BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PCN-2

In the Matter of	)
	)
In the Matter of the Petition of	)
	)
TILLAMOOK PEOPLE'S UTILITY DISTRICT	)
	)
	)
PETITION FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	)
	)
	)
	)

TESTIMONY OF TODD SIMMONS

ON BEHALF OF TILLAMOOK PEOPLE'S UTILITY DISTRICT

October 6, 2017

Q. PLEASE STATE YOUR NAME AND YOUR EMPLOYER.

A. My name is Todd Simmons, General Manager of Tillamook People's Utility District ("Tillamook PUD").

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. My resume is attached as Exhibit TPUD/101.

Q. ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

A. I am appearing on behalf of Tillamook PUD.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to: (a) generally describe Tillamook PUD's need to develop an 8.6 mile long overhead transmission line from a breaker in the Tillamook Substation owned by the Bonneville Power Administration ("BPA") to a proposed new Oceanside Substation owned by Tillamook PUD ("Transmission Line"); (b) describe the process for choosing the route of the line; (c) describe the cost and rate impact from the Transmission Line on existing Tillamook PUD customers; and (d) describe how Tillamook PUD will comply with land use regulations for the siting and development of the Transmission Line.

Q. PLEASE GENERALLY DESCRIBE TILLAMOOK PUD AND ITS SYSTEM.

A. Tillamook PUD is a municipal corporation, authorized by Section 12, Article XI of the Oregon Constitution and organized under ORS Chapter 261. Tillamook PUD serves all of Tillamook County and parts of Clatsop and Yamhill Counties.

Q. PLEASE DESCRIBE THE LOCATION OF THE TILLAMOOK PUD SERVICE TERRITORY.

A. Exhibit TPUD/102 included with my testimony shows Tillamook PUD's service territory.

Q. PLEASE GENERALLY DESCRIBE THE TRANSMISSION LINE.

A. The Transmission Line is an 8.6 mile long transmission line from a breaker in the Tillamook Substation owned by BPA to the proposed new Oceanside Substation owned by Tillamook PUD. The proposed route of the Transmission Line is shown on Exhibit TPUD/202 included with the testimony being submitted by KC Fagen on behalf of Tillamook PUD ("Fagen Testimony"). The Transmission Line will provide a primary source of power from BPA's Tillamook Substation into Tillamook PUD's system surrounding the communities of Netarts and Oceanside, while providing a secondary source of power to other areas of Tillamook PUD's service territory.

Q. WHY DOES TILLAMOOK PUD NEED THE TRANSMISSION LINE?

A. The Transmission Line is needed to adequately provide reliable service to existing and new customer loads in large portions of Tillamook PUD's service territory, and is most critical for customers in the coastal areas around Netarts and Oceanside.

Q. HAS THE TILLAMOOK PUD BOARD OF DIRECTORS REVIEWED THE NEED FOR THE TRANSMISSION LINE?

A. Yes. Tillamook PUD's Board of Directors has independently reviewed the need for the Transmission Line and approved the line's location. A copy of the minutes from the Board of Directors' most recent consideration of the line is included with my testimony.[1]

Q. WHAT TYPE OF FACILITIES SERVE THIS AREA OF TILLAMOOK PUD'S SERVICE TERRITORY NOW?

A. The area to be served directly by the Transmission Line is currently served from a radial 24.9 kV line sourced from Tillamook PUD's Wilson River Substation.[2] The existing 24.9 kV line is aging, has limited capacity and limited reliability, and has subjected

[1] Exhibit TPUD/103.
[2] A general discussion of the current service is described in Exhibit TPUD/200 ("Fagen Testimony").

Tillamook PUD customers to outages of increased frequency. In part because of the load growth Tillamook PUD has and continues to experience in coastal areas, reliability issues on the existing 24.9 kV line are expected to increase and if a solution is not forthcoming, a moratorium will have to be imposed on new electric connections. The Transmission Line will increase overall system reliability and ensure that Tillamook PUD can adequately serve its existing and future customers.

Q. WHAT TYPES OF CUSTOMERS WOULD BENEFIT FROM THE PROPOSED TRANSMISSION LINE?

A. The customers who will benefit from the Transmission Line are diverse and include residential, small commercial, large commercial, industrial, water and sewer districts, and irrigation uses.

Q. HAS TILLAMOOK PUD DETERMINED HOW THE TRANSMISSION LINE WILL IMPACT RATES FOR EXISTING MEMBERS?

A. Yes. As Tillamook PUD witness Mr. Fagen describes in his testimony, the Transmission Line is estimated to cost approximately $13.2 million. In Exhibit TPUD/104 included with my testimony, I show the rate impact of $10 million based on our expected total revenue of $40 million per year. Based on that analysis, each $10 million obligation we take on has an average impact on a residential customer's bill $1.95 per month for the first 10 years, and $1.59 per month over 25 years. Based on a new obligation of $13.2 million, this would equate to an average increase of $2.57 per month for the first ten years, or an average increase of $2.10 per month over 25 years. This impact is tolerable, and the actual impact is expected to be lower over time as new load is added to the system.

Q. HOW DID TILLAMOOK PUD DETERMINE WHERE TO LOCATE THE LINE?

A. Tillamook PUD has undergone an extensive selection process to identify the specific

route for the line. The beginning and end of the transmission route are the Tillamook Substation and the proposed Oceanside Substation. The preferred route for the Transmission Line is based on input from multiple stakeholders and various other sources of information, including:

- Comments received through individual meetings with landowners and other stakeholders
- Feedback during public workshops and meetings
- Recommendations from a Citizen Advisory Group
- Results from a prioritization process that combined input from landowners, members of the public, and Tillamook PUD staff
- Meetings with state and local regulatory and permitting agencies
- Requirements of BPA
- Several rounds of analysis by Tillamook PUD engineering staff

Q. WILL TILLAMOOK PUD BE CONDEMMING ANY PROPERTY FOR THE TRANSMISSION LINE?

A. As of the filing of this application, Tillamook PUD believes that it will likely have to condemn some property for the Transmission Line, but we do not know precisely how many properties. Tillamook PUD is in the process of obtaining consent, in the form of easements, from all landowners along the Transmission Line route. Tillamook PUD remains optimistic that it can continue to negotiate with property owners to reduce the overall number of parcels to be condemned, with the goal of avoiding condemnation altogether.

Q. HOW WILL THE LINE BE FINANCED?

A. Tillamook PUD expects to receive financing for the Transmission Line from the USDA's Rural Utility Service ("RUS"). As part of receiving RUS approval of financing for a

facility such as the Transmission Line, Tillamook PUD must demonstrate that the Transmission Line is justified, and an environmental analysis must be performed where appropriate agencies are contracted and given an opportunity to comment. RUS has given Tillamook PUD initial approval of this project following review of Tillamook PUD's 2014-2017 Construction Work Plan. A copy of the RUS approval and the Construction Work Plan are included as Exhibit TPUD/105.

Q. IS THE TRANSMISSION LINE PRACTICAL?

A. In my opinion, yes. Tillamook PUD, in collaboration with the community and its leaders, has developed a route that is practical and has the least overall impact on the community. The starting and ending points are guided by Tillamook PUD's and BPA's existing infrastructure. As noted in the testimony of Mr. Fagen, the Wilson River Substation is approaching capacity. The closest substation to the Netarts/Oceanside area where capacity can be gained is BPA's Tillamook Substation. By utilizing that substation, Tillamook PUD can rely on existing infrastructure and construct a shorter line than if other starting points were chosen. The preferred route also allows Tillamook PUD to rely on existing rights of way in many areas, thereby reducing potential conflicts and impacts on surrounding uses.

Q. IS THE TRANSMISSION LINE JUSTIFIED?

A. Yes. As described in my testimony and in the testimony of Mr. Fagen, the proposed Transmission Line will provide many benefits to Tillamook PUD and its customer and will allow Tillamook PUD to continue to meet its obligation to provide safe and reliable service throughout its territory.

Q. WILL THE TRANSMISSION LINE HAVE OTHER REGIONAL BENEFITS?

A. Yes. Not only will the Transmission Line benefit Tillamook PUD customers and system reliability, the route and facilities to be replaced are designed in a manner to minimize

impact to the communities and environment, which is consistent with state policy and which provides benefits to the public in general.

Q. WHICH LOCAL JURISDICTIONS HAVE LAND USE AUTHORITY OVER THE TRANSMISSION LINE?

A. The proposed line is located in two different planning jurisdictions: (1) Tillamook County, and (2) the City of Tillamook. The construction of a transmission line is allowed along the identified route in both of these jurisdictions. Concurrent with this application, Tillamook PUD has applied for a conditional use permit and other development permits with Tillamook County.

No land use permits are required in the City of Tillamook based on the proposed route. Instead, the location of the Transmission Line within the City's limits is governed by a Franchise Agreement between the City and Tillamook PUD, which the City has confirmed.

Q. IS THE TRANSMISSION LINE COMPATIBLE WITH LOCAL LAND USE REGULATIONS?

A. Yes. Both the County and the City have acknowledged comprehensive plans and well-developed codes that implement those plans. As long as the Transmission Line does not violate either code, the line will be consistent with, and compatible with, the comprehensive plans. The City has confirmed that no land use authorization is required. The County, however, will require several development permits and a conditional use permit.

Q. HAS TILLAMOOK PUD WORKED WITH TILLAMOOK COUNTY TO DETERMINE IF THE TRANSMISSION LINE IS COMPATIBLE WITH LOCAL COMPREHENSIVE PLANS AND LAND USE REGULATIONS?

A. Yes. The County will ultimately make that determination through land use proceedings,

and that decision cannot be predetermined. However, Tillamook PUD's land use team has analyzed the County's land use regulations and the need for land use permits, and has also reviewed land use requirements along the alternative routes. As part of that analysis, Tillamook PUD's consultants worked closely with the County to help determine whether the Transmission Line will be compatible with local comprehensive plans and land use regulations. Based on that work, Tillamook PUD submitted an application to the County on August 30, 2017. A copy of the narrative supporting that application is included as Exhibit TPUD/106 to my testimony. The County has the application and has begun processing Tillamook PUD's request for land use authorization.

The Transmission Line will pass through several zones in the County, each of which allows transmission lines, but only after obtaining a conditional use permit. The conditional use permit allows the County to review the development and to impose conditions to reduce any potential impacts on nearby properties. If the County does not approve that application, Tillamook PUD would either have to resubmit the application with new information, or find a new route. Either way, the preferred route will not be constructed unless and until the County determines it is compatible with the County's land use regulations.

Q. CAN TILLAMOOK PUD OBTAIN THE APPROPRIATE CONDITIONAL USE PERMIT FROM THE COUNTY?

A. Yes. As I just noted, the Transmission Line is an allowed use in each of the applicable County zones. The purpose of the conditional use permit is to ensure that the proposed use is designed in an appropriate manner with respect to its compatibility with surrounding properties, not to determine if the use is allowed at all.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 101

TO THE TESTIMONY OFF TODD SIMMONS

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

SIMMONS RESUME

October 6, 2017

Todd Simmons

85886 Pine Grove Road Eugene Oregon 97405 | 541 915-8975 | tsimmons@tpud.org

Tradition of Performance Excellence in

UTILITY MANAGEMENT

- Introduced innovative and inclusive management style to create and maintain sustainable professional relationships, bridging the gaps between traditional barriers and fostering collaboration resulting in increased efficiency and quality.

EMERGENCY MANAGEMENT

- Oregon Water Agency Response Network Steering Committee and Chair, Western Regional Mutual Aid Committee, American Public Power Association Region 10 Coordinator, 11 years as National Firefighter I and Emergency Medical Technician.

COMMUNICATION

- Certified instructor for Leading at the Speed of Trust and the Incident Command System. Created Communication Director position and protocols for Unified and Integrated Command. Created and conducted multiple tabletop and practical emergency response exercises.

LEADERSHIP

- 26 years in Utility Leadership positions including Water, Electric, and Natural Gas Utilities, leading Operations, Engineering, Facilities, Customer Service, Procurement, and Security divisions.

Professional Experience

GENERAL MANAGER | TILLAMOOK PEOPLE'S UTILITY DISTRICT | 2017-PRESENT

- Manage 83 employees and $50 million annual Capital and Maintenance budget, serving 21,000 electric distribution residential, commercial, and industrial customers.

ELECTRIC OPERATIONS MANAGER | EUGENE WATER & ELECTRIC BOARD | 2011-2016

- Managed $20-25 million annual Capital and Maintenance budget. Reduced the 10-year capital plan by $54 million in 2011. Decreased FTE in every division while increasing safety, quality, and efficiency and creating higher levels of customer and employee satisfaction. Divisions include Transmission & Distribution Engineering, Transformers, Meters, Communications & Controls, Meter Relay, Substations, Transmission & Distribution Line, Vegetation Management, Customer Service, Transmission & Distribution Operations Dispatch, Facilities, Security, and Central Purchasing Warehouse.

WATER OPERATIONS MANAGER/CONSTRUCTION SUPERVISOR | EUGENE WATER & ELECTRIC | 2001-2011

- Started as the Construction Supervisor, managing joint trench projects and water main replacement program. Appointed to lead the entire Water Operations process from production to distribution. Reorganized to increase water quality while lowering costs and increasing our responsiveness to changes in the distribution system and customer impacts. Incorporated the Water Master Plan into daily operations. Part of Steering Committee to create an Oregon WARN, becoming the fifth state in the union to form an interagency response network.

GENERAL CONTRACTOR | PINE GROVE CONSTRUCTION | 1995-2001

- Created commercial and residential construction company, providing new construction, remodeling, and addition services in Oregon and Northern California.

FIRE FIGHTER/EMERGENCY MEDICAL TECHNICIAN | LANE COUNTY FIRE DISTRICT #1 | 1998-2010

- Completed national Firefighter I certification, reaching the rank of Fire Ground Engineer. Served as an Emergency Medical Technician, completing rotations in Peacehealth Emergency Room.

CONTRUCTION & MAINTENANCE SUPERVISOR | PACIFIC GAS & ELECTRIC | 1990-1995

- Managed Gas and Electric Operations including all Construction and Maintenance Crews, Meter Reading, Customer Service, and Warehouse.

Education

MANAGEMENT CERTIFICATE | 1989 | SKYLINE COLLEGE

- Major: Business Management
- Related coursework: Economics

EMERGENCY MEDICAL TECHNICIAN | 2000 | LANE COMMUNITY COLLEGE

UTILITY MANAGEMENT | 2004 | UTAH STATE UNIVERSITY

WATER OPERATIONS | 2005 | SACRAMENTO STATE UNIVERSITY

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 102

TO THE TESTIMONY OFF TODD SIMMONS

ON BEHALF OF

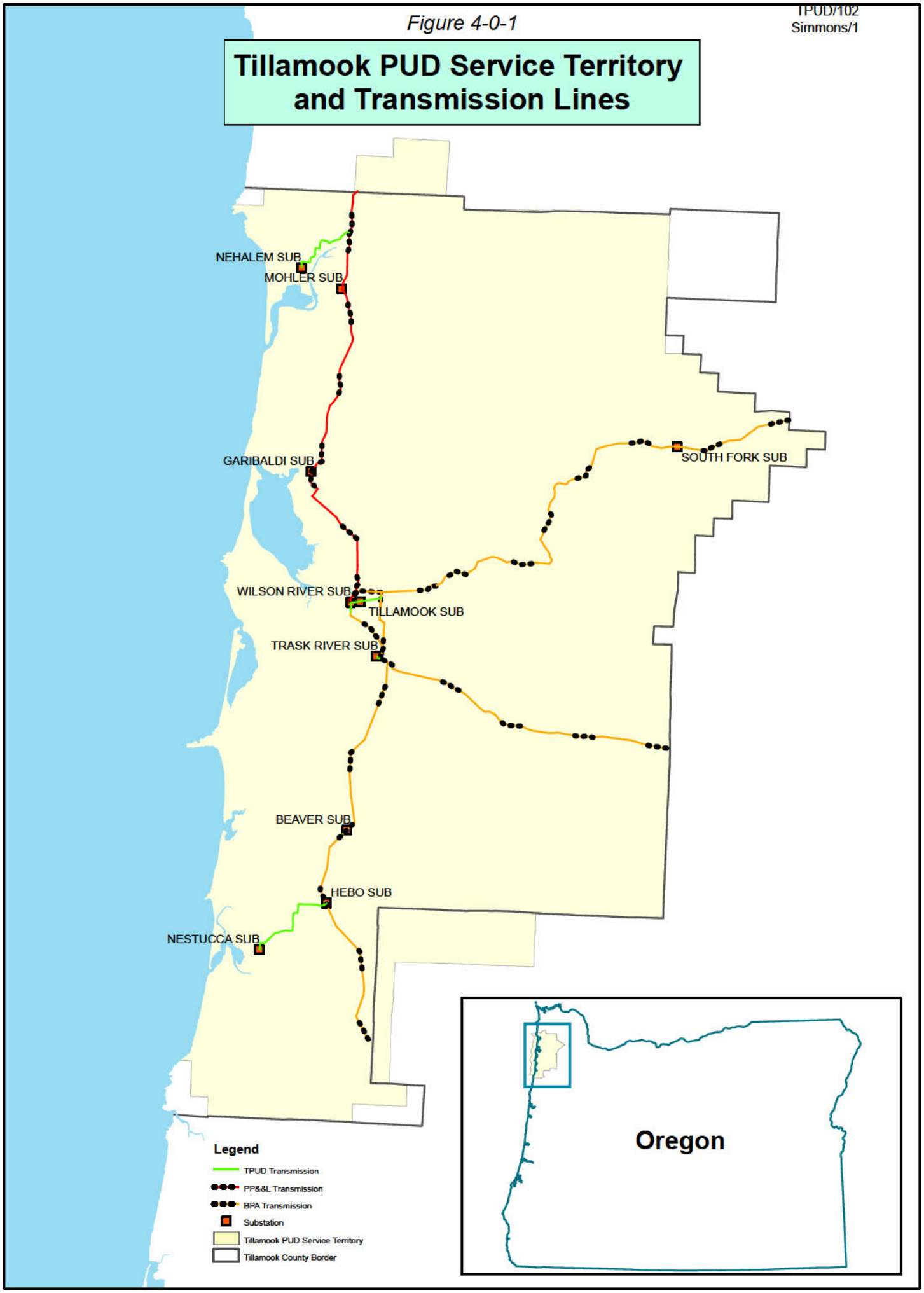
TILLAMOOK PEOPLE'S UTILITY DISTRICT

SERVICE TERRITORY MAP

October 6, 2017

Figure 4-0-1

Tillamook PUD Service Territory and Transmission Lines



BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 103

TO THE TESTIMONY OFF TODD SIMMONS

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

TPUD BOARD MINUTES

October 6, 2017

Tillamook People's Utility District
Agenda for January 17, 2017
Regular Board Meeting

- **3:30 p.m. – Board Workshop**
- **4:30 p.m. – Executive Session**
- **6:00 p.m. – Regular Board Meeting**

- **Presentations by the Public: The Tillamook Bay Habitat and Estuary Improvement District**
  Presentations will be limited to five minutes per person or group unless prior arrangements for additional time have been requested through the general manager's office.

- **Oath of Office for Newly Elected Directors – Hewitt and Olson**

- **Installation of New Officers:**
  Barbara Trout, President
  Doug Olson, Vice President
  Ed Jenkins, Treasurer
  Ken Phillips, Secretary
  Harry Hewitt, Director

- **Approval of Minutes** (Voice Vote) Pgs. 1-9
  - December 13, 2016 Regular Board Meeting
  - December 16, 2016 Special Board Meeting

- **Department Reports**

General Manager	Pgs. 10 **ACTION ITEM(S):** Approve Resolution No. 17-01-01 "A Resolution Authorizing Appointment of Representative to the Board of the Tillamook Intergovernmental Development Entity"
Customer Services	Pgs. 11-13 **ACTION ITEM(S):** Approve Write-offs $1,730.76
Human Resources	Pgs. 14 **ACTION ITEM(S):** None
Public Relations	Pgs. 15-19 **ACTION ITEM(S):** Authorize the General Manager to execute a wheeling suspension agreement with the Port of Tillamook Bay
Operations	Pgs. 20-21 **ACTION ITEM(S):** None
Engineering	Pgs. 22-25 **ACTION ITEM(S):** None
Finance	Pgs. 26-30 **ACTION ITEM(S):** None
Information Technology	Pgs. 31-33 **ACTION ITEM(S):** None

- **Approval of December 2016 Accounts Payables** (Voice Vote)

- **Items from the Board:**

This is a public meeting with handicap accessibility. Those who attend the meeting and require special accommodations should contact TPUD (800-422-2535 or 842-2535). The Board reserves the right to conduct an Executive Session according to ORS 192.660

Tillamook People's Utility District
1115 Pacific Avenue, PO Box 433
Tillamook, OR 97141

December 13, 2016 – Regular Meeting

Board Members Present:

Harry Hewitt, President
Barbara Trout, Vice President
Doug Olson, Treasurer
Ed Jenkins, Secretary
Ken Phillips, Director

Staff Present:

General Manager/Human Resources
Terri Filosi, Human Resources Director (absent)
Nancy Dillard, Executive Assistant; Recording Secretary

Customer Services
Marty Holm, Customer Services Manager

Engineering
KC Fagen, Engineering Manager

Finance
Jim Martin, Finance Manager/Interim General Manager

Information Technology
John Luquette, Information Technology Manager

Operations
Wade Scott, Operations Manager
Wayne Greeson, Material/Purchasing Supervisor

Public Relations
Barbara Johnson, Public Relations Manager

General Counsel: Tommy Brooks, Attorney - Cable Huston (conference call until 6:36 p.m.)

Guests: David Mast, Doris Mast, Hope Hewitt, Patty Olson, Kurt Mizee (left at 6:36 p.m.), Case Anker (left at 6:36 p.m.), and Filomara Anker (left at 6:36 p.m.)

Call to Order

President Hewitt called the meeting to order at 6:00 p.m.

Tillamook to Oceanside Transmission Line

KC Fagen recommended that the Board approve the proposed Tillamook to Oceanside Transmission Line route segments E1, C2 and W2 and direct staff to proceed with the necessary easements and permits, including the Conditional Use Permit application with Tillamook County. The staff recommendation was presented at the November Board Meeting.

Public Input

Kurt Mizee, owner of Tilla-Bay Farms, addressed the process that was followed for siting the Tillamook to Oceanside Transmission Line. He felt that there should have been one meeting with only the landowners that would be directly impacted. He gave staff input when he met with them and the staff recommended route is opposite of what he asked for. He realized that this has been a long process for staff and the board and has gone on for at least 5 years, but from his perspective his family has been farming their property for 99 years through four generations and now the District is proposing to go through their property. He doesn't see that as acceptable, especially since there are already power lines that cross his property. Mizee stated that they will be fighting the process every step with legal counsel.

Doris Mast stated that she thinks that the route should follow W1 instead of route W2 because it is cheaper, shorter with fewer curves, and it would also give the District its own right-of-way.

Fagen responded to Mizee's comments. There was input from multiple landowners in the area of Mizee's farm. One landowner wanted one route and another landowner wanted a different route. Multiple avenues and a lot of information were weighed in order to select the recommended route. In regards to the western route, both of the property owners in that area preferred route W2 and fewer roads will need to be built on that route.

Mizee stated that he had asked multiple times for staff to personally notify him and other potentially affected property owners anytime the transmission line came before the board in any capacity. There was no personal notification to property owners when staff presented the route to the Board at the November Board Meeting.

Board Comments

Doug Olson stated that he will be voting in favor of staff's recommendation. The things he looks for in a project are:

1. Need. Initially he was suspect of whether there was need, but the previous engineer, Bob White, and the current engineer, KC Fagen, have convinced him of the need for a variety of reasons. Besides need there are issues of reliability, capacity, safety, and convenience.

2. Cost Benefit. The project is in the $10 million range making this one of the most significant decisions that the Board will make. The transmission line will last up to 35 years without significant modifications.

