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-05-01	58	38	48.0	8	0	T	0.0	0
2022-05-02	56	45	50.5	11	1	1.46	0.0	0
2022-05-03	54	45	49.5	10	0	0.22	0.0	0
2022-05-04	61	41	51.0	11	1	T	0.0	0
2022-05-05	55	42	48.5	9	0	0.36	0.0	0
2022-05-06	55	42	48.5	9	0	1.03	0.0	0
2022-05-07	52	44	48.0	8	0	1.06	0.0	0
2022-05-08	47	39	43.0	3	0	0.63	0.0	0
2022-05-09	52	35	43.5	4	0	0.18	0.0	0
2022-05-10	56	34	45.0	5	0	T	0.0	0
2022-05-11	55	36	45.5	6	0	T	0.0	0
2022-05-12	53	45	49.0	9	0	1.63	0.0	0
2022-05-13	57	36	46.5	7	0	0.17	0.0	0
2022-05-14	56	46	51.0	11	1	1.92	0.0	0
2022-05-15	59	51	55.0	15	5	0.24	0.0	0
2022-05-16	57	48	52.5	13	3	0.31	0.0	0
2022-05-17	58	38	48.0	8	0	T	0.0	0
2022-05-18	56	44	50.0	10	0	0.29	0.0	0
2022-05-19	54	42	48.0	8	0	0.05	0.0	0
2022-05-20	57	37	47.0	7	0	0.00	0.0	0
2022-05-21	62	39	50.5	11	1	0.00	0.0	0
2022-05-22	61	44	52.5	13	3	0.00	0.0	0
2022-05-23	63	47	55.0	15	5	0.00	0.0	0
2022-05-24	62	43	52.5	13	3	0.00	0.0	0
2022-05-25	63	51	57.0	17	7	0.07	0.0	0
2022-05-26	69	49	59.0	19	9	T	0.0	0
2022-05-27	62	50	56.0	16	6	0.25	0.0	0
2022-05-28	57	47	52.0	12	2	0.34	0.0	0
2022-05-29	54	47	50.5	11	1	1.28	0.0	0
2022-05-30	58	46	52.0	12	2	0.27	0.0	0
2022-05-31	67	42	54.5	15	5	T	0.0	0
Average Sum	57.6	43.0	50.3	326	55	11.76	0.0	0.0

## Climatological Data for OTIS 2 NE, OR - June 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-06-01	64	48	56.0	16	6	T	0.0	0
2022-06-02	66	47	56.5	17	7	T	0.0	0
2022-06-03	60	50	55.0	15	5	0.13	0.0	0
2022-06-04	59	52	55.5	16	6	0.43	0.0	0
2022-06-05	58	53	55.5	16	6	0.94	0.0	0
2022-06-06	61	51	56.0	16	6	0.16	0.0	0
2022-06-07	68	48	58.0	18	8	T	0.0	0
2022-06-08	63	51	57.0	17	7	0.01	0.0	0
2022-06-09	67	50	58.5	19	9	0.18	0.0	0
2022-06-10	62	56	59.0	19	9	2.08	0.0	0
2022-06-11	62	55	58.5	19	9	0.70	0.0	0
2022-06-12	62	50	56.0	16	6	0.09	0.0	0
2022-06-13	57	47	52.0	12	2	0.28	0.0	0
2022-06-14	61	49	55.0	15	5	0.18	0.0	0
2022-06-15	61	46	53.5	14	4	0.03	0.0	0
2022-06-16	61	51	56.0	16	6	0.05	0.0	0
2022-06-17	60	48	54.0	14	4	0.27	0.0	0
2022-06-18	60	46	53.0	13	3	0.06	0.0	0
2022-06-19	57	51	54.0	14	4	0.13	0.0	0
2022-06-20	64	51	57.5	18	8	0.02	0.0	0
2022-06-21	71	51	61.0	21	11	0.00	0.0	0
2022-06-22	67	50	58.5	19	9	0.00	0.0	0
2022-06-23	64	43	53.5	14	4	0.00	0.0	0
2022-06-24	75	43	59.0	19	9	0.00	0.0	0
2022-06-25	91	51	71.0	31	21	0.00	0.0	0
2022-06-26	90	58	74.0	34	24	0.00	0.0	0
2022-06-27	70	47	58.5	19	9	0.00	0.0	0
2022-06-28	64	55	59.5	20	10	0.04	0.0	0
2022-06-29	64	54	59.0	19	9	0.03	0.0	0
2022-06-30	67	46	56.5	17	7	0.00	0.0	0
Average Sum	65.2	49.9	57.6	533	233	5.81	0.0	0.0