3. Timeline. It will take two years or more to complete the transmission line project.

Olson has been to a number or meetings concerning the transmission line and took a tour to look at all of the potential routes. Approximately 36 routes options have been looked at starting at the substation going south, going straight through the city, and going north. The first route that was selected was the route going straight through the City of Tillamook. This route was approved by the City of Tillamook Planning Commission, but was denied by the City of Tillamook. Tillamook PUD appealed the decision to the Land Use Board of Appeals (LUBA), but was denied.

There have been two outside groups helping with this project. The first was the Citizen's Advisory Group. Olson attended some of the meetings and was impressed with the variety of community members that were on the committee. While the committee wasn't comprise of only landowners that would potentially be affected by the project, they were all Tillamook PUD rate payers and should have a say in the project. The District also had a professor develop a chart to help with route selection. Olson felt the chart wasn't useful, because the lack of participation made it statistically invalid. He did like the points that were raised in the process.

Olson feels it is time to make a route selection. There are 2,100 rate payers making up 10% of the Districts customers in the Oceanside area that are entitled to safe, reliable and affordable energy and this project will provide these this to them. When crews have to work on the distribution line to Oceanside, power has to be turned off to those customers. There is no other way to feed that area and power can be off for a considerable length of time.

Currently there are 108 miles of transmission line. Without those miles Tillamook PUD wouldn't have power. Some of the transmission lines are owned by Tillamook PUD, some Bonneville Power, and some are owned by PacifiCorp. The proposed transmission line would add eight miles. Olson thinks that the proposed route impacts the least amount of people, even though it is on commercial property and farm land.

The cost of the project has gone up in excess of $1 million since the beginning. He is mindful of the 21,000 people that will bear the cost of the $10 million project. The cost of the project is increasing approximately $200,000 per year. Delaying the project just increases the burden on the rate payers.

The project doesn't have anything to do with wave ocean energy. This topic came up quite a while ago and was set aside. Olson has followed the wave ocean energy process carefully and doesn't believe that there will be ocean energy off of Tillamook County in the foreseeable future.

When starting the process, routes south of the City of Tillamook were looked at, but dismissed due to the number of homes, the mill, and the airport. The central route was the least expensive, but impacted many businesses. Staff tried to move forward with this route, but was unsuccessful. The only route Olson thinks would be viable is one going north. There is some impact to private property, but modifications to the route have tried to minimize that.

Olson would like to vote in favor of staff's recommendation and to direct staff to go to the County Planning Commission. All of the parties will have ample opportunity to make their case before the Tillamook County Planning Commission. If landowners are unhappy with the Tillamook City Planning Commission's decision, they can appeal to LUBA. There may be modifications to the route as the project moves forward. So far the project exists only on paper.

Director Jenkins asked Mizee if his concerns were about pole placement or that the lines crossing his property would impact his farming operation. Mizee responded that he was concerned about both. They currently have two sets of lines running across their property and the transmission line would add a third.

Director Phillips stated that he sat in on all of the CAG meetings except for one. He will be voting for the recommended route.

Director Trout asked whether staff has been working with the Port on the easement following the railroad tracks. Fagen stated that staff has had two meetings with the Port and they don't have any issues with that particular route. There seems to be sufficient room for the transmission line to be in the Port right-of-way.

Don Aufdermauer stated that he understands that Hogan doesn't want the power line to run through the middle of his field, but he thinks that having the route going down the Wilson River Loop will affect a lot more homes. He would like to see the route go from the railroad track straight over to Roby's with the pole positioned by a slough. The line could potentially go across Hogan's field with only one or two poles. He had thought that the route was set except from the end of Goodspeed Road, but now the route has changed and is near housing again. Fagen responded that in the case of the eastern routes the District is able to utilize public corridors and not private land with route E1. In the central routes, it isn't possible to go around anyone's property. Aufdermauer suggested talking to Hogan about crossing his field. If the District could save $500,000 by crossing Hogan's field, the District could use some of the savings to pay Hogan. Aufdermauer isn't as concerned about poles being on his property as he is about the other people that will be affected by the route E1. Director Jenkins reminded him that it is important to remember that this may be the route staff is recommending to be approved, but adjustments will be made as the project proceeds.

Director Jenkins stated that while he originally wasn't in favor of the CAG group, he realized it was part of the process. There will be adjustments as the project moves forward. The Board has to make a decision on a route while also minimizing the impact to landowners. Aufdermauer stated that from the beginning people did and still want to know exactly where poles will be placed. Director Jenkins replied that yes that is important, but once the route is established, the type of structure, type of poles, and length of span that the poles can withstand and other issues can be resolved hopefully to everyone's satisfaction.

MOTION: By Director Olson and seconded by Director Phillips to approve the staff report with the following routes as delineated on route E1, route C2 and route W2 with a clear understanding that those exist in theory and on paper only and can be modified based on further engineering and other such conditions as might arise. The motion was approved unanimously.

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 104

TO THE TESTIMONY OFF TODD SIMMONS

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

RATE IMPACT SHEET

October 6, 2017

From: Jim Martin
To: KC Fagen
Cc: Todd Simmons; Shirley Scott
Subject: Rate Impact of $10 million
Date: Wednesday, May 17, 2017 3:01:36 PM
Attachments: Rate Impact of $10 Milion.xlsx

Rate Impact for $10 Million Tillamook Oceanside Transmission Line and Substation

			25 years Avg	1st 10 yrs Avg	1st 5 yrs Avg	First Year
Annual Average Bond Interest (4%, 25 years)			234,000	347,000	375,000	396,000
Annual Average Property Tax			66,000	86,000	93,000	99,000
Annual Average Depreciation Expense (2.725%)			272,500	272,500	272,500	272,500
			572,500	705,500	740,500	767,500
Rate Impact on $40 million in sales			1.43%	1.76%	1.85%	1.92%
Current Rate Basic Charge	22.00	22.00	22.31	22.39	22.41	22.42
Current Rate Cost per kWh	0.0710	88.75	90.02	90.32	90.39	90.45
		110.75	112.34	112.70	112.80	112.88
Regular Residential Monthly Impact Average usage - (1,250 kWh's / mo.)			$ 1.59	$ 1.95	$ 2.05	$ 2.13

The Rate Impact of $10 million would be an increase
of 1.43% for a 25 year loan.
The first ten years of that would be at a rate of 1.76%
The first five years of that would be at a rate of 1.85%
The first one year of that would be at a rate of 2.13%

The average monthly residential bill would rise $1.59 per month
- or $1.95 for the first ten years.
- or $2.05 for the first five years.
- or $2.13 for the first one year.

Jim Martin | *Finance Manager*
Tillamook People's Utility District
P.O. Box 433 • 1115 Pacific Avenue • Tillamook, Oregon 97141
phone: 503.815.8620 | *cell:* 503.812.2390
fax: 503.815.8648 | www.tpud.org

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 105

TO THE TESTIMONY OFF TODD SIMMONS

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

RUS APPROVAL LETTER/CONSTRUCTION WORK PLAN

October 6, 2017

USDA
United States Department of Agriculture

Rural Development

USDA – RD – RUS –
Electric

11471 Business Park
BLVD, # 771876
Eagle River, AK
99577 - 1876

Voice 907-688-8732
Cell 907-244-2788
Fax 888-655-3357

February 4, 2014

Mr. Raymon Sieler, General Manager
Tillamook People's Utility District
PO Box 433
Tillamook, OR 97141-0433

Subject: Tillamook Public Utility District (OR 24- Tillamook PUD)
2014 – 2017 Construction Work Plan (CWP)

Dear Mr. Sieler:

I received two copies each of Tillamook People's Utility District (Tillamook PUD) 2014 – 2017 Construction Work Plan (CWP) certified by the professional engineer as of November 2013; Board Resolution # 14-01-01 dated January 14, 2014 accepting the four-year Construction Work Plan for years 2014-2017.

My review of Tillamook PUD's 2014 - 2017 Construction Work Plan (CWP) has been completed and the distribution facilities described therein are hereby approved for construction work plan purposes, effective January 31, 2014.

RUS Headquarters Northern Engineering Branch (NRD) must approve all Transmission & Generation Facilities (Project Code Areas of 800, 1000, 1100, and 1200) prior to commencement of construction. There are two projects of this nature that fall within the CWP. You will note that the transmission projects:

- 810B – Wilson River Substation to Oceanside Substation – 115 kV Line
- 802B – BPA owned Boyer Substation and the New Neskowin Substation – 115 kV Line

Both of these projects will require NRD Engineering Branch review and approval.

This approval is contingent upon approval of Tillamook PUD's 2014 – 2017 Environmental Report (ER) by the Rural Utilities Service (RUS) Regional Office in writing. You must have this environmental clearance from the Regional Office before commencing construction of any projects contained within this CWP, unless approval was given previously for specific projects.

I will forward a copy of Tillamook PUD 2012 – 2015 Construction Work Plan with its associated Board Resolution to staff in Washington, D.C. Thru this letter I will provide a copy of my approval of the Construction Work Plan to the Electric Program's Northern Regional Division Engineering Branch for their review and approval of items such as the transmission and generation facilities mentioned above and the required environmental clearance for all projects included in the CWP.

Construction of the facilities is subject to the conditions outlined in all applicable RUS Bulletins and Code of Federal Regulations (CFR's). Particular attention should be given to List of Materials Acceptable for Use on Systems of REA Electrification Borrowers, i.e. Informational Publication 202-1 (Available from our Web page) and Rules 7 CFR 1721, 1724, 1726, and 1794. All construction must be in conformance with provisions of the latest edition of the National Electrical Safety Code. Where local regulations or other RUS requirements are more stringent, those requirements shall govern.

It is Tillamook PUD's Board of Director's responsibility to authorize, as it determines available, the use of loan funds or general funds to finance the construction projects proposed. You should be aware that future reimbursements of general funds from RUS loan funds are subject to policies and provisions in effect at the time of loan approval. For further details, please see 7 CFR Part 1710, "General and Pre-Loan Policies and Procedures Common to Insured and Guaranteed Electric Loans." Notwithstanding this CWP approval, it should be understood that there is no assurance that advance of loan funds or reimbursement of general funds expenditures will be approved to finance the construction of facilities included in this Construction Work Plan.

Any subsequent projects that become necessary and are not covered in Tillamook PUD's current RUS approved CWP (or approved amendment), must be detailed in a new CWP amendment. Tillamook PUD must receive RUS approval of such amendments prior to commencing any construction of projects, in order to maintain eligibility for RUS financing of the projects. An ER must be prepared to cover facilities proposed in such CWP amendments and be approved by RUS before starting any construction. The CWP amendments and associated ER's should be sent to me as RUS General Field Representative.

Mr. Sieler, if you should have any questions regarding these matters please feel free to contact me. I appreciate the many courtesies and assistance extended to me by members of your staff (Mr. Robert White & Mr. Jim Martin) and your consultant Electrical Consultants, Inc. (Robert Hurtig, PE) as these planning documents were developed and reviewed.

Sincerely,

Eric A. Marchegiani, P.E.
General Field Representative

cc: Mr. Charles M. Philpott, Chief, NRD Engineering Branch
Mr. Brian Jenkins, Chief, NRD Operations Branch
Ms. Deirdre Remley, EES, NRD
Mr. Jim Martin, Finance Manager, Tillamook PUD
Mr. Robert White, Power Services Manager, Tillamook PUD

BORROWER'S ENVIRONMENTAL REPORT

Mitigation & Monitoring of Construction Work Plan System Improvements & Maintenance
Planned For Years 2013 - 2016 for **TILLAMOOK PEOPLE'S UTILITY DISTRICT**

Environmental Services
Group

"Engineering with Distinction"
ECI

TILLAMOOK PEOPLE'S UTILITY DISTRICT
Borrower's Environmental Report
for
2013 – 2016 Construction Work Plan

Prepared For

Tillamook People's Utility District

Submitted By:

Electrical Consultants, Inc.
3521 Gabel Road
Billings, MT 59102

June 2013

ENGINEER'S CERTIFICATION
Borrower's Environmental Report
for the
2013-2016 Construction Work Plan
Tillamook People's Utility District

I certify that this report was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer.

Robert Hurtig
Name:

June 2013
Date

78751
Reg. No.

Table of Figures

1 INTRODUCTION

The Tillamook People's Utility District (TPUD) is headquartered in Tillamook, Oregon and is a customer-owned electric distribution utility providing electric service in Tillamook County and parts of Clatsop and Yamhill Counties in Oregon. Currently they serve about 20,000 customers in an area of 1,125 square miles.

TPUD purchases and receives power from the Bonneville Power Administration (BPA) and delivers it to customers through nine substations located throughout the three (3) counties.

This Borrower's Environmental Report (BER) for TPUD was prepared not only as required by the RUS but also as a commitment to protect the environment while providing safe, reliable and cost effective electric power to the cooperatives consumers.

2 PROJECT DESCRIPTION

2.1 Introduction

This CWP was prepared by Electrical Consultants, Inc. (ECI) for TPUD in accordance with the requirements to acquire funding from the Rural Utilities Service (RUS). The purpose of the CWP is to provide TPUD with an orderly plan for carrying out construction and other needed improvements in the most economic and environmentally savvy manner possible, as well as complying with all applicable Federal, State and local requirements.

2.2 Description of Individual Projects

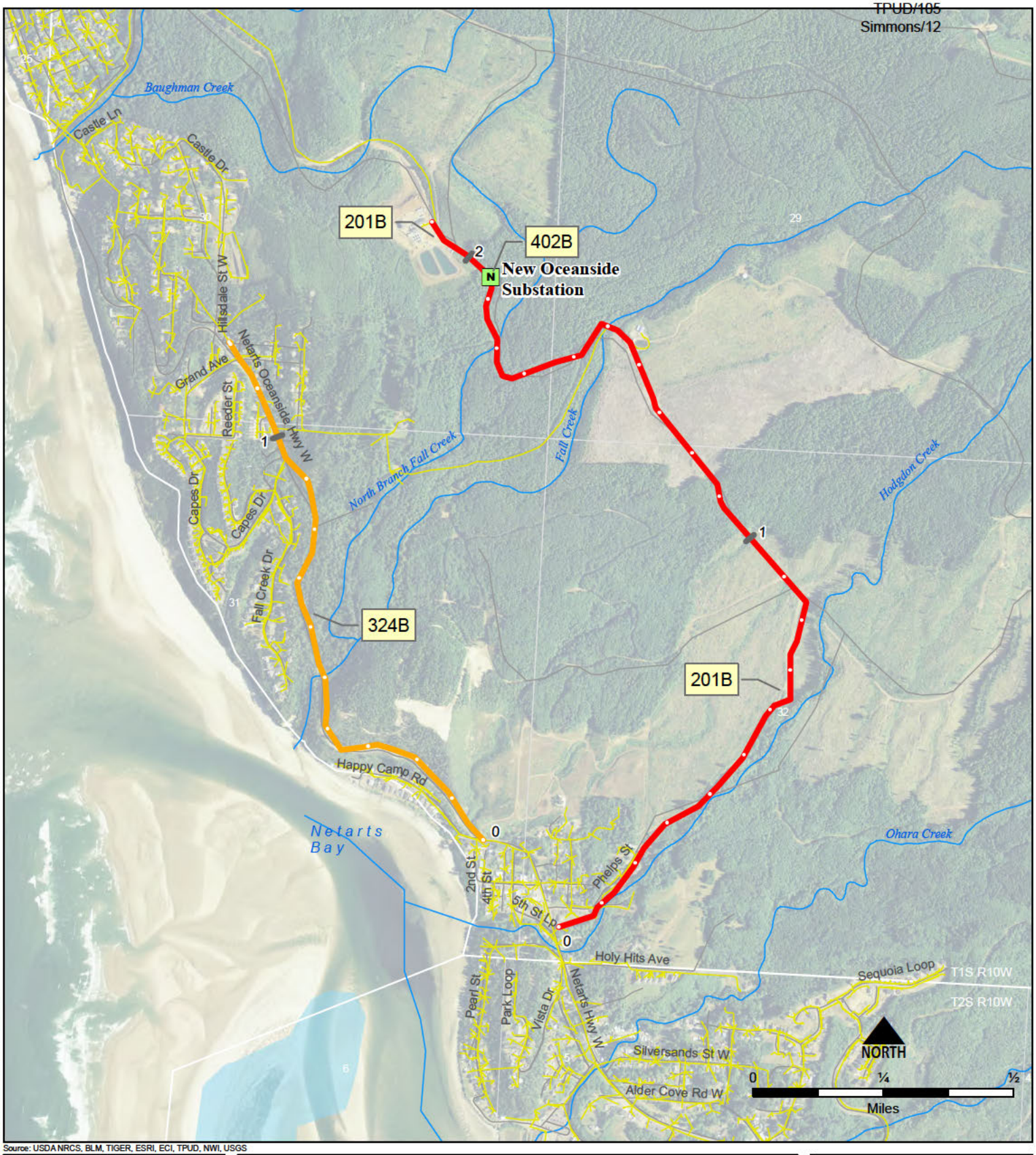
The projects described herein consist of rebuilding existing overhead and underground distribution line and rebuild of overhead transmission line with distribution underbuild, and the building of two new (2) substations. All of these upgrades are needed in order to continue to provide adequate electrical service to TPUD's electrical consumers in their service territory.

System additions and improvements contained in the TPUD 2013-2016 CWP are described by each individual substation service area.

RUS CWP Code	IMPROVEMENT LIST
BEAVER SUBSTATION SERVICE AREA - TILLAMOOK COUNTY, OR	
329B	Reinsulate - three-phase, two-phase, and single-phase 12.47 kV line to accommodate a 24.9 kV line overhead distribution line. The step-down transformers between Beaver and Trask Substation south of the Sand Lake tap allowing this section of line to be fed from Trask Substation. Also, a step-down transformer will be added to the Boy Scout Camp tap. *(See Figure 2.1)*
GARIBALDI SUBSTATION SERVICE AREA - TILLAMOOK COUNTY, OR	
304B	Build - three-phase #4/0 underground distribution line to connect multiple subdivisions with a continuous underground line. This project will connect the Timber Lake development at Rockaway Beach to the existing three-phase line along Highway 101. It will provide a main backbone circuit to multiple subdivisions being constructed along and near Lake Lytle and Crescent Lake and also provide capacity for growth in the new subdivisions. *(See Figure 2.2)*
HEBO SUBSTATION SERVICE AREA - TILLAMOOK COUNTY, OR	
331B	Rebuild - #3/0 AAAC to three-phase 465.4 AAAC 24.9 kV overhead distribution line from Hebo Substation to the existing 465.4 AAAC line just beyond the tie point between Hebo and Nestucca Substation. *(See Figure 2.3)*

RUS CWP Code	IMPROVEMENT LIST
	NESTUCCA SUBSTATION SERVICE AREA – TILLAMOOK COUNTY, OR
308B	Rebuild - three-phase #4/0 AAAC 24.9 kV overhead distribution line south along Highway 101. From that point extend 753 feet northwest with new three-phase #1/0 24.9 kV underground distribution line. *(See Figure 2.4)*
401B	Build - a new substation north of Neskowin Substation with a 115 kV 15/20/25 MVA transformer 20.8/24.9 kV with LTC. This substation would have three (3) feeders exiting the substation. The first feeder would extend south to serve the loads on the southern portion of this service area. *(See Figure 2.4)*

RUS CWP Code	IMPROVEMENT LIST
	WILSON RIVER SUBSTATION SERVICE AREA – TILLAMOOK COUNTY, OR
201B	Build - install two (2) getaway feeders from the Oceanside Substation, one extending north to the three-phase line and one extending south 2.0 miles to connect at Phelps Street, constructed with 500 MCM URD 25 kV cable. This project is required to establish a feeder tie to the existing three-phase line dividing it into two (2) feeders. *(See Figure 2.5)*
316B	Rebuild - three phase #3/0 AAAC to three phase 652.4 AAAC 24.9 kV overhead distribution line west along the road to Netarts Highway. *(See Figure 2.6)*
319B	Rebuild – existing transmission line with under build distribution line along Highway 6 and the Wilson River Loop. This project is required due to the installation of a new highway underpass. *(See Figure 2.7)*
324B	Rebuild - three-phase #6 Hd Cu with three-phase 652.4 kCM AAAC 25 kV overhead distribution line. This project will begin at the end of the 500 MCM feeder getaway extending south to pole location 2 01 10 31 7305. This project is required to improve voltage levels at the extremities of the new feeder out of Oceanside, as well as reduce losses on this feeder. *(See Figure 2.5)*
325B	Rebuild - the existing 115 kV transmission line between Keller and Tillamook, OR. As part of this project, Tillamook PUD will need to redo the underbuild from the Narrows to Lee's Camp. This will be constructed with #1/0 AAAC and a #2 AAAC neutral. Areas of this project are remote and may necessitate the use of a helicopter to place materials. This rebuild project is located solely on State Lands. It is important that TPUD work with the State to comply with any permitting requirements. *(See Figure 2.8)*
330B	Rebuild – approximately 0.75 miles of overhead distribution line along Highway 6 near mile marker 7. The rebuild will consist of three-phase #1/0 AAAC 24.9 kV overhead distribution line. This rebuild project is located solely on State Lands. It is important that TPUD work with the State to comply with any permitting requirements. *(See Figure 2.9)*
402B	Build - new substation located southeast of Oceanside, OR adjacent to the new Oceanside treatment facility. This substation will have a 115/24.9 kV, 24/32/39.8 MVA transformer with an LTC. This transformer would be moved from the Wilson River Substation. There will be four (4) feeder bays with two (2) feeders initially exiting the substation. The first feeder will feed the Oceanside area. The second feeder will tie into the existing three-phase line and serve the Netarts area back towards Tillamook, OR with the open at recloser R0032. This will decrease the load on Wilson River by approximately 9.5 MW. *(See Figure 2.5)*
332B	Rebuild – approximately 900 feet of overhead distribution line with 500 MCM AL underground (URD) distribution line in the Main Street and 1st Street areas in Tillamook, OR and adding approximately 600 feet of #4/0 AL underground (URD) distribution line between 1st and Front Street just west of Main Street. *(See Figure 2.10)*



N Proposed Substation
Lines to Construct
Lines to Rebuild
Existing System Distribution Lines
Roads
Water courses
State Lands

Figure 2.5

Wilson River Service Area
Jurisdiction Map

ELECTRICAL CONSULTANTS, INC.

File: R:\Projects\540-081_CRI 115 kV SBRU Transmission Line\GIS\MXD\Jurisdiction.mxd, Jul 13, 2010 12:42:35 PM

503.986.5298	Oregon Department of State Lands, Attn: Mike Deblasi, 775 Summer Street NE, Salem, OR 97301
6/4/2013	Sent E-mail regarding Projects CWP 325B and 330B located in the Wilson Service Area.
6/4/2013	Please contact this agency and comply with any permit aurhtorization whether new or existing for the projects listed above located on State
6/21/2013	Mailed Addendum to agency to notify of additional project CWP 332B located in the Wilson River Substation Service Area.

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 106

TO THE TESTIMONY OFF TODD SIMMONS

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

LAND USE APPLICATION NARRATIVE

October 6, 2017

FINAL APPLICATION

Tillamook-Oceanside 115-kilovolt Transmission Line Project: Consolidated Administrative Review, Conditional Use Permit, and Development Permit Application

Submitted to

Tillamook County Department of Community Development

August 2017

Submitted by

Tillamook People's Utility District

1115 Pacific Avenue, Tillamook, Oregon 97141

and

ch2m

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Figures (located in Appendix A)

Acronyms and Abbreviations

APLIC	Avian Power Line Interaction Committee
Applicant	Tillamook People's Utility District
BMP	best management practice
BPA	Bonneville Power Administration
CFR	*Code of Federal Regulations*
County	Tillamook County
CUP	conditional use permit
DEQ	(Oregon) Department of Environmental Quality
DSL	Oregon Department of State Lands
EC1	Estuary Conservation 1 Zone
EN	Estuary Natural Zone
F	Forest Zone
F-1	Farm Zone
Feeder	An electric circuit that distributes electricity to customers
FEMA	Federal Emergency Management Agency
FH	Flood Hazard Overlay Zone
FIRM	Flood Insurance Rate Map
Highway 101	U.S. Highway 101
kV	kilovolt
MHHW	Mean Higher High Water
MP	milepost
N-1	normal less one
NESC	National Electric Safety Code
NPDES	National Pollutant Discharge Elimination System
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
ORS	Oregon Revised Statute
Project	proposed 115-kV transmission line and Oceanside Substation
RC	Rural Commercial Zone
RR-2	Rural Residential 2-Acre
RUS	Rural Utilities Services
SHPO	State Historic Preservation Office

TCCP	Tillamook County Comprehensive Plan
TCLUO	Tillamook County Land Use Ordinance
USACE	U.S. Army Corps of Engineer
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

SECTION 1

Request

The Tillamook People's Utility District (Applicant) proposes to construct a new 115-kilovolt (kV) aboveground transmission line between the Bonneville Power Administration's (BPA) Tillamook Substation, located to the east of the City of Tillamook on Oregon Route 6, to a new substation (Oceanside Substation) near the community of Oceanside in Tillamook County (County) (see Figure 1 in Appendix A). The proposed 115-kV transmission line and Oceanside Substation are referred to herein as the "Project." Approximately 8.4 miles of the proposed 8.6-mile transmission line route are within the jurisdiction of the County, and the remaining 0.2 mile is within the jurisdiction of the City of Tillamook.

The Applicant requests approval of an administrative review, conditional use permit (CUP), and development permit from Tillamook County for construction of the approximately 8.4-mile portion of the proposed transmission line that crosses Tillamook County and the proposed Oceanside Substation at the terminus of the line. The portion of the proposed transmission line within the County's Farm Zone (F-1) and Estuary Conservation 1 Zone (EC1) (see Figure 2 in Appendix A) is subject to the County's administrative review and approval. The portions of the proposed transmission line within the Forest Zone (F), Rural Commercial Zone (RC), Rural Residential 2-Acre (RR-2), and Estuary Natural Zone (EN) are subject to the County's approval of a CUP. The Project is also subject to the County's approval of a development permit where the Project crosses floodplains in the County. This application narrative and supporting materials demonstrate the Applicant's compliance with the applicable land use regulations for the County's combined approval of the requisite administrative review, a CUP, and a development permit.

SECTION 2

Project Overview

Approximately 8.4 miles of the 115-kV aboveground transmission line and its terminal substation are proposed to be located in Tillamook County, and the remaining 0.2 mile of the line is proposed to pass through the City of Tillamook. The 8.4-mile segment of the transmission line and the 115-kV to 24.9/14.4-kV distribution substation as shown on Figure 2 (see Appendix A) are the components of the Project subject to Tillamook County's jurisdiction.

The Project is proposed through six base zones and three overlay zones within Tillamook County, as shown on Figure 2 (see Appendix A) and discussed in Section 5.1 of this application. The proposed substation is entirely in Tillamook County near the communities of Netarts and Oceanside. The proposed substation will have two electric circuits (distribution feeders) serving the Oceanside and Netarts areas, and will also act as a backup source for the Applicant's Wilson River Substation.

A Citizen Advisory Group was formed to review and recommend a corridor for the proposed transmission line. The Citizen Advisory Group was made up of 14 volunteers from the general Project area and included landowners, agency staff, representatives from agricultural and dairy industries, and representatives from the business community. The proposed location for the Project was selected following a detailed analysis of potential alternative routes as well as recommendations received from the Citizen Advisory Group. This analysis incorporated a systematic rating system that was established for evaluating each alternative. The Applicant examined each alternative against a set of established criteria such as permitability, ease of obtaining corridor approval, access, constructability, and a series of other environmental, land use, and financial factors. The original transmission line corridor recommended by the Citizen Advisory Group was then adjusted based on feedback from public meetings and individual meets with affected landowners. Adjustment included relocating the transmission line from the middle of farmland to adjacent public corridors including the Port of Tillamook Bay's railroad right-of-way and Wilson River Loop Road, where the Project is east of U.S. Highway 101 (Highway 101).

Wherever possible, the Project has been routed adjacent to or collocated with existing linear developments within the County. These linear developments include the Port of Tillamook Bay's railroad right-of-way from the Tillamook Substation north to Wilson River Loop Highway, along Wilson River Loop Highway, Goodspeed Road east of Highway 101, and various existing access roads through private forest land to the west of Bayocean Road. Parallel construction or collocation with existing linear corridors (for example, highway and road rights-of-way, utility corridors, or previously developed areas) was one of the criteria used in evaluating routes. Collocation minimizes potential impacts to additional landowners, can reduce the need to clear new corridors, and lessens the potential environmental impact when compared to the clearing for new routes through previously undeveloped areas.

The main Project components and construction-related activities are outlined in Section 3 of this report.

SECTION 3

Project Description

This section describes the main Project components proposed in Tillamook County, the construction-related activities associated with components, estimated land disturbance, maintenance, fire protection, avian protection, noxious weed control, other permits required, and the Project schedule. The Project will require the establishment and maintenance of a Project corridor, including the installation of power poles and conductors, as well as the establishment and maintenance of temporary and permanent access roads and temporary work areas. The power poles will include a variety of pole types such as 1-pole (i.e., monopole), 2-pole, and 3-pole structures. The term "power pole" is used herein for each pole type. Typical power pole diagrams are included in Appendix B.

3.1 Transmission Line

3.1.1 Corridor

The transmission line will require the establishment of a corridor with a width of 50 to 100 feet. The corridor will be established through the use of existing easements where available. Where the Applicant does not have an existing easement, a new easement will be obtained. The section of the transmission line that requires only a 50-foot easement is within the central Tillamook Valley floor from the BPA Tillamook Substation east of Highway 101 (approximate milepost [MP] 0.0) to Bayocean Road (approximate MP 4.3). The 100-foot easement is needed in the forested area west of Bayocean Road, located from approximate MPs 4.3 to 8.6, to ensure adequate line clearance from trees and other forest vegetation. The proposed transmission line corridor is shown on Figure 3 in Appendix A.

In addition to the use of easements, the Applicant focused on selecting a route that maximizes use of existing rights-of-way (that is, roads and railroads). Collocation with existing rights-of-way minimizes potential impacts to additional landowners, reduces the need to clear new corridors, and lessens potential environmental impacts. The Applicant will work with the County, the Oregon Department of Transportation (ODOT), and Port of Tillamook Bay Railroad to secure requisite permits and approvals to use portions of the 50- to 100-foot-wide corridor that cross existing rights-of-way.

After construction, the corridor will be used by the Applicant as needed to perform periodic inspection and maintenance work on the transmission line. The corridor under and around the transmission line can continue to be used for its current purpose if the landowner chooses to do so, as long as the use does not conflict with the safe operation of the line and meets the National Electric Safety Code (NESC), Rural Utilities Services (RUS), and Applicant standards for clearances and use. Allowed uses typically include agricultural, grazing, hunting, and some development such as parking lots or roads. Uses that are disallowed include development of tall structures such as buildings or any use that degrades the required clearances as stipulated by the NESC, RUS, and Applicant standards. In some cases, existing or planned structures will be allowed by and incorporated into the easements. The *Farm and Forest Impacts Assessment* in Appendix C identifies the potential for the Project to cause significant impacts to farm or forest practices.

3.1.2 Power Poles

Throughout the Project area, 87 power poles are proposed for the transmission line conductor. Most of the power poles (84 power poles) will be located in the County, and three power poles will be located in the City of Tillamook (see Figure 3 in Appendix A). The power poles will vary in height, ranging approximately between 50 and 125 feet above ground. The actual height and diameter of each pole will be determined by topography and safety requirements for conductor clearances. Power poles will be

either steel or wood, and will consist of a single pole or two or three poles depending on soil types and span lengths (see Appendix B).

Monopoles will be used from MPs 0.2 to 2.8, at which point the line turns south off of Goodspeed Road; 2-pole and 3-pole configurations will be used from MP 2.8 to the end of the Project. Wood poles will be used from MPs 0.0 to 1.6 and from MP 4.7 (west of Bayocean Road) to the end of the Project, except for where self-supporting steel poles are needed. The steel power poles will be tubular with a painted galvanized coating and will measure approximately 1.5 to 3.5 feet in diameter at the ground line. It is anticipated that the steel power poles will be placed on a vibratory concrete caisson base from Highway 101 to Bayocean Road. The depth of the base and the use of vibratory caisson will vary from 20 to 40 feet deep based on soil conditions and the loads supported by the base. The footprint of each power pole's ground penetration is considered a permanent disturbance as provided in Section 3.3.4 (Total Land Disturbance). The actual power pole diameters provided in Table 3-1 are used to analyze impacts for the 84 power poles located in the County.

The distance between power poles will vary depending on different factors including but not limited to topography, location of jurisdictional waters, existing land use, and clearance requirements. In Tillamook County, the distance between power poles ranges between approximately 300 and 1,600 feet. The minimum conductor clearances from the ground and other power poles will exceed the requirements of the NESC and the RUS, maximizing the underlying property owner's use of the land.

Dead-end power poles will be used at regular intervals on the line to accommodate adequate conductor tensioning. Guy wires support some of the dead-end power poles and are held in place by subsurface anchors. Other power poles are self-supporting and do not require additional down guys, thereby reducing impacts on land usage.

3.1.3 Conductors

The electrical conductor is the wire (or wires) strung from the power poles that carries or moves electric current. The proposed single-circuit line will consist of three conductors, one per phase, that carries the electrical current making up the single-circuit configuration.

The conductors will not be covered with insulating material; instead, they will use air for insulation and ground clearance for public safety. Conductors will be attached to the power poles using insulators to prevent the electricity in the conductors from moving to other conductors, the power poles, and the ground. Arial markers will be used at river and slough crossings to provide visibility in accordance with the Applicant's *Avian Protection Plan* (Tillamook PUD, 2017).

A smaller overhead shield wire will be attached to the top of the power pole within a mile of the Tillamook Substation. The overhead shield wire extending for about a mile out of the proposed Oceanside Substation will have a core containing optical fibers used to transmit system protection data. The shield wire will provide ground protection to the transmission line from lightning damage.

3.1.4 Substation

The proposed Oceanside Substation is required to electrically connect the new transmission line to the existing distribution system. It is a necessary component between transmission and distribution. The new substation will occupy approximately 2 acres of land directly adjacent to the south side of the existing Netarts-Oceanside Sanitary District wastewater treatment plant (see Map 8 of Figure 3 in Appendix A). The substation will be similar to the appearance of other existing electrical substations located within Tillamook County and owned and operated by the Applicant, including the use of an 8-foot-high perimeter chain-link fence. The proposed conceptual layout of the Oceanside Substation is shown in Appendix B.

The proposed Oceanside Substation will have space for three feeder bays with the appropriate reclosers and underground getaways. It will also have a 20/26/33 megavolt-ampere power transformer with the appropriate protection equipment. The substation yard and at least 5 feet around the perimeter of the fence will be rock. The substation will have aboveground, steel-supporting, aluminum bus work for the distribution feeders. It will also have a dead-end power pole to support the transmission line before dropping down into switching and protective equipment for the power transformer. The substation will also have an unmanned control house that is approximately 400 square feet and will house protective relays, meters, batteries, and control equipment.

3.2 Construction Activity

3.2.1 Transmission Line Construction

Transmission line construction involves a land survey of the route centerline, final design of the line (detailing exact power pole selection and placement), creation of some access roads to the power pole locations, where necessary, augering of the power pole holes, installation of the vibratory caissons (bases), erection of the power poles and their associated hardware, installation of guys and anchors, installation of conductors, traffic flagging along roadways, and testing of the line before it is placed in service.

3.2.2 Equipment

Typical equipment for this type of line construction includes the following:

- Pickup trucks
- Line trucks
- Graders and bulldozers (potentially for portions of access roads primarily in the forested areas)
- Excavators
- Tractor-trailers
- Cranes
- Drum pullers and tensioners
- Harrows
- Broadcast seeders

3.2.3 Access Roads

Access is required along the Project corridor for line construction and ongoing maintenance. The majority of the construction access will be accomplished through the use of existing roads with spur roads constructed to the new power poles in the forested areas. The Applicant has reviewed existing roads along the entire Project corridor and it is anticipated that minimal improvements will be needed on existing roads during construction. However, some new access roads will be required within the County's F and F-1 zones as shown on Figure 3 in Appendix A. These roads will be located within the transmission line corridor wherever possible and kept to a minimum to avoid existing land use disruption. The Applicant includes access rights as part of the easements that will be obtained.

New access roads will typically be a maximum of 15 feet wide. Generally, these new roads will be unimproved unless soil conditions require the use of gravel at specific locations to provide sufficient load-bearing strength. No culverts will be required for new access roads within perennial water bodies along the Project route. New access roads for the Project will only cross two perennial water bodies (Hall Slough and a tributary to Doughtery Slough) between MPs 0.0 and 1.2. However, construction will be conducted during the dry summer months and access across these water bodies will occur where access currently exists by simply making minor improvements to the existing roads if necessary. Fences, gates, cattle guards, and additional rock will be added to access roads where necessary. Following

construction, the road area will only be maintained as necessary to allow for maintenance of the transmission line. The need for road maintenance along the valley floor from approximately MPs 0.0 to 4.3 is not anticipated. Maintenance access will be by foot or will be performed with track vehicles that are designed to traverse soft soils.

In some areas of central farmland within the F-1 zone, only temporary access roads will need to be constructed. These temporary access roads will consist of platforms (typically a mesh of wooden planks) that are installed on top of the existing farmland and capable of supporting the equipment needed to install the power poles and foundations. The temporary access roads will be needed for about 30 days for each power pole that does not have road access, including 12 power poles just east of Highway 101 along the Port of Tillamook Bay railroad tracks (power poles 4 through 15), and 10 power poles from just south of Goodspeed Road to Bayocean Road (power poles 40 through 49) (see Figure 2 in Appendix A).

Approximately 0.4 mile of new permanent access roads will be required in the County's F zone and 2.8 miles of temporary access roads will be required in the County's F-1 zone, estimated to result in approximately 0.7 acre of permanent forest disturbance and approximately 5.1 acre of temporary farm disturbance. Figure 2 in Appendix A shows the locations of the permanent and temporary access roads within the County's F and F-1 zones.

3.2.4 Vegetation Removal

Construction includes vegetation removal where necessary within the corridor to install the power poles and subsequently to protect the operational integrity of the transmission line. Low-growing vegetation, such as low-lying shrubs and grass, will only be removed where power poles are being installed. This lower-growing vegetation will be allowed throughout the corridor following construction.

Taller vegetation such as trees and tall shrubs exceeding 20 feet in height will likely need to be removed or topped (if in higher-value habitat areas) at about 20 feet from within the corridor. Trees will be removed within approximately 30 feet of power poles. In limited locations within the County, taller vegetation in riparian and wetland areas will need to be removed, such as where the line crosses Hoquarton Slough (see Figure 3 in Appendix A). In these higher-value habitats, the taller vegetation will be replaced with low-growing native species within the right-of-way and similar vegetation including trees replanted in the vicinity of the right-of-way following construction.

Vegetation removal in the vicinity of riparian areas will be avoided to the greatest extent practicable and will only be done to ensure safe operation of the line in a fashion that meets the NESC, RUS, and Applicant standards for clearances. In coordination with the Oregon Department of Fish and Wildlife (ODFW), the Applicant will mitigate for removal of native trees (tree defined as having a diameter at breast height [measured 4.5 feet off the ground] of 6 inches or greater) within the County's regulated riparian buffers by planting two trees for each one removed in the buffer. Vegetation management to maintain access and clearances will be performed over the life of the Project as part of the ongoing line maintenance.

3.2.5 Power Pole Installation

At each power pole site, leveled areas are needed to facilitate the safe operation of construction cranes and other equipment. These temporary power pole installation areas are required for the location and safe operation of cranes. The temporary disturbance for each power pole installation area is approximately 30 feet by 50 feet. The areas will be cleared of vegetation only to the extent necessary and will only occur within the 50- to 100-foot-wide transmission line corridor and temporary pulling and tensioning sites.

Materials required for assembling the power poles, including the power poles themselves, cross-arms, insulators, miscellaneous hardware, and stringing sheaves, will be delivered to each power pole site by

truck and pole trailers. The power pole will then be assembled on the ground, rigged with insulators and stringing sheaves at each conductor position, raised, and set in place.

Power poles will be installed using direct embedment, steel caissons, concrete base, or traditional concrete foundations. Direct embedment will be achieved by augering a hole slightly larger than the power pole, installing the power pole, and backfilling with gravel. The steel caissons and concrete bases will be vibrated directly into the ground. The soil will be augured or vacuumed from within the steel caisson and the pole installed similar to direct embedment. The steel caissons will be used to enhance strength and stability of the pole. Steel poles will be fitted over the concrete base and secured with bolts or slip joints. Traditional concrete foundations using rebar cages and a bolted connection at ground line to attach the power pole to the foundation will be used at heavy-angle, self-supporting power poles, mainly on the east side of Highway 101.

3.2.6 Conductor Installation

For public protection during wire installation, guard structures will be erected over Highway 101, active railroads, power lines, and other obstacles. Guard structures consist of H-frame power poles, with a long cross-arm, placed on either side of an obstacle to prevent conductors from falling on or across the obstacle. Equipment for erecting guard structures includes augers, line trucks, pole trailers, and cranes. Guard structures may not be required for small roads. On such occasions, other safety measures such as barriers, flaggers, or other traffic control will be used.

Installation of the sock line (conductor pilot line or pulling rope) will be performed via ground methods. Ropes will be draped from the stringing sheaves at each power pole. A pilot line is then strung along the ground and attached to each rope at the power pole location. The pilot line will be pulled up to the sheave and pulled through until all sheaves within a pull section have the pilot line installed through the sheaves. At that time, the pilot line will be attached to the pulling line and will be pulled back through before being attached to the conductor for the final pull-through. The conductor will be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end.

3.2.7 Conductor Pulling and Tensioning Sites

Conductor pulling and tensioning sites will be located up to 2 miles apart on straight line sections where dead-end structures are placed and at some angle points along the line route. The actual locations will be determined by the final line design and by the construction contractor. The level area required for the safe operation of pulling and tensioning equipment could be up to 100 feet by 200 feet. As with the power pole sites, the work area will be cleared of vegetation only to the extent necessary. After line construction, the pulling and tensioning sites will be returned to natural contours as much as possible and will be restored to preconstruction condition to the extent practicable and as required by the landowner. Figure 3 in Appendix A shows the location of the proposed pulling and tensioning sites.

3.2.8 Staging Areas

The construction contractor will need secure staging areas to store materials and equipment along the route. The construction contractor is expected to identify suitable locations in the County. The Applicant's pole yard next to the Wilson River Substation will be used as the main staging area. The construction contractor will make the necessary arrangements if additional staging areas are needed.

3.2.9 Construction Workforce

The peak construction workforce is estimated at 16 to 20 people, working at various locations along the line. In a given location along the transmission line route, the peak workforce is estimated at six to eight people, including flaggers.

3.2.10 Construction Traffic

Construction traffic will be minor due to the relatively short length of the transmission line in traffic areas, the remoteness of the majority of the Project and the short duration of the construction at any one location, typically fewer than 20 days. Construction traffic will consist of the construction crews traveling to and from the construction sites (that is, power pole locations and staging areas). More than one construction crew might be working at various locations along the route at the same time.

Construction materials (e.g., power poles, cross-arms, hardware, conductors) will be delivered along the route by truck. Line trucks, cranes, and other needed equipment will also travel to the site on a daily basis during the construction period.

3.2.11 Substation Construction

Substation construction involves a land survey of the substation site, final design of the substation, creation of an access road to the substation, clearing and grading of the substation site, construction of the substation components, and testing of the substation before it is placed in service.

3.2.11.1 Equipment

Typical equipment for this type of substation construction includes the following:

- Pickup trucks
- Line trucks
- Graders and bulldozers
- Excavators
- Tractor-trailers
- Cranes

3.2.11.2 Access Road

A permanent all-weather gravel access road providing sufficient load-bearing strength will be required to the proposed substation site to provide access for personnel, material deliveries, vehicles, trucks, heavy equipment, low-boy tractor trailer rigs (used for moving large transformers), and ongoing maintenance activities at the site. This type of road is typically constructed using bulldozers, excavators, road graders, and dump trucks.

The access road will be a maximum of 20 feet wide and approximately 500 feet long and is estimated to result in less than 0.25 acre of disturbance. It will connect the proposed substation to the existing Netarts-Oceanside sewer treatment plant road. The access road will be included in the final design of the substation and submitted to the County prior to Project construction.

3.2.11.3 Clearing and Grading

Clearing of vegetation, stumps, and organic material will be required for the entire substation area. Danger trees outside this perimeter will also be removed. The substation site will also be graded to provide an even 3 percent slope for drainage. Clearing and grading work is generally accomplished with chainsaws, excavators, bulldozers, and backhoes.

3.2.11.4 Grounding

A grounding system consisting of ground rods, bare copper wire, and clean stone will be required in the proposed substation for detection of faults and for personnel and public safety. The ground rods are driven 10 feet deep into undisturbed soil and are connected to the bare copper wire that is buried in soil approximately 18 inches deep in a grid-like pattern in and around the substation. This wire is connected to aboveground equipment. The surface of the substation and an area extending 3 feet beyond the

fence is covered with clean stone to provide a high resistance surface. Trenchers, backhoes, road graders, and dump trucks are typically used to construct the grounding system.

3.2.11.5 Fencing

The substation will have a perimeter chain-link security fence that is 8 feet high, with 1 foot of barbed wire on top. The holes for the fence posts will be dug to a maximum depth of 3 feet utilizing small augers.

3.2.11.6 Foundation Installation

Foundations for substation components are generally slabs, spread footings, and drilled piers. The excavation is typically performed utilizing backhoes, excavators, or truck-mounted augers. The rebar will be hand placed and tied into wooden forms built onsite. The concrete is then poured into the forms by concrete trucks.

3.2.11.7 Steel Support and Bus Work

The steel support framework is typically delivered to the site on flatbed trucks. It is typically offloaded and erected on the foundations utilizing cranes or other lift equipment. The appropriate insulators and switches are installed utilizing lift equipment and hand tools. The aluminum bus work is bent onsite utilizing conduit bending tools and welded together. It is installed utilizing lift equipment and hand tools.

3.2.11.8 Major Electrical Equipment

Major electrical equipment such as power transformers, reclosers, pad-mounted switches, circuit switchers, potential transformers, and current transformers typically is delivered to the site on flatbed trucks, lowboys, and pickups. Cranes and lift equipment are typically used to offload and place onto the slabs, foundations, or steel supports. They are then appropriately connected.

3.2.11.9 Oil Containment

The power transformer is filled with an insulating mineral oil. Containment systems prevent oil from this equipment from seeping into the ground or water bodies in the event of a rupture or leak. Monitoring system help detect oil leaks. Oil detection with automated alarming and containment systems will be installed as part of the substation construction. A Spill Prevention Control and Countermeasures Plan will be developed to address the requirement in U.S. Environmental Protection Agency regulations 40 *Code of Federal Regulations* (CFR) 112.

3.2.11.10 Control Building

A control building that houses protective relays, control devices, battery banks for primary control power, and remote monitoring equipment will be provided. Typically, the Applicant uses prefabbed concrete-framed buildings with a concrete foundation and painted steel exterior panel and metal roofs. The control building will be assembled offsite and placed on a cast-in-place foundation using a crane and tools typical to the construction industry.

3.2.11.11 Storage and Staging Yards

A construction material storage area may be needed outside the substation fenced area, but within the 2 acres planned for the substation. This storage area will be part of the substation property. After line construction, areas will be graded to blend with the natural contours as much as possible and will be restored to preconstruction condition to the extent practicable. After construction is completed, all debris and unused materials will be removed by the construction contractor.

3.2.11.12 Construction Workforce

The peak construction workforce at the substation site is estimated at 10 to 12 people.

3.2.11.13 Construction Traffic

Construction traffic will be minor due to the remote location of the substation site and short duration of the construction schedule. This traffic will consist of the construction crews traveling to and from the substation site.

Construction materials will be delivered to the site by truck. Line trucks, cranes, excavators, and other needed equipment will typically be delivered to the site and remain onsite until no longer needed.

3.3 Estimated Land Disturbance

This section describes the estimated permanent and temporary land disturbance associated with Project components. The only Project components resulting in land disturbance within Tillamook County are power poles, power pole installation areas, pulling and tensioning sites, permanent and temporary access roads, and the substation.

Permanent land disturbance will result from power poles, permanent access roads for maintenance, and the substation. Temporary land disturbance will result from power pole installation areas, pulling and tensioning sites, and temporary access roads for construction.

3.3.1 Power Poles

The footprint of each power pole's ground penetration is a permanent disturbance. The total permanent disturbance resulting from the 84 power poles proposed in the County is estimated based on the power pole dimensions shown in Table 3-1. The diameter of the steel power poles proposed will range from 1.5 to 3.5 feet.

Table 3-1. Power Pole Dimensions

Power Pole Type	Average Diameter (feet)
Steel Tangent	2
Steel-angle Self-supporting	3
Steel-angle Guyed	2
Steel Dead-end Self-supporting	3.5
Steel Dead-end Guyed	2
Wood Tangent	1.5
Wood-angle Guyed	1.5
Wood Dead-end Guyed	1.5

3.3.2 Substation

The proposed 2-acre substation site will be permanently cleared of all vegetation, stumps, and organic material. No temporary disturbances are anticipated.

3.3.3 Total Permanent and Temporary Land Disturbance

Table 3-2 identifies permanent disturbance areas proposed within Tillamook County for 84 power poles, access roads for line maintenance, and the substation. While actual power pole diameters will range

from 1.5 to 3.5 feet, a 5-foot diameter is used for all power poles in analyzing impacts to present a conservative disturbance estimate.

Table 3-2. Permanently Disturbed Areas

Project Feature	Square Feet	Acres
Power Poles	807.8	0.02
Guys and Anchors	3,000	0.06
Access Roads (uncultivated lands)	35,957	0.8
Substation Access Road[a]	10,000	0.23
Substation Site	87,120	2
Total Permanently Disturbed Area	***136,884.8***	***3.1***

[a] The substation access road will be a maximum of 20 feet wide and approximately 500 feet long.

Table 3-3 identifies temporarily disturbed areas proposed within Tillamook County for installation of 84 power poles, requiring 84 installation areas, pulling and tensioning sites, and temporary access roads.

Table 3-3. Temporarily Disturbed Areas

Project Feature	Square Feet	Acres
Power Pole Installation Areas	126,000	2.9
Conductor Pulling and Tensioning Sites	515,703	11.8
Temporary Access Roads	224,928	5.2
Total Temporarily Disturbed Area	***866,631***	***19.9***

3.3.4 Reclamation

As may be required by the landowners, temporary disturbance areas (that is, area needed only for construction) will be restored to as near original condition (for example, recontoured and reseeded) as possible. Each site, with the exception of power pole sites, will be graded as closely as possible to the original contour. Excess soil materials, rock, and other objectionable materials that are not used in restoration work will be disposed of in an approved manner.

3.4 Maintenance and Maintenance Access

The Applicant will perform routine, periodic inspection and maintenance, and emergency repairs on the transmission line power poles and hardware and the substation. Maintenance and repair activities typically include visual and infrared inspection, replacing wood power poles and wood cross-arms, replacing insulators, and performing vegetation control. Substation maintenance may include routing inspections, testing, and operating of equipment, monthly visual inspections of site and equipment, annual infrared inspections, and vegetation management. Access for this work will be across the permeant access roads used for construction and specialized vehicles or walking for nonroad accessible locations.

3.5 Fire Protection

Federal, state, and county laws, ordinances, rules, and regulations pertaining to fire prevention, presuppression, and suppression will be followed. Construction personnel will be advised of their responsibilities under the applicable fire laws and regulations. The construction contractor will notify the local fire district if a construction-related fire occurs.

The construction contractor will be responsible for any fire started by its employees or operations, whether in or out of the Project area, and will be responsible for fire suppression and rehabilitation.

Specific safety measures will be implemented during line construction to prevent fires and to ensure quick response and suppression in the event a fire occurs.

3.6 Avian Protection

The Applicant's avian protection policy recognizes that bird interactions with power lines can cause bird injuries and mortalities that may result in outages, violate bird protection laws, and cause grass and forest fires. Therefore, the Applicant is committed to minimizing bird interaction with power lines to the greatest extent practicable. The transmission line will be designed and built to avian-friendly standards (APLIC, 2006) and in accordance with the Applicant's *Avian Protection Plan* (Tillamook PUD, 2017), which provides a minimum 60-inch horizontal and 40-inch vertical separation between phase conductors and between phase conductors and grounded hardware, respectively. The Applicant sent its *Avian Protection Plan* to the U.S. Fish and Wildlife Service on June 16, 2017, and to ODFW on June 29, 2017, to solicit agency comments for use in updating and improving the plan.

The avian-friendly construction standards will include the use of covered conductor wires or sufficient spacing where distribution lines are underbuilt on transmission structures. The transmission line will by design (to provide sufficient electrical spacing) incorporate adequate spacing between phases and grounded structures. The spacing requirements as required in the NESC exceed the minimum spacing guidelines for avian protection. In areas of potential bird collisions, passive visual aids such as bird diverters or aerial balls will be used to reduce the likelihood of bird collisions with the power lines. These techniques were successfully deployed in a recent similar transmission line project jointly constructed by the Applicant and BPA in a 2014 project along State Route 6 in Tillamook County. Studies have indicated that passive visual aid devices are as successful as active type devices and can reduce bird collision by 50 to 80 percent (Crowder, 2000).

3.7 Noxious Weed Control

The Applicant is committed to controlling the spread of noxious weeds within the Project area during the construction, reclamation, and maintenance phases of the transmission line and substation development. Efforts will be made to reduce the spread of noxious weeds during the transmission and substation construction and maintenance processes. The guidelines identified in this section will be followed during construction, reclamation, and maintenance stages of the Project to control the spread of noxious weeds.

Equipment and supplies necessary for the reclamation of roads and a transmission line are possible causes of the spread of noxious weeds. During construction, construction equipment, materials, and vehicles will be stored at the sites where construction will occur or at specified construction yards. Personal vehicles, sanitary facilities, and staging areas will be confined to a limited number of specified locations to decrease chances of incidental disturbance and spread of noxious weeds.

Following construction, reclamation efforts will be made to limit the spread and establishment of a noxious weed community within the disturbed areas. Reseeding will be done as soon as possible during

the optimal period after construction. Certified “noxious weed-free” seed will be used on all areas to be seeded. On agricultural lands that are cultivated or pasture lands, this effort will be coordinated with the landowner, so that the appropriate reclamation is done.

During line maintenance, if noxious weed communities are found, they will be eradicated unless the area is too large to effectively eradicate, in which case the community will be controlled or contained to prevent further growth. The Applicant will use the services of a qualified contractor to perform the weed control as needed.

3.8 Other Permits

The Applicant is concurrently submitting multiple applications for permits necessary at this stage of the development process. These permits are described below.

3.8.1 Section 404/Removal-Fill Permit

The overall Project will include some activities within jurisdictional waters of the U.S. and waters of the state. Thus, a federal Clean Water Act, Section 404 Permit and a Removal-Fill Permit may be required from the U.S. Army Corps of Engineers (USACE) and the Oregon Department of State Lands (DSL), respectively. Whether these permits are necessary for the Project is still being determined based on public agency concurrence on the location of wetlands and water bodies (that is, concurrence on the Project wetland delineation) and subsequent Project impacts to wetlands and waters.

3.8.2 NPDES 1200-C Permit

The Project will require a National Pollutant Discharge Elimination System (NPDES) 1200-C permit for construction storm water discharges from the Oregon Department of Environmental Quality (DEQ). An NPDES 1200-C permit must be obtained for construction activities that disturb 1 acre of land or more. The application for the NPDES 1200-C permit will be submitted to DEQ at least 30 days prior to commencing any construction activities.

3.8.3 Road Crossing Permits

The Project corridor will cross public rights-of-way at all state and county road crossings. The applicable road-crossing permits will be obtained prior to the start construction activities.

3.9 Project Schedule

Project construction will occur over a period of approximately 14 to 18 months from the time construction begins until commercial operation. Construction is anticipated to begin in approximately May or June 2018. Table 3-4 presents the major tasks and key milestones, and the expected start and finish dates. The schedule will depend on regulatory restrictions, time of year, the need to accommodate crop-related activities in the County, and weather and ground conditions.

Table 3-4. Project Schedule

Major Task/Key Milestone	Start	Finish
Obtain Necessary Permits	August 2017	March 2018
Route Survey	April 2018	+ 6 months
Acquisition of Corridor	April 2018	+ 12 months
Engineering	January 2018	January 2019
Construction (Transmission line and substation)	May or June 2018	September 2019
Testing and Commissioning	September 2019	October 2019
Line Energization	September 2019	October 2019

SECTION 4

Purpose and Need

The purpose and need of the Project are to: (1) reduce high loading on existing facilities; (2) increase electrical system capacity in the central Tillamook Valley to support ongoing growth in the area (load growth); (3) improve service reliability; and (4) replace aging infrastructure in the City of Tillamook, Netarts, Oceanside, and the surrounding areas.

4.1 Reduce High Loading and Increase Capacity

The Wilson River Substation is approaching its planning level capacity as a result of increased electrical use in the City of Tillamook, Bay City, and the communities of Netarts and Oceanside. RUS recommends that older substation power transformers not be used more than 80 percent of their capacity under normal operating conditions to ensure that backup power is available to neighboring electrical systems. RUS further recommends that older equipment not be continuously operated at maximum capacity.

Usage data for the Applicant's service area and the Wilson River Substation (central Tillamook Valley) show a growing trend over the past 10 years in electricity use at the system level, and for the loads served by the two power transformers in Wilson River Substation. At the system level, electric usage is growing at 1.1 percent annually and Wilson River Substation is growing at 0.9 percent a year.

The Applicant has performed contingency analyses where the largest system component is removed from service (normal less one, or N-1). Such analyses are standard practice in the electric utility industry and recommended by national organizations such as the Institute of Electrical and Electronics Engineers (IEEE) and RUS. For the Applicant, the largest component in the central Tillamook Valley is the loss of the power transformer T2 at Wilson River Substation. The results under N-1 conditions show the remaining Wilson River, Garibaldi, and Trask River substation transformers are loaded to within 92 percent of the combined winter capacity and exceed 95 percent of individual power transformer capacity.

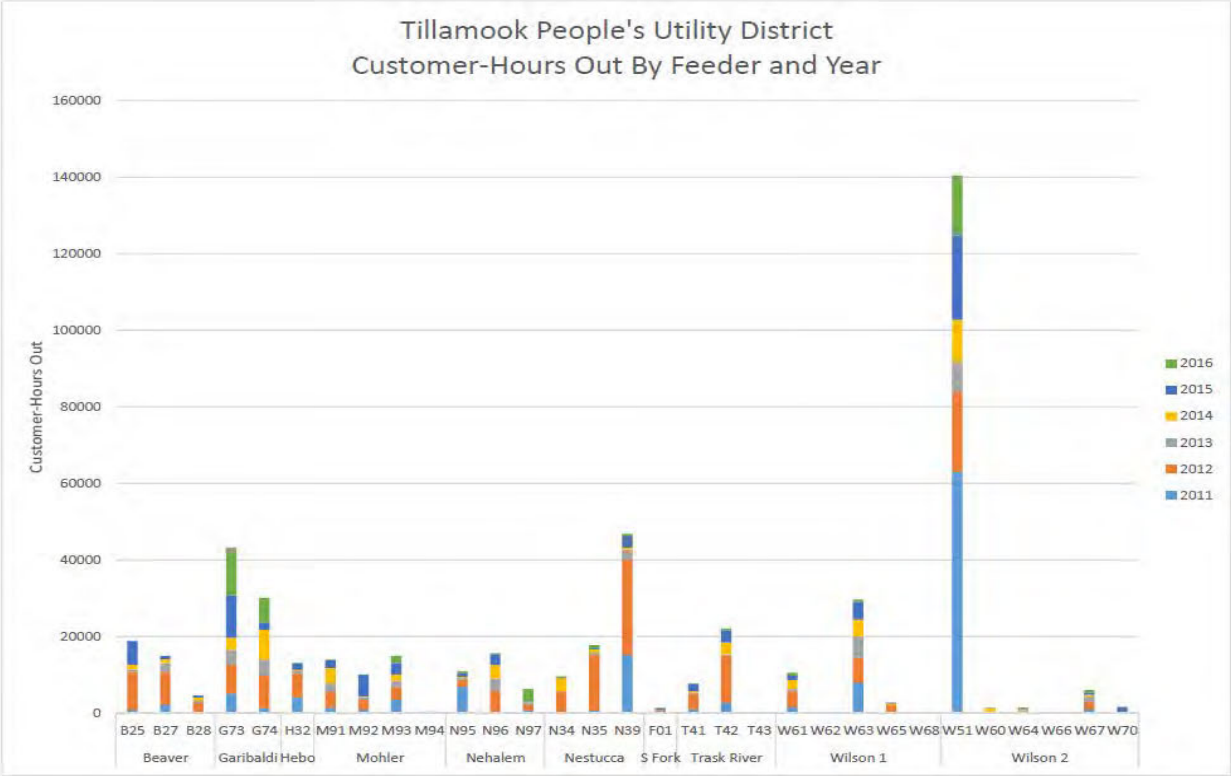
Building a substation in the central Tillamook Valley and Netarts-Oceanside areas will transfer approximately 10,500 kilovolt-amperes of capacity at peak times from the Wilson River Substation to the proposed Oceanside Substation, allowing for ongoing development and growth in the central Tillamook Valley and Netarts-Oceanside areas and the central Tillamook Valley area (including the City of Tillamook). The new Oceanside Substation will also provide reserve capacity to allow for the transfer of 15,000 kilovolt-amperes of electricity from the Wilson River Substation to the proposed Oceanside Substation during outage or maintenance activities.

4.2 Improve Service Reliability

The Project will serve approximately 1,800 electric meters (customers), which equates to a population of 3,800[1] in the geographic area along State Route 131 located west of the Tillamook River. This includes the communities of Oceanside and Netarts as well as Whiskey Creek Road. Currently this area is served by a more than 14-mile-long distribution line that passes through forest lands and tree-lined rights-of-ways from the Wilson River Substation. Approximately 1,800 customers are located near the ends of the line and have experienced many outages. The feeder that serves these customers is the Applicant's worst-performing feeder when considering customer-hours out by a factor of 2.8 times compared to the second-worst-performing feeder. The chart below shows the customer-hour outages for each feeder in

[1] Based on U.S. Census Bureau Statistics (2010).

the Applicant's service territory from 2011 through 2016. For example, if an outage occurs for 2 hours and five customers are without power, an outage of 10 customer-hours will result.



The Project will provide a new, more reliable source of power to the Netarts/Oceanside area and substantially reduce the number of customers affected by an outage and the length of the outage. Transmission lines such as the proposed transmission line are built to a higher degree of reliability than distribution lines due to their more critical nature in serving more overall customers than distribution lines. This will result in fewer outages in the Netarts/Oceanside area.

The proposed substation will also provide a second source of electricity to the central Tillamook Valley. When an outage occurs, the damaged section of the feeder can be isolated and the undamaged portions of the line restored to service because there will be sources of electricity at each end of the electric system. This will substantially reduce the outage time for customers not located in the area of the damaged line segment.

The proposed substation will distribute electricity to customers using two feeders rather than one. As a result, there will be fewer customers on each feeder and an outage on one feeder will not affect customers located on the other feeder. This will substantially reduce the number of customers affected by the outage. During outages related to the Wilson River Substation, the proposed transmission line will allow for the transfer of electricity and can serve customers into the City of Tillamook area (that is, the central Tillamook Valley floor).

4.3 Replace Aging Infrastructure

Approximately 2 miles of the existing radial distribution line currently serving the Netarts, Oceanside, and Whiskey Creek Road areas is a double-feeder pole line that is more than 50 years old. A radial electrical system has only one power source for a group of customers and a power failure along the radial line interrupts power in the entire line, which must be repaired before power can be restored. The top feeder is a copper-weld wire that is failing due to the rusting of the inner steel core of the wire.

Industry and Applicant's safety practices do not allow personnel to work on the wire while energized. Therefore, any repairs require an outage that cuts power to approximately 1,800 customers.

This double-feeder line needs to be replaced with a single-feeder line of much larger wire. Currently, work on this aging line cannot be accomplished without several long, extended outages to customers in the Netarts, Oceanside, and Whiskey Creek Road areas. Construction of the proposed transmission line will allow the aging double-feeder line to be removed from service and rebuilt with minimal interruption to customers.

SECTION 5

Compliance with Tillamook County Land Use Regulations

This section describes the County's required land use approvals and demonstrates how the proposed Project complies with the applicable provisions from the *Tillamook County Land Use Ordinance* (TLCUO) (Tillamook County, 2015) and *Tillamook County Comprehensive Plan* (TCCP) (Tillamook County, 2004). In addition to input from Tillamook County planning staff, the information provided in response to the land use regulations is based on the existing base zones and overlay zones crossed by the Project and the potential effects of activities proposed for construction and operation of the Project.

5.1 Background

The various components of the Project will lie within six base zones and three overlay zones in Tillamook County. Figure 2 in Appendix A shows the base zones crossed for the entire Project within the County. Project development will require administrative review approval for the portions of the Project that cross the County's Farm Zone (F-1) and Estuary Conservation 1 Zone (EC1). Approval and receipt of a CUP is required for development in four of the remaining six base zones crossed by the Project: the Forest (F), Rural Residential 2-Acre (RR-2), Rural Commercial (RC), and Estuary Natural (EN) zones. Table 5-1 lists the base and overlay zones crossed by the Project. Table 5-1 also summarizes the applicable criteria from the TCLUO that applies to the base and overlay zones crossed by the Project, defines how the use is permitted in the applicable zones, provides an approximate length of the zones crossed by the Project, and highlights additional development standards applicable to the Project.

Table 5-1. Zones Crossed and Applicable Review Criteria for the Project within Tillamook County

Zone	Approximate Length of Crossing (miles)	Applicable Review Criteria (TCLUO Section)	Use Permitted (Required Permit or Approval)	Use Defined As
Base Zones				
Farm Zone (F-1)	3.4	Section 3.002	Permitted (Type I - Administrative Review Approval)	Utility facility necessary for public service.
Forest Zone (F)	4.3	Section 3.004 Section 6.040	Conditional Use (Type III – Conditional Use Permit)	Utility facility necessary for public service.
Rural Residential 2-Acre (RR-2)	0.05	Section 3.010	Conditional Use (Type III – Conditional Use Permit)	Public utility facilities, including substations and transmission lines.
Rural Commercial Zone (RC)	0.1	Section 3.020	Conditional Use (Type III – Conditional Use Permit)	Utility substations and power transmission lines.
Estuary Natural Zone (EN)	0.2	Section 3.102; Section 3.120; Section 3.140	Conditional Use (Type III – Conditional Use Permit)	Electrical distribution lines and line power poles.
Estuary Conservation 1 Zone (EC1)	0.4	Section 3.106; Section 3.120; Section 3.140	Permitted (Type I - Administrative Review Approval)	Electrical distribution lines and line power poles.

Table 5-1. Zones Crossed and Applicable Review Criteria for the Project within Tillamook County

Zone	Approximate Length of Crossing (miles)	Applicable Review Criteria (TCLUO Section)	Use Permitted (Required Permit or Approval)	Use Defined As
Overlay Zones				
Flood Hazard Overlay Zone (FH)	1.7 (see Figure 1 in Appendix D)	Section 3.510	Permitted (Type II – Development Permit)	Permitted subject to the applicable standards of the underlying base zone and overlay zone review criteria.
Shoreland Overlay Zone	0.5	Section 3.545	Permitted	Permitted subject to the applicable standards of the underlying base zone and overlay zone review criteria.
Freshwater Wetlands Overlay	(see Table 3 and Figure 6 in Appendix E)	Section 3.550	Permitted	Permitted subject to the applicable standards of the underlying base zone and overlay zone review criteria.
Additional Development Standards				
Development Requirements for Geologic Hazard Areas	(see Appendix F)	Section 4.130	Permitted	Permitted within Geologic Hazard areas subject to the applicable standards of TCLUO 4.130.
Requirements for Protection of Water Quality and Streambank Stabilization Overlay	(see Appendix G)	Section 4.140	Permitted	Permitted subject to the applicable standards of the underlying base zone and overlay zone review criteria.
Protection of Archaeological Sites	(see Appendix H)	Section 4.160	Permitted	Permitted subject to the applicable standards of TCLUO 4.160.

Farther below in this section, the Applicant also demonstrates compliance with the applicable criteria associated with the three overlay zones listed in Table 5-1, including the Flood Hazard Overlay Zone (FH), Shoreland Overlay Zone, and Freshwater Wetlands Overlay. The Project crosses Federal Emergency Management Agency (FEMA)-mapped flood zone AE between the existing BPA Substation and Bayocean Road (approximately MPs 0.0 to 4.3). This application demonstrates the Project's compliance with the County's applicable FH overlay zone criteria for approval of a development permit in the underlying flood zone AE.

In addition to base and overlay zones, the Applicant also addresses additional development standards applicable to the Project including development requirements for geologic hazard areas (see TCLUO Section 4.130), requirements for protection of riparian vegetation (see TCLUO Section 4.140), and provisions for the protection of archaeological sites (see TCLUO Section 4.160).

5.2 Compliance with Tillamook County Land Use Ordinance

As discussed previously, the proposed Project is a permitted use subject to administrative review in the F-1 and EC1 zones and as a conditional use subject to CUP approval in the F, RR-2, RC, and EN zones. The Project also requires a development permit where it crosses the FEMA AE flood zone within the County's FH overlay zone. This section provides responses demonstrating compliance with the

applicable provisions of the TCLUO as required for Project construction and operation. The TCLUO articles that apply to this Project are addressed in the subsections below. TCLUO provisions that do not apply to the Project are not included or addressed in this application.

5.2.1 Article 3 – Zone Regulations

This section demonstrates compliance with the applicable provisions from Article 3 of the TCLUO.

SECTION 3.002 FARM ZONE (F-1)

This section demonstrates the Project's compliance with the applicable provisions of TCLUO 3.002 for development proposed in the County's F-1 zone. The use standards under TCLUO 3.002(4)(n)(1)(a) are substantially identical to the applicable criteria under Oregon Revised Statute (ORS) 215.275, which must be addressed to demonstrate that a utility facility is necessary for public service in an exclusive farm use zone. Thus, by demonstrating compliance with the use standards under TCLUO 3.002(4)(n)(1)(a) below, the Applicant also demonstrates the Project's compliance with ORS 215.275 where it crosses the County's F-1 zone.

(2) DEFINITIONS

For the purpose of this ordinance, unless otherwise specifically provided, certain words, terms, and phrases are defined as follows:

(kk) UTILITY FACILITIES NECESSARY FOR PUBLIC SERVICE: Unless otherwise specified in this Article, any facility owned or operated by a public, private or cooperative company for the transmission, distribution or processing of its products or for the disposal of cooling water, waste or by-products, and including, major trunk pipelines, water towers, sewage lagoons, cell towers, electrical transmission facilities (except transmission towers over 200' in height) including substations not associated with a commercial power generating facilities and other similar facilities.

Finding: The proposed Project is a utility facility necessary for public service within the F-1 zone as confirmed in coordination with Tillamook County planning staff. The proposed Project is neither a commercial facility for the purpose of generating power for public use by sale, nor does it include transmission towers over 200 feet in height. Therefore, the Project is permitted in the F-1 zone and is subject to the criteria under TCLUO 3.002(4)(n) addressed below.

(4) USE STANDARDS

(n) A utility facility that is necessary for public service.

1. A utility facility is necessary for public service if the facility must be sited in the exclusive farm use zone in order to provide the service. To demonstrate that a utility facility is necessary, an applicant must:

a. Show that reasonable alternatives have been considered and that the facility must be sited in an exclusive farm use zone due to one or more of the following factors:

Finding: The Project is a utility facility necessary for public service because it must cross through the F-1 zone in order to increase transmission capacity, improve reliability, and replace aging infrastructure as described in Section 4 (Purpose and Need). Specifically, the Project is necessary to:

- Ensure the Applicant's system capacity in the central Tillamook Valley does not exceed the RUS recommended peak loading capacity, allow for additional system capacity and growth in the central Tillamook Valley and Netarts-Oceanside area, and allow for the transfer of load capacity between substations.

- Improve the reliability of service to approximately 1,800 customers and substantially reduce the number of customers affected by an outage and the length of the outage.
- Replace the failing infrastructure associated with the existing radial distribution line that is over 50 years old and serves the Netarts-Oceanside area. Based on the age of the infrastructure, industry safety practices require that power is cut to the line during repairs, which creates an outage and cuts power to approximately 1,800 customers.

The Applicant examined various route alternatives during the route selection process. As described in Section 2 (Project Overview), the proposed location for the Project was selected following a detailed analysis of potential alternative routes and substation locations reviewed by the Citizen Advisory Group. This analysis incorporated a systematic rating system that was established for evaluating each alternative against a set of criteria such as permitability, ease of obtaining corridor approval, access, constructability, and a series of other environmental, land use, and financial factors. The transmission line corridor recommended by the Citizen Advisory Group was then adjusted to collocate with other corridors (i.e., existing roads and railroads) based on feedback from public meetings and individual meets with affected landowners.

Based on the areas to be served, the existing BPA Tillamook Substation and the proposed Oceanside Substation were fixed as corridor end points to evaluate route alternatives. The Applicant then examined data for zoning, existing land use and development, property boundaries, and the locations of sensitive biological and cultural resources to minimize impacts. The route was also evaluated in the field for the presence of sensitive biological and cultural resources. The route was then further adjusted to minimize impacts to wetlands and jurisdictional waters as well as riparian areas identified during the field surveys.

The transmission line route proposed in this application is the result of this analysis and shows that it must be sited in the F-1 zone to provide public service. No alternative route exists that can connect the existing and proposed substations without crossing the F-1 zone as shown on the Tillamook County Zoning Mapbook (see Figure 2 in Appendix A). Note that the F-1 zone designation occurs north of the Wilson River and extends well south of the City of Tillamook boundary. Therefore, the Project must be sited in the F-1 zone to provide service that satisfies the Applicant's obligations to reliably transmit electricity for customers within their service area, to improve system capacity and reliability, to alleviate system restraints, and to replace failing infrastructure associated with the existing line serving the central Tillamook Valley and Netarts-Oceanside areas. Thus, the Project satisfies the criteria of TCLUO 3.002(4)(n)(1)(a).

i. Technical and engineering feasibility;

Finding: As noted above, the Applicant considered alternatives for achieving the capacity and reliability goals of the Project through other means. However, the alternatives to the Project had technical and engineering limits that, when considered along with their cost, made those alternatives infeasible. The Project will provide the greatest capacity and reliability at the least cost to the public.

ii. The proposed facility is locationally-dependent. A utility facility is locationally-dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;

Finding: The Project is a locationally-dependent utility facility that is necessary for public service. As a result of the County's current land use zoning, there is no option to site a transmission line between the existing BPA Tillamook Substation and the proposed Oceanside Substation without crossing lands zoned F-1 (see Figure 2 in Appendix A). Note that the F-1 zone designation occurs along the Tillamook Estuary boundary north of the proposed route and extends well south of the City of Tillamook boundary. Therefore, the Project is locationally dependent because it must cross lands zoned F-1 in order to

achieve a reasonably direct route between the existing and proposed substations. Therefore, the factor in TCLUO 3.002(4)(n)(1)(a)(ii) warrants locating the Project in the F-1 zone.

iii. Lack of available urban and nonresource lands;

Finding: As described in Section 2 (Project Overview), the proposed location for the Project was selected following a detailed analysis of potential alternative routes and substation locations reviewed by the Applicant and Citizen Advisory Group. A number of alternative routes were examined by the Applicant and Citizen Advisory Group through the City of Tillamook to the south and west of the BPA Tillamook Substation and were deemed unbuildable due to various constraints. The analysis of alternative routes incorporated a systematic rating system for evaluating each alternative against a set of criteria that included but was not limited to environmental and land use factors. The proposed Project corridor was preferred by the Applicant and Citizen Advisory Group because while it largely avoids urban and residential areas, it also minimizes impacts to agricultural land and natural resources compared with other alternatives. The proposed Project corridor further reduces impacts on agricultural and resource lands through collocation with existing linear developments within the County. These linear developments include the Port of Tillamook Bay's railroad right-of-way from the substation north to Wilson River Loop Highway, along Wilson River Loop Highway, Goodspeed Road, and various existing access roads through private forest land in Tillamook County. Therefore, the factor in TCLUO 3.002(4)(n)(1)(a)(iii) warrants locating the Project in the F-1 zone.

iv. Availability of existing rights of way;

Finding: Parallel construction or collocation with existing linear corridors (for example, highway and road rights-of-way, utility corridors, or previously developed areas) was one of the criteria used in evaluating the preferred location of the proposed route. Collocation minimizes potential impacts to additional landowners, reduces the need to clear new corridors, and lessens the potential environmental impact when compared to the clearing for new routes through previously undeveloped areas. Wherever possible, the Project has been routed adjacent to or collocated with existing linear developments within the County. These linear developments include the Port of Tillamook Bay's railroad right-of-way from the substation north to Wilson River Loop Highway, along Wilson River Loop Highway, Goodspeed Road, and various existing access roads through private farmland in Tillamook County. Through collocation with available existing rights-of-way within the County, the proposed Project corridor minimizes environmental impacts and potential impacts on agricultural land. Further, no other available right-of-way will have allowed the Project to avoid the F-1 zone. Therefore, the factor in TCLUO 3.002(4)(n)(1)(a)(iv) warrants locating the Project in the F-1 zone.

v. Public health and safety; and

Finding: A major part of the Project's purpose is to provide reliable power to customers who are currently difficult to serve. The public health and safety of those customers depends, in part, on safe, reliable electric service. Thus, the Project will improve access to reliable power, which supports overall health and safety in Tillamook County. Therefore, the factor in TCLUO 3.002(4)(n)(1)(a)(v) warrants locating the Project in the F-1 zone.

vi. Other requirements of state and federal agencies.

Finding: As described in Section 3.8 (Other Permits), the Applicant will submit the appropriate applications for permits necessary at this stage of the development process to demonstrate compliance with the requirements of applicable state and federal agencies. These permits may include a federal Clean Water Act Section 404 Permit from the USACE, a Joint Removal-Fill Permit from DSL, a NPDES 1200-C permit from DEQ, and applicable road-crossing permits from the County. Therefore, the Project complies with TCLUO 3.002(4)(n)(1)(a)(vi).

b. Costs associated with any of the factors listed in subparagraph (a) of this paragraph may be considered, but cost alone may not be the only consideration in determining that a utility facility is necessary for public service. Land costs shall not be included when considering alternative locations for substantially similar utility facilities and the siting of utility facilities that are not substantially similar.

Finding: In accordance with TCLUO 3.002(4)(n)(1)(b), the Applicant did not consider cost alone in applying these factors and locating the proposed Project in the farm zone. The main factors in siting the route were proximity to the existing BPA Tillamook Substation and customers to be serviced by the proposed Oceanside Substation, collocation with existing linear rights-of-way, and avoidance of biological and cultural resources. In addition, the Applicant examined various route alternatives during a formal route selection process reviewed by the Citizen Advisory Group. The analysis determined that it is not possible to connect the existing and proposed substations without crossing land in the F-1 zone, regardless of cost. In addition, the Project is necessary to provide additional system capacity, reliability, and improve failing and aging infrastructure. No alternative route exists that can connect the existing and proposed substations without crossing the F-1 zone shown on Figure 2. For the reasons described herein, cost alone was not the primary factor in determining the proposed Project route and the Project complies with TCLUO 3.002(4)(n)(1)(b).

c. The owner of a utility facility approved under paragraph (n)1 shall be responsible for restoring, as nearly as possible, to its former condition any agricultural land and associated improvements that are damaged or otherwise disturbed by the siting, maintenance, repair or reconstruction of the facility. Nothing in this paragraph shall prevent the owner of the utility facility from requiring a bond or other security from a contractor or otherwise imposing on a contractor the responsibility for restoration.

Finding: Project construction includes vegetation removal where necessary within the corridor to install the power poles and subsequently to protect the operational integrity of the transmission line. Low-lying vegetation will be allowed to grow throughout the corridor following construction. Farming can continue in areas of the proposed corridor that were previously in farm use, which will be ensured through establishment of easements allowing that use. In addition, the easement will provide that the areas disturbed during construction will be restored by the Applicant for continued use of the land for agricultural production. The Applicant will similarly restore all areas disturbed during required maintenance or repair of the proposed Project. As described in Section 3.3.5 (Reclamation), and as may be required by the landowners, disturbed areas will be recontoured and seeded and restored to as near original condition as possible. Surface scarification for seeding will be done where necessary for germination. Except for the actual location of the power poles, all sites will be restored as closely as possible to the original contours. Excess soil materials, rock, and other non-native materials will be disposed of in a manner approved by the County. Therefore, the Project complies with TCLUO 3.002(4)(n)(1)(c).

d. The county shall impose clear and objective conditions on an application for utility facility siting to mitigate and minimize the impacts of the proposed facility, if any, on surrounding lands devoted to farm use in order to prevent a significant change in accepted farm practices or a significant increase in the cost of farm practices on surrounding farmlands.

Finding: Where areas of the proposed Project corridor are in farm use within the County's F-1 zone, the landowner will be able to continue farming it, which will be ensured through establishment of easements allowing that use. Permanent impacts from the Project on surrounding lands will be minimized as the transmission line conductor will be above the ground and access roads in cultivated areas will be temporary and only necessary for construction. Although the Applicant is not aware of significant impacts to farm practices from its other transmission lines, it conducted an in-depth evaluation of farm practices along the Project corridor and potential impacts to those practices.

Appendix C is the Farm and Forest Impacts Assessment. The report concludes that the Project will not result in a significant change to, or a significant increase in the cost of, farm and forest practices on surrounding farmlands. The Project complies with TCLUO 3.002(4)(n)(1)(d).

(15) USE TABLE

Table 1: Use Table for Farm Zones

HV = High value farmland 1 = Review Type 1

Use	***HV Type***	***Non-HV Type***	***SUBJECT TO 3.002***
Utility/Solid Waste Disposal Facilities			
Utility facilities necessary for public service, including associated transmission lines as defined in ORS 469.300 and wetland waste treatment systems but not including commercial facilities for the purpose of generating electrical power for public use by sale or transmission towers over 200 feet in height.	*1*	*1*	*(4)(n)*

Finding: The proposed Project is a utility facility necessary for public service and crosses the County's F-1 zone. The proposed Project is neither a commercial facility for the purpose of generating power for public use by sale, nor does it include transmission towers over 200 feet in height. Therefore, the Project is permitted in the F-1 zone and subject to a Type I review in accordance with the use table provided under TCLUO 3.002(15). The Project complies with this criterion.

SECTION 3.004 FOREST ZONE (F)

(2) DEFINITIONS

Words used in the present tense include the future; the singular number includes the plural; and the word "shall" is mandatory and not directory. Whenever the term "this ordinance" is used herewith, it shall be deemed to include all amendments thereto as may hereafter from time to time be adopted. For the purpose of this zone, the following definitions apply:

(dd) UTILITY FACILITIES NECESSARY FOR PUBLIC SERVICE: Unless otherwise specified in this Article, any facility owned or operated by a public, private or cooperative company for the transmission, distribution or processing of its products or for the disposal of cooling water, waste or by-products, and including, major trunk pipelines, dams & and other hydroelectric facilities, water towers, sewage lagoons, cell towers, electrical transmission facilities (except transmission towers over 200' in height) including substations not associated with a commercial power generating facilities and other similar facilities.

Finding: The proposed Project falls under the definition of a "utility facilities necessary for public service," per TCLUO 3.004(2)(dd), which includes substations and electrical transmission facilities under 200 feet in height. In accordance with Table 1 in TCLUO 3.004(13) (see Table 1 section for *Utility, Power Generation, and Solid Waste Uses*), the proposed transmission line will have a right-of-way width of up to 100 feet and is subject to conditional use criteria [TCLU 3.004(8)] in the County's F zone. The substation is the required terminus of the transmission line and services the mandatory connection between electrical transmission and distribution. Further, substation equipment is listed as accessory equipment in the use category for local distribution lines in Table 1 of TCLUO 3.004(13) (see Table 1 section for *Utility, Power Generation, and Solid Waste Uses*). The substation is needed to reduce the high voltage of the electrical power transmission to a lower voltage suitable for supply to consumers

through the distribution lines. The local distribution lines use category in Table 1 is listed as an allowed use in the F zone. Therefore, the Project complies with the definition of a "utility facilities necessary for public service" and is permitted conditionally in the County's F zone. The Applicant demonstrates compliance with applicable conditional use criteria under TCLUO 6040 in Section 5.2.3 (Conditional Use Procedures and Criteria).

(3) DEVELOPMENT STANDARDS

(a) Land divisions and development in the F Zone shall conform to the following standards, unless more restrictive supplemental regulations apply:

1. *The minimum lot width and minimum lot depth shall be 100 feet.*
2. *The minimum front, rear, and side yards shall all be 30 feet.*
3. *The height of residential structures shall not exceed 35 feet.*

Finding: The proposed Project does not require land divisions and does not include development of residential structures. The minimum lot width, depth, and yard setback requirements are not applicable to the proposed transmission line corridor, which will be established through easements in the County's F zone. The proposed Oceanside Substation will be on land leased or established through an easement in negotiation with the existing landowner. Therefore, the minimum lot width and depth in TCLUO 3.004(3)(a)(1) does not apply. Aside from the perimeter fence, no aboveground improvement will be within 30 feet of any adjacent property lines.

(8) CONDITIONAL USE REVIEW CRITERIA:

A use authorized as a conditional use under this zone may be allowed provided the following requirements or their equivalent are met. These requirements are designed to make the use compatible with forest operations and agriculture and to conserve values found on forest lands. Conditional uses are also subject to Article 6, Section 040.

1. *The proposed use will not force a significant change in, or significantly increase the cost of, accepted farming or forest practices on agriculture or forest lands.*

Finding: The proposed Project will not force a significant change in accepted farm and forest practices, nor cause a significant increase in the cost of such practices. ORS 527.620(5) defines "Forest practice" as follows:

> *Forest practice means any operation conducted on or pertaining to forestland, including but not limited to:*
>
> *(a) Reforestation of forestland;*
>
> *(b) Road construction and maintenance;*
>
> *(c) Harvesting of forest tree species;*
>
> *(d) Application of chemicals;*
>
> *(e) Disposal of slash; and*
>
> *(f) Removal of woody biomass.*

Along with farm practices, the Applicant's Farm and Forest Impacts Assessment, found in Appendix C, analyzes potential impacts to forest practices in the F-1 and F zones. That study demonstrates that the Project will not force a significant change to, or significantly increase the cost of, accepted farm and forest practices.

2. *The proposed use will not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire suppression personnel.*

Finding: The construction and operation of the proposed Project will be subject to the wildfire prevention and suppression requirements of ORS Chapter 477 and its associated administrative rules. These requirements include the need to do the following:

- Obtain certain permits.
- Provide fire prevention equipment on machinery.
- Limit or stop work during periods of elevated fire danger.
- Provide firefighting tools.
- Provide water supplies and pumping equipment.
- Provide fire watch personnel.
- Suppress wildfires originating from construction activity.
- Dispose of debris in a specified manner.
- Accept liability for the state's cost of suppressing wildfires originating from construction activity.

Following construction of the proposed Project, operations and maintenance activities will be subject to many of the same requirements as construction described in Section 3.5 (Fire Protection). In addition, the Applicant will develop an Emergency Response Plan that will include how to respond in case a wildfire is caused as a result of the construction or operations of the proposed Project. Because the proposed Project will implement the above measures, it will not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire suppression personnel. Therefore, the proposed Project complies with this criterion.

3. *A written statement recorded with the deed or written contract with the county or its equivalent is obtained from the land owner that recognizes the rights of adjacent and nearby land owners to conduct forest operations consistent with the Forest Practices Act and Rules for uses authorized in OAR 660-006-0025(5)(c).*

Finding: The Applicant understands this requirement and accepts as a condition of approval a requirement to acknowledge the "rights of adjacent and nearby landowners to conduct forest operations consistent with the Forest Practices Act and Rules for uses authorized in OAR 660-006-0025(5)(c)." Because the Applicant will be obtaining property rights through an easement rather than a deed, and because the underlying property owners will remain engaged in forest operations, the Applicant will ensure these written statements are recorded as part of the easement obtained from the underlying property owner. The proposed Project will not materially alter the stability of the overall land use pattern of the areas crossed in the County, nor will it substantially limit or impair the use of surrounding properties for permitted purposes. Therefore, the proposed Project demonstrates the ability to comply with this criterion.

(9) SITING STANDARDS FOR DWELLINGS AND STRUCTURES IN FOREST ZONES

Finding: The proposed Project is not a dwelling and does not include development of residential structures. The minimum lot width, depth, and yard setback requirements are addressed above in response to TCLUO 3.004(3). Therefore, the Project complies with the applicable criteria under TCLUO 3.004(9).

(10) FIRE-SITING STANDARDS FOR DWELLINGS AND STRUCTURES:

The following fire-siting standards or their equivalent shall apply to all new dwelling or structures in a forest zone:

(c) The owners of the dwellings and structures shall maintain a primary fuel-free break area surrounding all structures and clear and maintain a secondary fuel-free break area on land surrounding the dwelling that is owned or controlled by the owner in accordance with the provisions in "Recommended Fire Siting Standards for Dwellings and Structures and Fire Safety Design Standards

for Roads" dated March 1, 1991, and published by the Oregon Department of Forestry and shall demonstrate compliance with Table (10)(c)1.

Table (1)(c)1 Minimum Primary Safety Zone

Slope	*Feet of Primary Safety Zone*	*Feet of Additional Primary Safety Zone Down Slope*
0%	*30*	*0*
10%	*30*	*50*
20%	*30*	*75*
25%	*30*	*100*
40%	*30*	*150*

Finding: The construction activities associated with the proposed Project will be subject to the wildfire prevention and suppression requirements of ORS Chapter 477 and its associated administrative rules. These requirements include the need to:

- Obtain certain permits;
- Provide fire prevention equipment on machinery;
- Limit or stop work during periods of elevated fire danger;
- Provide firefighting tools;
- Provide water supplies and pumping equipment;
- Provide fire watch personnel;
- Suppress wildfires originating from construction activity;
- Dispose of debris in a specified manner; and
- Accept liability for the state's cost of suppressing wildfires originating from construction activity.

Following construction of the proposed Project, operations and maintenance activities will be subject to many of the same requirements as construction described in Section 3.5 (Fire Protection). In addition, the Applicant will develop an Emergency Response Plan that will include how to respond in case a wildfire is caused as a result of the construction or operations of the proposed Project.

(12) LAND DIVISIONS

(a) The minimum parcel size for new forest parcels is 80 (eighty) acres.

Finding: The proposed Project will not result in any land divisions and no new forest parcels will be created. This criterion, therefore, does not apply.

(13) Use Table

Table 1: Use Table for Forest Zones

A = Allowed

2 = Review Type 2

USE	*REVIEW*	*SUBJECT TO 3.004*
Utility, Power Generation, Solid Waste Uses		
Local distribution lines (e.g. electric, telephone, natural gas) & accessory equipment (e.g. electric distribution transformers, poles, meter cabinets, terminal boxes, pedestals), or equipment that provides service hookups, including water service hookups.	*A*	

New electric transmission lines with right-of-way widths of up to 100 feet as specified in ORS 772.210.	*2*	*(8)*

Finding: The proposed Project includes a new transmission line with a 100-foot-wide right-of-way and a new substation in the County's F zone. The proposed Project is neither a commercial facility for the purpose of generating power for public use by sale, nor does it include transmission towers over 200 feet in height. Therefore, the Project is permitted conditionally in the F zone and subject to a Type II review in accordance with the use table provided under TCLUO 3.004(13). The Project complies with this criterion.

SECTION 3.010: RURAL RESIDENTIAL 2 ACRE AND 10 ACRE ZONE (RR-2) (RR-10)

(3) USES PERMITTED CONDITIONALLY: In the RR zone, the following uses and their accessory uses are permitted subject to the provisions of Article 6 and the requirements of all other applicable supplementary regulations contained in this Ordinance.

(n) Public utility facilities, including substations and transmission lines.

Finding: The proposed Project is considered a public utility facility per TCLUO Section 1.030(A). Therefore, the proposed Project is a conditional use where the transmission line corridor crosses the RR-2 zone (see Map 2 on Figure 2 in Appendix A).

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

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

(b) The minimum parcel/lot size is 10 acres for lots/parcels rezoned Rural Residential on or after October 4, 2000.

(c) Parcels less than two acres in size that were legally established prior to December 18, 2002 may be built upon provided that all other requirements of this Ordinance and other applicable development requirements are met.

(d) Lots in an approved preliminary subdivision plat that is being maintained in an active status as of the date of adoption of this Ordinance may be built upon after approval and recording of the final plat.

(e) The minimum lot width and depth shall both be 100 feet.

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

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

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

Finding: The proposed Project will include one transmission line power pole (power pole 20) to be located within an easement in the RR-2 zone (see Map 2 on Figure 2 in Appendix A). This power pole does not constitute a development and no land division or lot are involved, which the standards in TCLUO Section 3.010(4)(a-h) are intended to regulate. Therefore, these criteria are not applicable to the Project.

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

Finding: The proposed Project will include one transmission line power pole (power pole 20) within the RR-2 zone (see Map 2 on Figure 2 in Appendix A). The power pole is not a building and the height of the power pole is not regulated by TCLUO 3.010(4)(i). Therefore, this criterion is not applicable to the Project.

SECTION 3.020: RURAL COMMERCIAL ZONE (RC)

(3) USES PERMITTED CONDITIONALLY: In the RC zone, the following uses and their accessory uses are permitted subject to the provisions of Article IV and the requirements of all applicable supplementary regulations contained in this ordinance:

(n) Utility substations and power transmission lines.

Finding: The proposed Project includes power transmission lines and two transmission line power poles (power poles 1 and 3) in the RC zone (see Map 1 on Figure 2 in Appendix A). Therefore, the proposed Project is considered a conditional use in the RC Zone.

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

(a) The minimum lot dimensions, yard setbacks, and building height restrictions for structures containing only residential use shall be the same as in the RR zone.

(b) Minimum yards for any structure on a lot or parcel adjacent to a residential zone shall be 5 feet on the side adjacent to the residential zone, and 10 feet in the front yard. No rear yard is required.

(c) For commercial or combined commercial-residential structures, structures shall be either constructed on the property line or setback at least 3 feet or as required in Section 3.020 (4) (b).

Finding: The proposed Project will include two transmission line power poles (power poles 1 and 3) to be located within an easement in the RC zone (see Map 1 on Figure 2 in Appendix A). The power poles do not constitute a development and no land division or lot are involved, which the standards in TCLUO 3.020(4)(a-c) are intended to regulate. Therefore, these criteria are not applicable to the Project.

(g) The maximum building height for commercial structures shall be 35 feet except on ocean or bay frontage lots, where it shall be 24 feet, higher structures may be permitted as a conditional use in accordance with Article VI.

Finding: The power poles 1 and 3 are components of the proposed Project and may range between 50 and 125 feet in height. Power poles 1 and 3 are the only power poles proposed within the RC zone. TCLUO 3.020(4)(g) is a standard that is intended to regulate the height of buildings and other commercial structures. The power poles associated with the proposed Project are not buildings or other commercial structure regulated by TCLUO Section 3.020(4)(g). Therefore, this criterion is not applicable.

SECTION 3.100 ESTUARY ZONE

(1) GENERAL USE PRIORITIES AND AREAS INCLUDED: General priorities, from highest to lowest, for uses within all ESTUARY ZONES shall be:

(a) Uses which maintain the integrity of the estuarine ecosystem.

(b) Water-dependent uses requiring an estuarine location, as consistent with the overall Oregon Estuarine Classification.

(c) Water-related uses which do not degrade or reduce the natural estuarine resources and values.

(d) Non-dependent, non-related uses which do not alter, reduce or degrade the estuarine resources and values.

ESTUARY ZONES shall be applied to all estuarine waters, intertidal areas, submerged and submersible lands and tidal wetlands up to the line of non-aquatic vegetation or the Mean Higher High Water (MHHW) line, whichever is most landward.

The application of a particular type of ESTUARY ZONE within a given estuary is dependent upon the classification of the estuary under L.C.D.C Rule No. OAR 660-17-010, and the criteria outlined in individual zone descriptions in Section 3.102 to 3.110. The Estuary Zones indicated on Tillamook County Zoning Maps are illustrative in nature and only approximate the zone boundaries.

Estuary Classification: Development. Estuaries: Nehalem, Tillamook. Permitted Zones: Estuary Development (ED), Estuary Conservation 2 (EC2), Estuary Conservation 1 (EC1), Estuary Conservation Aquaculture (ECA) and Estuary Natural (EN).

Estuary Classification: Conservation. Estuaries: Nestucca, Netarts, Neskowin Creek, Sutton Creek. Permitted Zones: Estuary Conservation 2 (EC2), Estuary Conservation 1 (EC1), Estuary Conservation Aquaculture (ECA) and Estuary Natural (EN).

Finding: The proposed Project crosses portions of the Tillamook Bay estuary that are classified for development. No portion of the proposed Project is within an estuary area classified for conservation. In a meeting with County planning staff on February 16, 2017, and in an email from planning staff on March 14, 2017 (Foote, 2017, pers. comm.), it was confirmed that the Project is a permitted use in the EC1 zone and permitted conditionally in the EN zone subject to the applicable review and development standards of TCLUO 3.120 and 3.140. The proposed Project is a non-water-related use where it crosses the County's EC1 and EN zones. As described in response to the applicable review and development standards below under TCLUO 3.120 and 3.140, respectively, the proposed Project will not alter, reduce, or degrade estuarine resources and values.

Figure 2 in Appendix A shows where the proposed Project crosses the approximate EC1 and EN zone boundaries indicated in Tillamook County's Zoning Map data, received as Geographic Information System (GIS) shapefiles from County planning staff. As mentioned in the criteria above, the County's zoning data is "illustrative in nature" and does not provide a formal delineation of estuary zone boundaries in the County. The Applicant delineated the areas where the proposed Project crosses the EC1 and EN boundaries. Delineated estuary zone maps are shown on Figure 4 in Appendix A.

As a conservative measure to identify EC1 and EN zone boundaries within the proposed 50-foot-wide transmission line corridor, the Applicant used the top of existing levees where they are present along estuarine water bodies and within the proposed Project corridor. The levee data were in the form of GIS shapefiles received from County planning staff. The top of the levees exceeds the Mean Higher High Water (MHHW) elevation where present within the proposed Project corridor and forms a conservative estuary zone boundary. That is, the estuary line as defined in the TCLUO may be closer to the water body edge than this point, but it will not be farther from the water body. The MHHW is at an elevation of 8.0 feet North American Vertical Datum 1988 for the corridor crossings of the Trask and Tillamook Rivers, the Hoquarten, Dougherty, Hall and Tomlinson Sloughs, and Stillwell Ditch (Brown et al., 2014). In the few places along the Project corridor where levees are not present, the Applicant used the MHHW line to delineate the EC1 and EN zone boundaries consistent with the guidance in TCLUO 3.100(1).

Qualified field biologists conducted field surveys between April 24 and 27, 2017. During these field visits, the water levels surrounding estuary water bodies and sloughs were too high to determine the line of nonaquatic vegetation; however, the biologists confirmed that the top of existing levees formed a sound estuary boundary. The biologists also confirmed that in the few places where land line of nonaquatic vegetation was not visible, the MHHW elevation forms a more conservative boundary. Accordingly, Maps 1 through 12 on Figure 4 in Appendix A show the Applicant's delineation of the EC1 and EN zone boundaries based on the location of existing levees and the line of MHHW. Where levees are present within the proposed Project corridor, Figure 4 in Appendix A shows the estuary zone boundary on the top of the levee and the area behind or landward of the levee as in the F-1 zone. Where existing levees are not present within the proposed Project corridor, Figure 4 in Appendix A shows areas landward of the MHHW line as in the F-1 zone.

Descriptions of each delineated EC1 and EN zone boundary are provided below:

- **Hoquarten Slough (approximate MP 0.4)**: Map 1 to Figure 4 in Appendix A shows the proposed Project corridor crossing the Hoquarten Slough at approximate MP 0.4. At this location, the delineated EC1 boundary is drawn to the MHHW line along the north and south banks of the slough. The delineated EC1 boundary extends well south of the original boundary provided on the Tillamook County Zoning Map. Existing levees are not identified within this portion of the proposed Project corridor. The revised F-1 zone is shown landward of the MHHW line and remains consistent with the original F-1 zone and with land in existing agricultural use as depicted in the aerial imagery shown on the map. No power poles are located within the original or delineated EC1 zones and the proposed Project will span the delineated EC1 zone associated with this crossing of Hoquarten Slough.
- **Dougherty Slough (approximate MP 0.6)**: Map 2 to Figure 4 in Appendix A shows the proposed Project corridor crossing the Dougherty Slough at approximate MP 0.6. At this location, the delineated EC1 zone boundary is drawn to the MHHW line along the north and south banks of the slough. The delineated EC1 boundary extends south of the original boundary provided on the Tillamook County Zoning Map. Existing levees are not identified within this portion of the proposed Project corridor. The revised F-1 zone is shown landward of the MHHW line and remains consistent with the original F-1 zone and with land in existing agricultural use as depicted in the aerial imagery shown on the map. No power poles are located within the original or delineated EC1 zones and the proposed Project will span the delineated EC1 zone associated with this crossing of Dougherty Slough.
- **Hall Slough (approximate MP 2.8)**: Map 3 to Figure 4 in Appendix A shows the proposed Project corridor crossing the Hall Slough at approximate MP 2.8. At this location, the delineated EC1 zone boundary is drawn to the top of the existing levees along the north and south banks of the slough, which is more conservative than the area shown between the MHHW lines. The portions of the original EC1 zone boundary provided on the Tillamook County Zoning Map that are landward of the levee to the south of Hall Slough are now shown within the F-1 zone. This delineation is consistent with the existing agricultural use that occurs directly south and landward of the levee depicted in the aerial imagery shown on the map. The revised F-1 zone remains consistent with the original F-1 zone to the north of Hall Slough. No power poles are located within the original or delineated EC1 zones and the proposed Project will span the delineated EC1 zone associated with this crossing of Hall Slough.
- **Hoquarten Slough (approximate MP 3.1)**: Maps 4 and 5 to Figure 4 in Appendix A show the proposed Project corridor crossing the Hoquarten Slough at approximate MP 3.1. At this location, the delineated EC1 zone boundary is drawn to the top of the levees along the east and west banks of the slough, which is more conservative than the area shown between the MHHW lines. The portions of the original EC1 zone boundary provided on the Tillamook County Zoning Map that are landward of the levee to the east of Hoquarten Slough are now shown within the F-1 zone. This delineation is consistent with the existing agricultural use that occurs directly east and landward of the levee depicted in the aerial imagery shown on the map. West of Hoquarten Slough, the delineated EC1 zone boundary is expanded to the top of the levee and the remaining F-1 zone is consistent with the original F-1 zone west and landward of the levee. Power poles are located landward of the levees and will not occur within the delineated EC1 zone. The proposed Project will span the entire delineated EC1 zone associated with this crossing of Hoquarten Slough.
- **Hoquarten Slough and the Trask River (approximate MP 3.4)**: Maps 6 and 7 to Figure 4 in Appendix A show the proposed Project corridor crossing the Hoquarten Slough at approximate MP 3.4. At this location, the delineated EC1 zone boundary is drawn to the top of the levee east of Hoquarten Slough and west of the Trask River, which shows a more conservative area than the area shown

between the MHHW lines. The portions of the original EC1 zone boundary provided on the Tillamook County Zoning Map that are landward of the levee to the east of Hoquarten Slough are now shown within the F-1 zone. This delineation is consistent with the existing agricultural use that occurs to the east and landward of the levee depicted in the aerial imagery shown on the map. West of the Trask River, the delineated EC1 zone boundary is expanded to the top of the levee and the remaining F-1 zone is consistent with the original F-1 zone west and landward of the levee. The portion the corridor that cross the peninsula located between Hoquarten Slough and the Trask Rivers is delineated as EC1 zone because it is south of a levee and within the boundary of the Southern Flow Corridor-Landowner Preferred Alternative Project (SFC-LPA), which is designed to restore tidal marsh habitat. Power poles are located landward of the levees and will not occur within the original or delineated EC1 zones. The proposed Project will span the entire delineated EC1 zone associated with this crossing of Hoquarten Slough and Trask River. The proposed Project will not impact land or tidal resources within the SFC-LPA.

- **Stillwell Ditch (approximate MP 3.6)**: Map 8 to Figure 4 in Appendix A shows the proposed Project corridor crossing Stillwell Ditch at approximate MP 3.6. At this location, the delineated EC1 zone boundary is drawn to the MHHW line along the east and west banks of the slough. The delineated EC1 zone boundary is generally consistent with the original boundary provided on the Tillamook County Zoning Map. Existing levees are not identified within this portion of the proposed Project corridor. The revised F-1 zone is shown landward of the MHHW line and remains consistent with the original F-1 zone and with the existing agricultural use depicted in the aerial imagery shown on the map. No power poles are located within the original or delineated EC1 zones and the proposed Project will span the delineated EC1 zone associated with this crossing of Stillwell Ditch.
- **Tillamook River (approximate MP 3.9 to MP 4.0)**: Maps 9 and 10 to Figure 4 in Appendix A show the proposed Project corridor crossing the Tillamook River between approximately MP 3.9 and MP 4.0. At this location, the delineated EC1 zone boundary is drawn to the top of the levee on the east side of the Tillamook River. In this case, the levee provides a more conservative delineation area than the boundary of the MHHW line. The delineated EC1 zone boundary is expanded to the top of the levee and the remaining F-1 zone is consistent with the original F-1 zone east and landward of the levee. The original boundary between the EC1 and EN zones on the west side of the Tillamook River is not changed. The portion of the corridor that crosses the island located in the Tillamook River remains zoned EC1, which is consistent with the Tillamook County Zoning Map. Power poles are located landward of the levees and will not occur within the original or delineated EC1 zones. The proposed Project will span the entire delineated EC1 and EN zones associated with this crossing of the Tillamook River.
- **Tomlinson Slough (approximate MP 4.1)**: Map 11 to Figure 4 in Appendix A shows the proposed Project corridor crossing Tomlinson Slough and the EN zone at approximate MP 4.1. At this location, the delineated EN zone boundary is drawn to the top of the levee located west of Tomlinson Slough. This delineation shows a more conservative area than the bounds of the MHHW lines along Tomlinson Slough. The portions of the original EN zone boundary provided on the Tillamook County Zoning Map that are west and landward of the levee are now shown within the F-1 zone, which is consistent with the existing agricultural use depicted in the aerial imagery shown on the map. The delineated EN zone boundary remains consistent with the original EN zone boundary on the east side of the levee. Power poles are located landward of the levee and will not occur within the delineated EN zone. The proposed Project will span the Tomlinson Slough and the entire delineated EN zone.
- **S-09B Tomlinson Slough (approximate MP 4.2 to MP 4.3)**: Map 12 to Figure 4 in Appendix A shows the proposed Project corridor crossing S-09B Tomlinson Slough between approximately MP 4.2 and MP 4.3. This portion of the Project, although west and landward of an existing levee, is below the

elevation of the MHHW line and the MHHW line cannot be used to delineate the EC1 zone boundary. The property located along this portion of the corridor was not accessible during field surveys and information is not available to determine the line of nonaquatic vegetation. Accordingly, the Applicant used aerial imagery to draw a conservative delineation of the EC1 zone. The east side of the delineated EC1 zone boundary follows the original boundary provided on the Tillamook County Zoning Map. The west side of the delineated EC1 zone boundary extends into the original F-1 zone boundary to the vegetated edge of S-09B Tomlinson Slough, which is adjacent to land in existing agricultural use. The property is bound to the east by the levee that forms the delineated EN zone boundary (see Map 11 to Figure 4 in Appendix A). Aerial imagery shows that the portion of the original EC1 zone located west of S-09B Tomlinson Slough has been filled for farm use. Map 12 to Figure 4 in Appendix A delineates this area as F-1 zone. No power poles are located within the original or delineated EC1 zones and the proposed Project will span the delineated EC1 zone associated with the crossing of S-09B Tomlinson Slough.

For the reasons described above, the proposed Project complies with the general use priorities and estuary zone areas provided under this criterion.

SECTION 3.102: ESTUARY NATURAL ZONE (EN)

(3) USES PERMITTED CONDITIONALLY: The following uses may be permitted subject to the procedures of Section 3.120 and Article 6 and the standards in Section 3.140.

(d) Electrical distribution lines and line support structures.

Finding: Transmission lines are not specifically identified in TCLUO 3.102(3). However, energy transmission lines are specifically identified in Section 3.140(6), which addresses siting and development standards for energy facilities and utilities in the County's estuary zones. In addition, TCLUO 2.040 allows the Director to permit a use not listed in a particular zone, provided that it is of the same general character, or has similar impacts on nearby properties, as do other uses permitted in the zone. Map 4 to Figure 2 in Appendix A shows where the proposed Project crosses the approximate EN zone boundary indicated in Tillamook County's Zoning Map data. The Applicant's delineated EN zone boundary is shown on Maps 10 and 11 of Figure 4 in Appendix A. No transmission line power poles will be located in the EN zone and the proposed 115-kV transmission line conductor will completely span over the top of the EN zone. In addition, the width of the Project corridor is 50 feet when crossing the EN zone to minimize the area of disturbance. There will be no surface impacts from the Project within the EN zone.

In a meeting with County planning staff on February 16, 2017, and in an email from planning staff on March 14, 2017 (Foote, 2017, pers. comm.), it was confirmed that the proposed 115-kV transmission line is a use similar in character to electrical distribution lines and line power poles and may be permitted conditionally in the EN zone subject to the applicable review and development standards of TCLUO 3.120 and 3.140, and the conditional use review criteria under TCLUO 6.040, which are addressed below. Therefore, the proposed Project is a use permitted conditionally in the County's EN zone in accordance with TCLUO 3.102(3)(d).

SECTION 3.106: ESTUARY CONSERVATION 1 ZONE (EC1)

(2) USES PERMITTED WITH STANDARDS: The following uses are permitted subject to the procedure of Section 3.120 and the standards in Section 3.140:

(h) Electrical distribution lines and line support structures.

Finding: Transmission lines are not specifically identified in TCLUO 3.106(2). However, energy transmission lines are specifically identified in Section 3.140(6), which addresses siting and development standards for energy facilities and utilities in the County's estuary zones. In addition, TCLUO 2.040 allows the Director to permit a use not listed in a particular zone, provided that it is of the same general character, or has similar impacts on nearby properties, as do other uses permitted in the zone. Maps 1

through 4 to Figure 2 in Appendix A show where the proposed Project crosses the approximate EC1 zone boundary indicated in Tillamook County's Zoning Map data. The Applicant's delineated EC1 zone boundary is shown on Figure 4 in Appendix A. No transmission line power poles will be located in the EC1 zone and the proposed 115-kV transmission line conductors will completely span over the top of the EC1 zone. In addition, the width of the Project right-of-way is 50 feet when crossing the EC1 zone to minimize the area of disturbance.

In a meeting with County planning staff on February 16, 2017, and in an email from planning staff on March 14, 2017 (Foote, 2017, pers. comm.), it was confirmed that the proposed 115-kV transmission line is a use similar in character to electrical distribution lines and line power poles and may be permitted with standards in the EC1 zone subject to the applicable review and development standards of TCLUO 3.120 and 3.140, which are addressed below. Therefore, the Project is a use permitted with standards in the EC1 zone in accordance with TCLUO 3.106(2)(h).

SECTION 3.120: REVIEW OF REGULATED ACTIVITIES

This section demonstrates the proposed Project's compliance with the applicable provisions of TCLUO 3.120 for development activities proposed in the County's EC1 and EN zones. Compliance with TCLUO 3.120 is not a development standard of the other four County zones crossed by the proposed Project (F-1, F, RR-2, and RC). The proposed Project corridor will cross regulated estuary areas (Statewide Planning Goal 16) where it crosses the Hoquarten, Dougherty, Hall, and Tomlinson Sloughs, the Trask and Tillamook Rivers, Stillwell Ditch, and S-09B Tomlinson Slough as described in response to TCLUO 3.100. In addition, the proposed Project corridor crosses regulated shoreland (Statewide Planning Goal 17), which establishes a 50-foot buffer as defined in TCLUO 3.545 (Shoreland Overlay) from the edge of the estuary areas listed above in the EC1 and EN zones. The Project's proposed crossings of the Applicant's delineated EC1 and EN zones and the Shoreland (SH) overlay zone in the County are illustrated on Figure 4 in Appendix A. The Applicant demonstrates compliance with the applicable criteria of TCLUO 3.545 for the SH overlay zone below.

The proposed 50-foot-wide Project corridor crosses approximately 0.4 mile of the delineated EC1 zone and approximately 0.2 mile of the delineated EN zone (see Table 5-1 above and Figure 4 in Appendix A). The Applicant has taken necessary steps to avoid and mitigate impacts for this portion of the Project pursuant to TCLUO 3.120. No power poles are proposed in either the EN or EC1 zones. Demonstration of the Applicant's compliance with TCLUO 3.120 is provided below.

(1) PURPOSE: The purpose of this Section is to provide an assessment process and criteria for local review and comment on State and Federal permit applications which could potentially alter the integrity of the estuarine ecosystem.

Finding: The Applicant acknowledges the purpose of TCLUO 3.120, which is to provide an assessment process and criteria for the review and comment of appropriate local, state, and federal agencies for portions of the proposed Project that could potentially alter the integrity of the estuarine ecosystem. The Applicant demonstrates the proposed Project's compliance with the applicable provisions of TCLUO 3.120 for development of Project components in the County's EC1 and EN zones. Therefore, this provision is satisfied.

(2) REGULATED ACTIVITIES: Regulated activities are those actions which require State and/or Federal permits and include the following:

(a) Fill (either fill in excess of 50 c.y. or fill of less than 50 c.y., which requires a Section 10 or Section 404 permit from the U.S. Army Corps of Engineers).

(b) Dredging (either dredging in excess of 50 c.y. within a 12 month period, or dredging of less than 50 c.y., which requires a Section 10 permit from the U.S. Army Corps of Engineers).

(c) Dredged material disposal including flow lane disposal.

Finding: The Applicant is concurrently preparing multiple applications for permits necessary at this stage of the development process to demonstrate compliance with applicable state and federal regulations. The overall Project will include some activities within jurisdictional waters of the U.S. and waters of the state. Thus, a federal Clean Water Act, Section 404 Permit, and Removal-Fill Permit may be required from USACE and DSL, respectively. Whether these permits are necessary for the Project is still being determined based on public agency concurrence on the location of wetlands and water bodies (that is, concurrence on the Project wetland delineation) and subsequent Project impacts to wetlands and waters. The proposed Project will require fill and removal in regulated wetlands in excess of 50 cubic yards. However, the portion of the Project that crosses the EC1 and EN zones will not require fill in excess of 50 cubic yards or less than 50 cubic yards. The Project requires a permit from the USACE under Section 10 of the Rivers and Harbors Act of 1899 for crossing navigable water bodies but not for fill. The Applicant has designed the Project to span the EC1 and EN zones to minimize impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A) and no fill will occur in the EC1 and EN zones. In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones.

The definition of piling and dolphin is not provided in TCLUO 11.030. Dolphins are marine structures typically associated with water dependent uses. The Project does not include the installation of any dolphins or other water dependent components. Similarly, piling is associated with supporting water dependent marine structures and is not defined by the TCLUO. To the extent that power poles for a utility facility can be considered "piling," the Applicant demonstrates compliance with applicable criteria under TCLUO 3.120 and 3.140 by avoiding the installation of power poles in the EC1 and EN zones. No dredging or dredged material disposal is proposed as part of this Project and the Project does not include shoreline stabilization or alterations. Therefore, no regulated activities listed in TCLUO 3.120(2)(a-d) are part of the proposed Project in the EC1 and EN zones.

(e) Shoreline stabilization, bank line or streamline alteration involving fill or dredging in excess of 50 c.y.

(f) In-water lot storage.

Finding: No dredging or dredged material disposal is proposed as part of this Project and no shoreline stabilization or alteration is proposed as part of this Project. The Project does not include in water lot storage. The Applicant has designed the Project to span the EC1 and EN zones to minimize impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A) and no fill will occur in the EC1 and EN zones. In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. Therefore, the portion of the Project that crosses the EC1 and EN zones will not require fill in excess of 50 cubic yards. For the reasons described above, the Project is not a regulated activity in the estuary as defined by TCLUO 3.120(e and f).

(3) PROCEDURE FOR REVIEWING REGULATED ACTIVITIES: Review of State and Federal permit notices are an Administrative function of the Planning Department. Regulated activities and any associated use or uses as a whole shall be reviewed according to the requirements of the zone(s) in which the proposed uses and activities are to be located (Section 3.100 to 3.110), standards relevant to the proposed uses and activities (Section 3.140), an impact assessment (Section 3.120 (6)), requirements for degradations or reductions of estuarine natural values where applicable (Section 3.120 (7)) and comments from State and Federal agencies having responsibility for permit review (Section 3.120 (8). Based on this review, the Department will decide whether the proposed uses and activities comply with this Ordinance and will forward this decision to the appropriate permitting agencies and the

permit applicant prior to the final date set for comments. Decisions of the Planning Department or Planning Commission may be appealed (Section 3.120 (9)).

Finding: As described in Section 3.8 (Other Permits), the Applicant is concurrently preparing other applications for permits necessary at this stage of the development process to demonstrate compliance with the requirements of applicable state and federal regulations. The overall Project will include some activities within jurisdictional waters of the U.S. and waters of the state. Thus, a federal Clean Water Act, Section 404 Permit, and Removal-Fill Permit may be required from the USACE and DSL, respectively. Whether these permits are necessary for the Project is still being determined based on public agency concurrence on the location of wetlands and water bodies (that is, concurrence on the Project wetland delineation) and subsequent Project impacts to wetlands and waters. The proposed Project will require fill and removal in regulated wetlands in excess of 50 cubic yards. However, the portion of the Project that crosses the EC1 and EN zones will not require fill in excess of 50 cubic yards or less than 50 cubic yards and no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones.

The Applicant acknowledges the procedure for reviewing regulated activities in the EC1 and EN zones as described under TCLUO 3.120(3). The Applicant demonstrates compliance with standards for Project development in response to the applicable criteria under TCLUO 3.140(6) for energy facilities and utilities and TCLUO 3.140(7) for fill in estuarine waters, intertidal areas, and tidal wetlands. Requirements for potential degradations or reductions of estuarine natural values are addressed under TCLUO 3.120(7) below. Furthermore, the Applicant acknowledges that the County will incorporate any comments received from appropriate permitting agencies into their review and decision on this permit application. Therefore, this criterion is satisfied.

(4) ZONE REQUIREMENTS: Uses and activities shall be allowed only if they are allowed in the zones in which they are to be located. Accessory uses proposed for adjacent upland areas must be allowed in the upland zones in which they are to be located as well as the SHORELANDS OVERLAY ZONE (Section 3.090). Uses that are permitted with standards must comply with the standards of Section 3.140. Uses listed as Conditional Uses shall be reviewed according to the procedures of Article 6 and the standards of Section 3.140. If a Conditional Use review is required, the Planning Department shall notify the applicant and State and Federal permitting agencies and shall request an extension of the comment period.

Finding: The Project is a permitted use in the EC1 zone consistent with TCLUO 3.106(2)(h) and is permitted conditionally in the EN zone consistent with TCLUO 3.102(3)(d), subject to the applicable standards of TCLUO 3.120 and 3.140. This application narrative demonstrates the Project's compliance with the applicable provisions of TCLUO 3.120 and TCLUO 3.140 for development of the proposed Project in the County's EC1 and EN zones. The proposed Project corridor is within the EC1 zone for approximately 0.4 mile and is within the EN zone for approximately 0.2 mile (see Table 5-1 above and Figure 4 in Appendix A). The Applicant addresses the applicable conditional use review criteria under Article 6 of the TCLUO to demonstrate the Project's consistency as a permitted conditional use in the EN zone. The Applicant acknowledges that as part of the conditional use review process, the County may notify applicable state and federal agencies of this application and may request an extension of the comment period. Therefore, the Project satisfies this criteria.

(5) IMPACT ASSESSMENTS: The Planning Department shall, with the assistance of affected State and Federal agencies, develop impact assessments for regulated activities. Federal Environmental Impact Statements or Assessments may be substituted if made available to the Planning Department. The following considerations must be addressed in the impact assessment.

(a) The type and extent of alterations expected.

Finding: As described above in responses to TCLUO 3.120(2)(a through f), the Project does not include the development of regulated activities in the EC1 or EN zones and an impact assessment is not required. In summary, the Applicant has designed the Project to span over the top of the EC1 and EN zones to avoid impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A) and no fill will occur in the EC1 and EN zones. In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. Power poles will be installed landward from adjacent water bodies and outside of the EC1 and EN zones. As described in Section 3.2.4 (Vegetation Removal), taller vegetation such as trees and tall shrubs exceeding 20 feet in height will likely need to be removed from the corridor within the EC1 and EN zones. The taller vegetation will be replaced with low-growing native species within the right-of-way and in riparian areas, similar vegetation will be replanted in the vicinity of the corridor following construction. This riparian mitigation will be coordinated with input from ODFW. Temporary impacts that may occur during construction will be restored to as near original condition as possible (for example, recontoured and reseeded). The Project will not result in bank line or streamline alteration. Therefore, the Project complies with this criterion.

(b) The type of resource(s) affected including, but not limited to aquatic life and habitats, riparian vegetation, water quality and hydraulic characteristics.

Finding: As described above in responses to TCLUO 3.120(2)(a through f), the Project does not include the development of regulated activities in the EC1 or EN zones and an impact assessment is not required. The impacts to estuarian-related resources are limited because the Project's power poles and any other permanent Project components are all located outside of the EN and EC1 zones. In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. The only permanent feature crossing over the estuary zones will be the aerial conductor. As described in Section 3.2.4 (Vegetation Removal), taller vegetation such as trees and tall shrubs exceeding 20 feet in height will likely need to be removed from the corridor within the EC1 and EN zones. The taller vegetation will be replaced with low-growing native species within the right-of-way and in riparian areas, similar vegetation will be replanted in the vicinity of the corridor following construction. This riparian mitigation will be coordinated with input from ODFW. Temporary impacts that may occur during construction will be restored to as near original condition as possible (for example, recontoured and reseeded). The Applicant will apply for a NPDES 1200-C permit prior to construction to avoid construction-related impacts to water quality and hydraulic characteristics associated with the estuarine areas in the proposed Project corridor. Therefore, Project complies with this criterion.

(c) The expected extent of impacts of the proposed alteration on water quality and other physical characteristics of the estuary, living resources, recreation and aesthetic use, navigation and other existing and potential uses of the estuary.

Finding: As described above in responses to TCLUO 3.120(2)(a through f), the Project does not include the development of regulated activities in the EC1 or EN zones and an impact assessment is not required. The impacts to estuarian-related resources are limited because the Project's power poles and any other permanent Project components are all located outside of the EN and EC1 zones. The only permanent feature crossing over the estuary zones will be the aerial conductor. In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones.

The Project was specifically routed to avoid existing and planned public access areas and will not preclude the public from using estuarine areas within the EC1 and EN zones for recreation. The proposed Project will be located, designed, and installed to minimize conflict with scenic values. First, the power poles, the most visible feature of the Project, will be installed approximately every 500 feet

and will span larger distances to avoid the EC1 and EN zones. Thus, the main visual effect of the Project will be spread out across these distances. Second, the proposed power poles will be constructed of wood or galvanized material that can be coated to minimize potential glare and enabling them to blend better with the surroundings. Finally, the proposed Project corridor does not cross any County recognized aesthetic uses in the EC1 and EN zones. The Project is specifically designed to span navigable waters as shown on Figure 4 in Appendix A and will not be located within the water body of the estuary. Accordingly, the Project will not affect navigation within the Tillamook Bay estuary. Therefore, the Project complies with this criterion.

(d) The methods which could be employed to avoid or minimize adverse impacts.

Finding: As described above in responses to TCLUO 3.120(2)(a through f), the Project does not include the development of regulated activities in the EC1 or EN zones and an impact assessment is not required. The primary objective in developing a final route was to avoid direct impacts to the estuary. The impacts to estuarian-related resources are limited because the Project's power poles and any other permanent Project components are all located outside of the EN and EC1 zones. In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. A second objective in routing the Project and determining power pole locations was minimizing impacts to existing wetlands and water bodies located near the EC1 and EN zones. The steps involved in modifying the Project alignment to minimize impacts included the following:

- Power poles were sited to span the conductor over the surface of wetlands, water bodies, and estuarine areas.
- The Project was aligned parallel to or within existing linear right-of-way, utility corridors, or previously disturbed areas.
- The Project route was aligned so that wetlands will be crossed at their narrowest point when possible.
- The Project was aligned so that water bodies will be crossed at a right angle to their banks to minimize impacts to riparian areas.
- The width of the Project right-of-way was reduced from 100 to 50 feet when crossing the EC1 and EN zones and across the valley floor to minimize the area of disturbance.
- Where possible, temporary work areas will be located in areas outside of the EC1 and EN zones to minimize disturbance of estuarine areas.

Temporary wetland impacts along the Project route will be mitigated. No permanent impacts are proposed to tidal wetlands and waters or nontidal wetlands in shoreland designations that are identified as significant in the EC1 and EN zones and within the SH overlay zone. Therefore, the Project complies with this criterion.

(6) REQUIREMENTS FOR RESOURCE CAPABILITY DETERMINATIONS: Uses and activities for which a resource capability determination is required by Section 3.140, shall be allowed only if they are found to be consistent with the resource capabilities of the management unit(s) and the purposes of the zone(s) in which they are to be located. An activity will be found to be consistent with the resource capabilities of a management unit (as described in Section 2 of the Estuarine Resources Element of the Tillamook County Comprehensive Plan) when either (1) the impacts of the use on estuarine species, habitats, biological productivity and water quality are not significant or; (2) that the resources of the area are able to assimilate the use and activity and their effects and continue to function in a manner consistent with the purposes of the zone. The resource capability determination shall be based on information generated by the impact assessment.

Finding: The Project is a permitted use in the EC1 zone consistent with TCLUO 3.106(2)(h) and is permitted conditionally in the EN zone consistent with TCLUO 3.102(3)(d) subject to the applicable standards of TCLUO 3.120 and 3.140. This application narrative demonstrates the Project's compliance with the applicable provisions of TCLUO 3.120 and TCLUO 3.140 for development of the proposed Project in the County's EC1 and EN zones. As described above in responses to TCLUO 3.120(2)(a through f), the Project does not include the development of regulated activities in the EC1 or EN zones and an impact assessment is not required under TCLUO 3.120(5). The Applicant demonstrates specific compliance with standards for Project development in response to the applicable criteria under TCLUO 3.140(6) for energy facilities and utilities and TCLUO 3.140(7) for fill in estuarine waters, intertidal areas, and tidal wetlands. Therefore, the Project complies with this criterion.

(7) SIGNIFICANT DEGRADATIONS OR REDUCTIONS OF ESTUARINE NATURAL VALUES:

(a) Definition: Significant degradations or reductions of estuarine natural values include dredging, fill, and other activities which will cause significant off site impacts as determined by the impact assessment (Section 3.120 (5)).

(b) Requirements: Dredging and fill must comply with the standards in Section 3.140 (Subsections (5) and (7) respectively). Other reductions and degradations of estuarine natural values shall be allowed only if:

(1) A need (i.e. a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights; and

Finding: The Project is a utility facility necessary for public service and demonstrates a substantial public benefit to County residents and commercial clients reliant on the Applicant for electrical power and services. The Project is designed to improve transmission capacity and reliability and replace aging infrastructure as described in Section 4 (Purpose and Need). Specifically, the Project is necessary to:

- Ensure the Applicant's system capacity in the central Tillamook Valley does not exceed the RUS recommended peak loading capacity, allow for additional system capacity and growth in the central Tillamook Valley and Netarts-Oceanside areas, and allow for the transfer of load capacity between substations to prevent load curtailments and outages to customers.
- Improve the reliability of service to approximately 1,800 customers and substantially reduce the number of customers affected by an outage and the length of the outage.
- Replace the failing infrastructure associated with the existing radial distribution line that is over 50 years old and serves the Netarts-Oceanside area. Based on the age of the infrastructure, industry safety practices require that power is cut to the line during repairs, which creates an outage and cuts power to approximately 1,800 customers.

The Project will not unreasonably interfere with public trust rights to the County's estuarine areas within the EC1 and EN zones. The Oregon Public Trust Doctrine limits the public use of waterways to the submerged and submergible land up to the Line of Ordinary High Water. The public may only pass through areas above the Line of Ordinary High Water if absolutely necessary, not merely for convenience or ease of use of the waterway[2].

Additionally, the Project will not unreasonably interfere with public trust rights because the Applicant will have approvals for Project construction and operation, including easements. The Project will be entirely aboveground and landward of the Line of Ordinary High Water except for the aerial conductor, and only the 50-foot-wide permanent easement will need to remain free from certain types of vegetation and development consistent with NESC standards for the operation and maintenance of a

[2] *See* Oregon Department of State Lands publication, "The Public's Rights to use Oregon's Waterways for Recreation" (June 8, 2009), available at http://www.oregon.gov/dsl/NAV/docs/recreational_use_waterways.pdf.

transmission line. The Project was specifically routed to avoid existing and planned public access areas and will not preclude the public from using estuarine areas within the EC1 and EN zones.

The presence of the Project will not interfere with public use and access to the Tillamook Bay estuary in general. In addition, the Project is a permitted or conditional use in the County's EC1 and EN zones where proposed, respectively. Thus, the Project is a use that has been deemed acceptable for the area by the County. The general public will maintain access to and use of the estuarine resources crossed by the Project in the County during construction and operation. Thus, the Project will not unreasonably interfere with the public use and enjoyment of the Tillamook Bay estuary. Therefore, the Project complies with this criterion.

(2) No feasible alternative upland locations exist; and

Finding: The proposed Project corridor must cross regulated estuary in the County's EC1 and EN zones to connect the proposed transmission line between the existing BPA Tillamook Substation and the proposed Oceanside Substation (see Figure 2 and Figure 4 in Appendix A). As described in Section 2 (Project Overview), the proposed location for the Project was selected following a detailed analysis of numerous potential alternative routes reviewed by the Citizen Advisory Group. This analysis incorporated a systematic rating system that was established for evaluating each alternative against a set of criteria such as permitability, ease of obtaining corridor approval, access, constructability, and a series of environmental, land use, and financial factors. The transmission line corridor recommended by the Citizen Advisory Group was then adjusted based on feedback from public meetings and individual meets with affected landowners. The proposed Project corridor was selected because it meets the preference of the Citizen Advisory Group to avoid residential and commercial areas within the City of Tillamook while minimizing impacts to agricultural land and estuarine areas within the County. Note that portions of the EC1 and EN zones occur north of the proposed Project corridor along Wilson River and portions of the EC1 zone extend well south of the City of Tillamook boundary (see Figure 2 in Appendix A). No alternative route exists that can reasonably connect the existing and proposed substations without crossing the EC1 and EN zones as shown on Figure 2 in Appendix A.

(3) Adverse impacts are minimized as much as feasible.

Finding: A primary objective in developing a final route was to minimize impacts to existing wetlands and water bodies within the EC1 and EN zones. Avoiding high-value wetlands and estuarine areas was of particular importance when modifying the proposed route. Potential adverse impacts from construction of the Project (i.e., fill) in wetlands and water bodies within the estuarine areas of the EC1 and EN zones have also been minimized. The Project has been designed and will be constructed to avoid intrusion into the wetlands and estuarine areas located along the route in the EC1 and EN zones. Power poles will not be located within the EC1 and EN zones and the Project will span water bodies within the EC1 and EN zones.

The steps involved in modifying the Project alignment to minimize impacts included the following:

- Power poles were sited to span the conductor over the surface of wetlands, water bodies, and estuarine areas.
- The Project was aligned parallel to or within existing linear right-of-way, utility corridors, or previously disturbed areas.
- The Project route was aligned so that wetlands will be crossed at their narrowest point when possible.
- The Project was aligned so that streams will be crossed at a right angle to their banks to minimize impacts to riparian areas.

- The width of the Project right-of-way will be reduced to 50 feet when crossing the EC1 and EN zones to minimize the area of disturbance, as opposed to the 100-foot-wide corridor that is required in the F zone.
- Temporary work areas are located in areas outside of the EC1 and EN zones to minimize disturbance of estuarine areas.

Temporary wetland impacts along the Project route will be mitigated. No permanent impacts are proposed to tidal wetlands and waters or nontidal wetlands in shoreland designations that are identified as significant in the EC1 and EN zones and within the SH overlay zone. Therefore, the Project complies with this criterion.

(8) STATE AND FEDERAL REVIEWING AGENCY COMMENTS: In the review of regulated activities, the Planning Department shall notify the following agencies: Oregon Department of Fish and Wildlife, Oregon Division of State Lands, Oregon Department of Land Conservation and Development, Oregon Department of Economic Development, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Environmental Protection Agency, U.S. Army Corps of Engineers. Notice will be mailed within 7 days of County receipt of the State or Federal permit notice. The notice will include permit reference, identification of the local decisions to be made, references to applicable policies and standards, and notification of comment and appeal periods. The Planning Department shall consider any comments received no later than seven days before the closing date for comments on the State or Federal permit notice.

Finding: The Applicant acknowledges that the County will notify the agencies listed in TCLUO 3.120(8) and will consider comments received from agencies regarding the proposed Project. Therefore, this provision is satisfied.

SECTION 3.140: ESTUARY DEVELOPMENT STANDARDS

This section demonstrates the Project's compliance with the applicable estuary development standards of TCLUO 3.140 for development proposed in the County's EC1 and EN zones.

(6) ENERGY FACILITIES AND UTILITIES: Siting, design, construction, maintenance or expansion of energy facilities and utilities in estuary zones, shall be subject to the following standards:

(a) When new energy facilities and utilities are proposed within estuarine waters, intertidal areas or tidal wetlands, evidence shall be provided by the applicant and findings made by the County that:

(1) A need (i.e. a substantial public benefit) exists and the use or alteration does not unreasonably interfere with public trust rights.

(2) Alternative non-aquatic locations are unavailable or impractical.

(3) Dredging, fill and other adverse impacts are avoided or minimized.

Finding: The proposed Project is a new utility facility necessary for public service that crosses over estuarine areas within the County's EC1 and EN zones. The Applicant provides evidence demonstrating that the Project complies with the standards under TCLUO 3.140(6)(a). First, the Project is not proposed "*within estuarine waters, intertidal areas or tidal wetlands*" as only the aerial conductor will pass over these areas. As described in response to TCLUO 3.120(7), the Project demonstrates a substantial public benefit to County residents and commercial clients reliant on the Applicant for electrical power and services. The Project is designed to improve transmission capacity and reliability and replace aging infrastructure as described in Section 4 (Purpose and Need). Specifically, the Project is necessary to:

- Ensure the Applicant's system capacity in the central Tillamook Valley does not exceed the RUS recommended peak loading capacity, allow for additional system capacity and growth in the central

Tillamook Valley and Netarts-Oceanside areas, and allow for the transfer of load capacity between substations to prevent load curtailments and outages to customers.

- Improve the reliability of service to approximately 1,800 customers and substantially reduce the number of customers affected by an outage and the length of the outage.
- Replace the failing infrastructure associated with the existing radial distribution line that is over 50 years old and serves the Netarts-Oceanside area. Based on the age of the infrastructure, industry safety practices require that power is cut to the line during repairs, which creates an outage and cuts power to approximately 1,800 customers.

The Project will not unreasonably interfere with public trust rights to the County's estuarine areas within the EC1 and EN zones. The Project will be entirely aboveground and landward of the Line of Ordinary High Water except for the aerial conductor, and only the 50-foot-wide permanent easement will need to remain free from certain types of vegetation and development consistent with NESC, RUS, and Applicant standards for clearances and use for the operation and maintenance of a transmission line. The Project was routed to avoid existing and planned public access areas and will not preclude the public from using estuarine areas within the EC1 and EN zones. The presence of the Project will not interfere with public use and access to the Tillamook Bay estuary in general. The general public will maintain access to and use of the estuarine resources crossed by the Project in the County during construction and operation. Thus, the Project will not unreasonably interfere with public trust rights.

The proposed Project corridor must cross regulated estuary in the County's EC1 and EN zones to connect the proposed transmission line between the existing BPA Tillamook Substation and the proposed Oceanside Substation (see Figure 2 in Appendix A). As described in Section 2 (Project Overview), the proposed location for the Project was selected following a detailed analysis of multiple potential alternative routes reviewed by the Citizen Advisory Group. This analysis incorporated a systematic rating system that was established for evaluating each alternative against a set of criteria such as permitability, ease of obtaining corridor approval, access, constructability, and a series of environmental, land use, and financial factors. The transmission line corridor recommended by the Citizen Advisory Group was then adjusted based on feedback from public meetings and individual meets with affected landowners. The proposed Project corridor was selected because it meets the preference of the Citizen Advisory Group to avoid residential and commercial areas within the City of Tillamook while minimizing impacts to agricultural land and estuarine areas within the County. Note that portions of the EC1 and EN zones occur north of the proposed Project corridor along Wilson River and portions of the EC1 zone extend well south of the City of Tillamook boundary. No alternative route exists that can reasonably connect the existing and proposed substations without crossing the EC1 and EN zones as shown on Figure 2 in Appendix A.

The Applicant has designed the Project to span the EC1 and EN zones to minimize impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bay Ocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A) and no fill will occur in the EC1 and EN zones. Power poles will be installed landward and outside of the EC1 and EN zones. The proposed Project is sited in an area already disturbed for existing urban or agricultural uses and avoided areas of forested wetlands found in other areas along the Trask and Tillamook Rivers. The width of the Project right-of-way will be reduced to 50 feet when crossing the EC1 and EN zones to minimize the area of disturbance, as opposed to the 100-foot-wide corridor that is required in the F zone. As described in Section 3.2.4 (Vegetation Removal), taller vegetation such as trees and tall shrubs exceeding 20 feet in height will likely need to be removed from the corridor within the EC1 and EN zones directly underneath the conductor. The taller vegetation will be replaced with low-growing native species within the right-of-way and similar vegetation will be replanted in the vicinity of the right-of-way following construction. Temporary

impacts that may result from Project construction will be restored to as near original condition as possible (for example, recontoured and reseeded).

Temporary wetland impacts along the Project route will be mitigated. No permanent impacts are proposed to tidal wetlands and waters or nontidal wetlands in shoreland designations that are identified as significant in the EC1 and EN zones and within the SH overlay zone. Therefore, the Project complies with the standards under TCLUO 3.140(6)(a).

(b) Electrical or communication transmission lines shall be located underground or along existing rights-of-way unless economically infeasible.

Finding: To the extent practicable, the Project has been routed adjacent to or collocated within existing linear developments within the County. These linear developments include the Port of Tillamook Bay's railroad right-of-way from the substation north to Wilson River Loop Highway, along Wilson River Loop Highway, Goodspeed Road, and various existing access roads through private farmland in Tillamook County. Parallel construction or collocation with existing linear corridors (for example, highway and road rights-of-way, utility corridors, or previously developed areas) was one of the criteria that the Applicant used in evaluating routes. The Applicant has made use of the existing linear corridors described above (see Figure 2 in Appendix A) to minimize environmental impacts associated with completely new corridors. The Applicant also reviewed undergrounding as an option for the proposed Project, which was determined to be cost prohibitive six to eight times the cost of overhead construction. Undergrounding the proposed transmission line will require the installation of a costly underground vault system in areas predominantly covered by floodplain and will increase permanent surface impacts to wetlands and waters while limiting farm activities within the proposed 50-foot-wide Project corridor. For the reasons described above, the Project complies with this criterion.

(c) Above-ground utilities shall be located to have the least adverse effect on visual and other aesthetic characteristics of the area. Interference with public use and public access to the estuary shall be minimized.

Finding: The Project will not be located within the EN or EC1 zones except for the aerial conductor crossing. The power poles have all been sited outside the estuary zones. The Project was specifically routed to avoid existing and planned public access areas and will not preclude the public from using estuarine areas within the EC1 and EN zones. The proposed Project will also be located, designed, and installed to minimize conflict with scenic values. First, the power poles, the most visible feature of the Project, will be installed approximately every 500 feet and up to 1,600 feet where necessary to cross water bodies and estuarine areas. Thus, the visual effect will be spread out across these distances. Second, the proposed power poles will be constructed of wood or galvanized material that can be coated to minimize potential glare and enabling them to blend better with the surroundings. In addition, the proposed Project corridor does not cross any significant County recognized aesthetic uses in the EC1 and EN zones.

(d) Whenever practicable, new utility lines and crossings within estuarine waters, intertidal areas or tidal wetlands shall follow the same corridors as existing lines and crossings.

Finding: The Project will not be located "*within estuarine waters, intertidal areas or tidal wetlands*" as only the aerial conductor will pass over these areas. Whenever practicable, the Project has been routed adjacent to or collocated within existing linear developments within the County. These linear developments include the Port of Tillamook Bay's railroad right-of-way from the substation north to Wilson River Loop Highway, along Wilson River Loop Highway, Goodspeed Road, and various existing access roads through private farmland in Tillamook County. Parallel construction or collocation with existing linear corridors (for example, highway and road rights-of-way, utility corridors, or previously developed areas) was one of the criteria that the Applicant used in evaluating routes. Collocation minimizes potential impacts to additional landowners, can reduce the need to clear new corridors, and

lessens the potential environmental impact when compared to the clearing for new routes through previously undeveloped areas. The Applicant has made use of the existing linear corridors described above (see Figure 2 in Appendix A) to minimize crossings of the EC1 and EN zones to minimize environmental impacts areas associated with completely new corridors. Therefore, the Project complies with this criteria.

(e) Water discharge into estuarine waters, intertidal areas and tidal wetlands from an energy facility or utility shall meet EPA and DEQ standards, and shall not produce increases in temperature in the receiving waters which would have adverse impacts on aquatic life. Water Quality policies shall apply.

Finding: No water will be discharged into estuarine waters, intertidal areas, or tidal wetlands as a result of the proposed Project. The Applicant will obtain a NPDES 1200-C permit from DEQ prior to construction to avoid impacts to water quality from construction-related stormwater runoff. In an effort to maintain water temperature, the Applicant is coordinating with ODFW to mitigate for the removal of trees within County-regulated riparian buffers, by planting two new trees for every one removed. Therefore, the Project complies with this criteria.

(f) When new energy facilities and utilities are proposed in EN zones, evidence shall be provided by the applicant and findings made by the County that the proposed use is consistent with the resource capabilities of the area and the preservation of areas needed for scientific, research or educational needs.

Finding: The proposed Project is a new utility facility necessary for public service that is permitted conditionally in the EN zone. The proposed 50-foot-wide Project corridor is within the EN zone for approximately 0.2 mile (see Figure 2 in Appendix A). The Applicant has designed the Project to span over the EN zone to minimize impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EN zone (see Figure 4 in Appendix A). Based on the Applicant's examination of the proposed EN crossing, there are limited trees and taller-growing vegetation within the 50-foot-wide corridor. Therefore, the vegetation in the EN crossing, such as the existing grasses and shrubs will be allowed to remain, ensuring that the estuarine areas continue to provide the level of ecosystem services that they currently provide.

The Project is permitted conditionally in the EN zone consistent with TCLUO 3.102(3)(d) subject to the applicable standards of TCLUO 3.120 and 3.140. This application narrative demonstrates the Project's compliance with the applicable provisions of TCLUO 3.120 and TCLUO 3.140 for development of the proposed Project in the County's EN zone.

The Applicant is unaware of any areas needed for scientific, research or educational needs within the portions of the proposed 50-foot-wide corridor that cross the EN zone. To the extent the aerial conductor spans over any of these areas, the Applicant will work with the County to ensure the Project does not preclude the use of areas in the EN zone identified on Figure 4 in Appendix A for scientific, research or educational needs. For the reasons described above, the Project complies with this criterion.

(g) When storm water and sewer outfalls are proposed in EC2 and EC1 zones, evidence shall be provided by the applicant and findings made by the County that the proposed use is consistent with the resource capabilities of the area and the long-term use of renewable resources, and does not cause a major alteration of the estuary.

Finding: No storm water or sewer outfalls are part of the proposed Project. Therefore, this criterion is not applicable.

(h) When new energy facilities and utilities are proposed in Estuary Development (ED) zones, evidence shall be provided by the applicant and findings made by the County that the proposed

facility will not preclude the provision or maintenance of navigation and other public, commercial and industrial water dependent uses.

Finding: The Project is not proposed to be constructed in the Estuary Development (ED) zone. Therefore, this criterion does not apply.

(j) Dredge, fill, shoreline stabilization or other activities in conjunction with construction of energy facilities or utilities shall be subject to the respective standards for these activities.

Finding: No dredge or shoreline stabilization activities are associated with the Project and the County's dredge and shoreline stabilization standards are not applicable.

The Applicant has designed the Project to span the EC1 and EN zones to minimize impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A) and no fill or temporary access roads will occur in the EC1 and EN zones. Therefore, the portion of the Project that crosses the EC1 and EN zones will not require fill in excess of 50 cubic yards. Therefore, the Project complies with this criterion.

(k) Energy facilities and utilities shall be sited so that they do not and will not require structural shoreline stabilization methods.

Finding: The Project is specifically designed to span over the estuary as shown on Figure 3 in Appendix A and no portion of the Project will be located within the water body of the estuary. No power poles will be located within the EC1 and EN zones (see Figure 4 in Appendix A). No shoreline stabilization methods are associated with the Project and the County's shoreline stabilization standards are not applicable to the Project. Therefore, this criteria does not apply.

(7) FILL IN ESTUARINE WATERS, INTERTIDAL AREAS AND TIDAL WETLANDS: These standards shall apply only to fill in excess of 50 c.y. or fill of less than 50 c.y. which requires a Section 10 or 404 Permit from the U.S. Army Corps of Engineers.

(a) When fill in estuarine waters, intertidal areas or tidal wetlands is proposed, evidence shall be provided by the applicant and findings made by the County that:

(1) The fill is necessary for navigation or other water dependent uses that require an estuarine location, or is specifically allowed by the management unit or zone; and

(2) A need (i.e. a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights; and,

(3) If no feasible alternative upland locations exist; and,

(4) If adverse impacts are minimized.

Finding: The Applicant is concurrently preparing multiple applications for permits necessary at this stage of the development process to demonstrate compliance with applicable state and federal regulations. The overall Project will include some activities within jurisdictional waters of the U.S. and waters of the state. Thus, a federal Clean Water Act, Section 404 Permit, and Removal-Fill Permit may be required from the USACE and DSL, respectively. Whether these permits are necessary for the Project is still being determined based on public agency concurrence on the location of wetlands and water bodies (that is, concurrence on the Project wetland delineation) and subsequent Project impacts to wetlands and waters. The proposed Project will require fill and removal in regulated wetlands in excess of 50 cubic yards. However, the portion of the Project that crosses the EC1 and EN zones will not require fill in excess of 50 cubic yards or less than 50 cubic yards. The Applicant has designed the Project to span the EC1 and EN zones to minimize impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A). In addition, no

temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones.

The Tillamook and Trask Rivers and some of the other tributaries crossed by the Project are navigable requiring a permit from the USACE under Section 10 of the Rivers and Harbors Act of 1899. Thus, the standards of TCLUO 3.140(7)(a) apply to the Project even though fill will not occur within the estuary.

The Project demonstrates a substantial public benefit to County residents and commercial clients reliant on the Applicant for electrical power and services. The Project is designed to improve transmission capacity and reliability and replace aging infrastructure as described in Section 4 (Purpose and Need). Specifically, the Project is necessary to:

- Ensure the Applicant's system capacity in the central Tillamook Valley does not exceed the RUS recommended peak loading capacity, allow for additional system capacity and growth in the central Tillamook Valley and Netarts-Oceanside areas, and allow for the transfer of load capacity between substations to prevent load curtailments and outages to customers.
- Improve the reliability of service to approximately 1,800 customers and substantially reduce the number of customers affected by an outage and the length of the outage.
- Replace the failing infrastructure associated with the existing radial distribution line that is over 50 years old and serves the Netarts-Oceanside area. Based on the age of the infrastructure, industry safety practices require that power is cut to the line during repairs, which creates an outage and cuts power to approximately 1,800 customers.

The Project will not unreasonably interfere with public trust rights to the County's estuarine areas within the EC1 and EN zones. The Project will be entirely aboveground and landward of the Line of Ordinary High Water except for the aerial conductor, and only the 50-foot-wide permanent easement will need to remain free from certain types of vegetation and development consistent with NESC, RUS, and Applicant standards for clearances and use for the operation and maintenance of a transmission line. The Project was specifically routed to avoid existing and planned public access areas and will not preclude the public from using estuarine areas within the EC1 and EN zones. The presence of the Project will not interfere with public use and access to the Tillamook Bay estuary in general. The general public will maintain access to and use of the estuarine resources crossed by the Project in the County during construction and operation. Thus, the Project will not unreasonably interfere with public trust rights.

The proposed Project corridor must cross regulated estuary in the County's EC1 and EN zones to connect the proposed transmission line between the existing BPA Tillamook Substation and the proposed Oceanside Substation (see Figure 2 in Appendix A). As described in Section 2 (Project Overview), the proposed location for the Project was selected following a detailed analysis of multiple potential alternative routes reviewed by the Citizen Advisory Group. This analysis incorporated a systematic rating system that was established for evaluating each alternative against a set of criteria such as permitability, ease of obtaining corridor approval, access, constructability, and a series of environmental, land use, and financial factors. The transmission line corridor recommended by the Citizen Advisory Group was then adjusted based on feedback from public meetings and individual meets with affected landowners. The proposed Project corridor was selected because it meets the preference of the Citizen Advisory Group to avoid residential and commercial areas within the City of Tillamook while minimizing impacts to agricultural land and estuarine areas within the County. Note that portions of the EC1 and EN zones occur north of the proposed Project corridor along Wilson River and portions of the EC1 zone extend well south of the City of Tillamook boundary. No alternative route exists that can reasonably connect the existing and proposed substations without crossing the EC1 and EN zones as shown on Figure 2 in Appendix A.

The width of the Project right-of-way will be reduced to 50 feet when crossing the EC1 and EN zones to minimize the area of disturbance, as opposed to the 100-foot-wide corridor that is required in the F

zone. As described in Section 3.2.4 (Vegetation Removal), taller vegetation such as trees and tall shrubs exceeding 20 feet in height will likely need to be removed from the corridor within the EC1 and EN zones directly underneath the conductor. The taller vegetation will be replaced with low-growing native species within the right-of-way and similar vegetation will be replanted in the vicinity of the right-of-way following construction. Temporary disturbances that may result from construction will be restored to as near original condition as possible (for example, recontoured and reseeded).

Temporary wetland impacts along the Project route will be mitigated. Therefore, the Project complies with the standards under TCLUO 3.140(7)(a).

(b) When fill for the purpose of on-site maintenance of existing facilities is proposed, evidence shall be provided by the applicant and findings made by the County that:

(1) There are no alternatives to fill to maintain proper operation of the facility.

(2) The amount of fill proposed is confined to the geographic area of the existing facility, and is the minimum amount necessary to fulfill the need.

Finding: The Project is a new utility facility necessary for public service that is permitted in the EC1 zone and permitted conditionally in the EN zone. The Project is not onsite maintenance of an existing facility. Therefore, the criteria under TCLUO 3.140(7)(b) does not apply to the proposed Project.

(c) Where existing public access is reduced, suitable access as part of the development project shall be provided.

Finding: The proposed Project was specifically routed to avoid existing and planned public access areas and will not preclude the public from using estuarine areas within the EC1 and EN zones. The presence of the Project will not interfere with or reduce public use and access to the Tillamook Bay estuary in general. No power poles or other permanent components are proposed within the estuary zones, only the aerial conductor crosses these areas. The general public will maintain access to and use of the estuarine resources crossed by the Project in the County during construction and operation. Thus, the Project complies with this criterion.

(d) The fill shall be placed at a time that will minimize sedimentation and turbidity. The work periods specified in the Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources (ODFW, 1976) shall be followed unless approval of alternative work periods has been obtained from the ODFW.

Finding: The Project is specifically designed to span the EN and EC1 zones as shown on Figure 4 in Appendix A. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A) and no fill will occur in the EC1 and EN zones. In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. The Applicant will obtain approval for a NPDES 1200-C permit from DEQ prior to construction as required to ensure erosion and sediment control for construction stormwater runoff to avoid construction-related impacts to water quality. The Applicant will continue to work with the relevant regulatory agencies regarding the timing of construction. Therefore, the Project complies with this criterion.

(e) Only non-polluted materials may be used for fill. Materials which would create water quality problems are not permitted.

Finding: No power poles or fill will occur within the EC1 and EN zones and no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. Furthermore, the Applicant will obtain approval for a NPDES 1200-C permit from DEQ prior to construction as required to ensure erosion and sediment control for construction stormwater runoff. Therefore, the Project complies with this criterion.

(f) The perimeters of the fill shall be provided with erosion prevention measures, consistent with Shoreline Stabilization standards.

Finding: No power poles or fill will occur within the EC1 and EN zones and no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. Furthermore, the Applicant will obtain approval for a NPDES 1200-C permit from DEQ prior to construction as required to ensure erosion and sediment control for construction stormwater runoff. Therefore, the Project complies with this criterion.

(g) Fills shall be placed so that adjacent or nearby property is not adversely impacted by increased erosion, shoaling or flooding produced by changes in littoral drift or other changes in water circulation patterns. An affidavit from a professional registered engineer or hydrologist may impact assessment required in Section 3.120.

Finding: No power poles or fill will occur within the EC1 and EN zones and no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. Furthermore, the Applicant will obtain approval for a NPDES 1200-C permit from DEQ prior to construction as required to ensure erosion and sediment control for construction stormwater runoff. Although located outside of the estuary zones, fill associated with construction of the power poles in the F-1 zone will not impact adjacent or nearby properties by increased erosion, shoaling or flooding. As part of this application package, the Applicant is submitting a request for a development permit for the portions of the Project within designated floodway. This development permit request demonstrates compliance with applicable flood hazard criteria under TCLUO 3.510. As part of the development permit request, the Applicant has conducted a zero-rise analysis to prove that any portion of the Project constructed within the floodway will not cause any rise in base (100-year) flood elevations when compared to existing conditions (see Appendix D). This no-rise analysis further demonstrates the Project's compliance with the applicable provisions under TCLUO 3.120. Therefore, the Project complies with this criteria.

(h) Fill proposals requiring mitigation shall include a mitigation plan consistent with Mitigation standards.

Finding: Permanent adverse impacts from the Project (i.e., fill) to estuarine areas of the EC1 and EN zones have been avoided. No power poles or fill will occur within the EC1 and EN zones and no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. The aerial conductor will span over the water bodies within the EC1 and EN zones. Temporary wetland impacts along the Project route will be mitigated. Therefore, the Project complies with this criterion.

(i) Fill in estuarine waters, intertidal areas and tidal wetlands shall be subject to the requirements of the State Fill and Removal Law (ORS 541.605 - 541.665), The Rivers and Harbors Act of 1899, the Clean Water Act of 1977 (PL 95-217) and other applicable State and Federal laws. These requirements shall be enforced by State and Federal agencies with regulatory authority over fill projects.

Finding: The Applicant is concurrently preparing multiple applications for permits necessary at this stage of the development process to demonstrate compliance with applicable state and federal regulations. The overall Project will include some activities within jurisdictional waters of the U.S. and waters of the state. Thus, a federal Clean Water Act, Section 404 Permit, and Removal-Fill Permit may be required from the USACE and DSL, respectively. Whether these permits are necessary for the Project is still being determined based on public agency concurrence on the location of wetlands and water bodies (that is, concurrence on the Project wetland delineation) and subsequent Project impacts to wetlands and waters. The proposed Project will require fill and removal in regulated wetlands in excess of 50 cubic yards. However, the portion of the Project that crosses the EC1 and EN zones will not require fill in excess of 50 cubic yards or less than 50 cubic yards. The Applicant has designed the Project to span the

EC1 and EN zones to minimize impacts within estuarine areas. Accordingly, none of the 50 power poles proposed within the central Tillamook Valley area between the existing BPA Tillamook Substation and Bayocean Road will be located within the EC1 and EN zones (see Figure 4 in Appendix A). In addition, no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones.

The Tillamook and Trask Rivers and some of the other tributaries crossed by the Project are navigable requiring a permit from the USACE under Section 10 of the Rivers and Harbors Act of 1899. The Applicant will obtain this permit prior to initiating construction. Therefore, the Applicant will demonstrate compliance with applicable state and federal regulations prior to Project construction and the Project complies with this criterion.

(j) An impact assessment shall be conducted during the local, State, and Federal review of permit applications for fill in estuarine waters, intertidal areas, or tidal wetlands according to the provisions outlined in Section 3.120. Identified adverse impacts shall be minimized to be consistent with the resource capabilities and purposes of the area.

Finding: The Project is a permitted use in the EC1 zone consistent with TCLUO 3.106(2)(h) and is permitted conditionally in the EN zone consistent with TCLUO 3.102(3)(d) subject to the applicable standards of TCLUO 3.120 and 3.140. This application narrative demonstrates the Project's compliance with the applicable provisions of TCLUO 3.120 and TCLUO 3.140. No power poles or fill will occur within the EC1 and EN zones and no temporary access roads or conductor pulling and tensioning sites will be located in the EC1 and EN zones. As described above in responses to TCLUO 3.120(2)(a through f), the Project does not include the development of regulated activities in the EC1 or EN zones and an impact assessment is not required under TCLUO 3.120(5). Therefore, the Project complies with this criterion.

SECTION 3.510: FLOOD HAZARD OVERLAY ZONE (FH)

The Project crosses the County's Flood Hazard Overlay Zone. The County's FH overlay zone is shown as the flood hazard areas depicted on FEMA's Flood Insurance Rate Map (FIRM). The portion of the Project located between the existing BPA substation and Bayocean Road is generally identified within Zone AE which is a Special Flood Hazard Area susceptible to a 1 percent annual chance flood or 100-year flood event. However, the Project also crosses Regulated Floodway. Thus, the Applicant has prepared a zero-rise analysis to demonstrate that no portion of the Project constructed within the floodway will cause any rise in base (100-year) flood elevations when compared to existing conditions (see Appendix D). The floodway is shown on Figure 1 in Appendix D. The Applicant requests a Development Permit for the crossing of the Floodway. The Applicant demonstrates compliance with the applicable criteria of TCLUO 3.510 below.

(5) GENERAL STANDARDS: In all areas of special flood hazards the following standards are required:

ANCHORING

(a) All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.

Finding: Throughout the Project area in the County, 44 power poles will be located in Zone AE as depicted on FEMA's FIRM and 23 power poles are in the floodway (see Figure 1 in Appendix D). The power poles are described in Section 3.1.2 and have been selected based on soil conditions and hydrologic conditions, which will be confirmed during the detailed engineering phase of the Project. The power poles will vary in height, ranging approximately between 50 and 125 feet above ground. The actual height and diameter of each power pole will be determined by topography and safety requirements for conductor clearances. The power poles will be either steel or wood and will consist of a single pole or of two or three poles, depending on soil types and span lengths. The steel power poles will be tubular with a painted galvanized coating and will measure approximately 1.5 to 3.5 feet in

diameter at the ground line and it is anticipated that the steel power poles will be placed on a vibratory concrete caisson base from Highway 101 to Bayocean Road. The depth of the base and the use of vibratory caisson will vary based on soil conditions and the loads supported by the base as determined during detailed engineering. The footprint of each power pole's ground penetration is considered a permanent disturbance as provided in Table 3-2.

Dead-end power poles will be used at regular intervals on the line to accommodate adequate conductor tensioning. Guy wires support some of the dead-end power poles and are held in place by subsurface anchors to prevent movement of the power poles. Other power poles are self-supporting and do not require additional down guys, thereby reducing impacts on land usage. Typical power pole diagrams are included in Appendix B. Therefore, the Project complies with this criterion.

CONSTRUCTION MATERIALS AND METHODS

(c) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(d) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

Finding: The Project will be constructed using materials designed to resist flood damage, and using methods and practices that minimize flood damage. The power poles are described in Section 3.1.2 and have been selected based on soil conditions and hydrologic conditions, which will be confirmed during the detailed engineering phase of the Project. As described in Section 3.2.5, power poles will be installed using direct embedment, steel caissons, or traditional concrete foundations. Direct embedment will be achieved by augering a hole slightly larger than the power pole, installing the pole and backfilling with gravel, or vibrating the power pole or a section of the power pole directly into the earth. Steel caissons will be used as the power pole foundations to enhance strength and stability, depending on the soil types. The caissons will be driven into the ground using a vibratory hammer and the power poles will be placed within the hollow steel caisson and backfilled with gravel. Traditional concrete foundations using rebar cages and a bolted connection at ground line to attach the power pole to the foundation will be used at heavy-angle, self-supporting power poles, mainly on the east side of Highway 101.

Dead-end power poles will be used at regular intervals on the line to accommodate adequate conductor tensioning. Guy wires support some of the dead-end power poles and are held in place by subsurface anchors to prevent movement of the power poles. Other power poles are self-supporting and do not require additional down guys, thereby reducing impacts on land usage. Typical power pole diagrams for the Project are included in Appendix B. Therefore, the Project complies with this criterion.

(6) SPECIFIC STANDARDS FOR A ZONES (A, AE or A1-A30): In all areas of special flood hazards where base flood data has been provided as set forth in Section 3.510(2) or other base flood data are utilized, the following provisions are required:

NONRESIDENTIAL CONSTRUCTION

(c) New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall have either the lowest floor including basement elevated to three feet above the level of the base flood elevation or higher; or, together with attendant utility and sanitary facilities, shall:

(1) Be floodproofed so that the portion of the structure that lies below the portion that is three feet or more above the base flood level is watertight with walls substantially impermeable to the passage of water.

(2) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

(3) Be certified by a registered professional engineer or architect that the design and methods of construction are in compliance with accepted standards of practice for meeting provisions of this Subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the Community Development Director.

Finding: The power poles are described in Section 3.1.2 and will be installed as described in Section 3.2.5. The Project is not a building with a basement or utilities unrelated to electrical transmission. The specific power poles have been selected based on soil conditions and hydrologic conditions, which will be confirmed during the detailed engineering phase of the Project. The power poles will be installed using direct embedment, steel caissons, or traditional concrete foundations. Direct embedment will be achieved by augering a hole slightly larger than the power pole, installing the power pole and backfilling with gravel, or vibrating the power pole or a section of the pole directly into the earth. Steel caissons will be used as the power pole foundations to enhance strength and stability, depending on the soil types. The caissons will be driven into the ground using a vibratory hammer and the power poles will be placed within the hollow steel caisson and backfilled with gravel. Traditional concrete foundations using rebar cages and a bolted connection at ground line to attach the power pole to the foundation will be used at heavy-angle, self-supporting power poles, mainly on the east side of Highway 101.

Dead-end power poles will be used at regular intervals on the line to accommodate adequate conductor tensioning. Guy wires support some of the dead-end power poles and are held in place by subsurface anchors to prevent movement of the power poles. Other power poles are self-supporting and do not require additional down guys, thereby reducing impacts on land usage. Typical power pole diagrams for the Project are included in Appendix B. Therefore, the Project complies with this criterion.

(8) SPECIFIC STANDARDS FOR FLOODWAYS: Located within areas of special flood hazard established in Section 3.510(2) are areas designated as regulatory floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

(a) Encroachments in the regulatory floodway including fill, new construction, substantial improvements and other development are prohibited unless certification is provided by a professional registered civil engineer demonstrating through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that such encroachment shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(b) If Subsection 8(a) is satisfied, all new construction and substantial improvement shall comply with all applicable flood hazard reduction provisions of Section 3.510(5) and (6).

Finding: Northwest Hydraulic Consultants provided a letter to the Applicant documenting an engineer's certification of 'zero-rise' on June 12, 2017. The zero-rise certification letter is included as Appendix D to this application narrative. Part of the proposed transmission line corridor alignment is within the regulatory FEMA floodway as shown on Figure 1 in Appendix D. Under FEMA regulations, any development that occurs in the floodway must not cause a rise in the base (100-year) flood. Appendix D certifies that the Project does not cause a rise in the base flood elevations, floodway elevations, and floodway widths and meets FEMA 'zero-rise' criteria as set forth in 44 CFR 60.3 and the Tillamook County ordinance. As demonstrated above, Project construction will comply with the applicable criteria under TCLUO 3.510 (5) and (6). Therefore, the Project complies with the applicable standards for floodway development under TCLUO 3.510(8).

(13) DEVELOPMENT PERMIT PROCEDURES: A development permit shall be obtained before construction or development begins within any area of special flood hazard zone. The permit shall be for all structures including manufactured dwellings, and for all development including fill and other

development activities, as set forth in the Definitions contained in this Section of the Land Use Ordinance.

(b) Development Permit Review Criteria.

(1) The fill is not within a floodway, Coastal High Hazard Area, wetland, riparian area or other sensitive area regulated by the Tillamook County Land Use Ordinance.

Finding: Northwest Hydraulic Consultants provided a letter to the Applicant documenting an engineer's certification of 'zero-rise' on June 12, 2017. The zero-rise certification letter is included as Appendix D to this application narrative. Under FEMA regulations, any development that occurs in the floodway must not cause a rise in the base (100-year) flood. Appendix D certifies that the Project does not cause a rise in the base flood elevations, floodway elevations, and floodway widths and meets FEMA 'zero-rise' criteria as set forth in 44 CFR 60.3 and the Tillamook County ordinance. Therefore, the Project complies with this criterion.

(2) The fill is necessary for an approved use on the property.

Finding: The Applicant is applying for the various land use permits and approvals required to construct and operate the Project within the corridor as proposed, including the proposed crossing of the floodway. County approval of the permits and approvals will demonstrate that the proposed power poles are necessary within the floodway. Therefore, the Project complies with this criterion.

(3) The fill is the minimum amount necessary to achieve the approved use.

Finding: The proposed power poles proposed in the floodway are the minimum necessary to achieve the approved use. The Applicant has examined numerous route alternatives between the existing and proposed substations. A Citizen Advisory Group was formed to review and recommend a corridor for the proposed transmission line. The proposed location for the Project was selected following a detailed analysis of potential alternative routes as well as recommendations received from the Citizen Advisory Group. This analysis incorporated a rating system that was established for evaluating each alternative. The Applicant examined each alternative against a set of established criteria such as permitability, ease of obtaining corridor approval, access, constructability, and a series of other environmental, land use, and financial factors. The original transmission line corridor recommended by the Citizen Advisory Group was then adjusted based on feedback from public meetings and individual meets with affected landowners. The proposed route is the conclusion of this alternatives analysis.

The type, size, and location of the specific power poles within the floodway is based on preliminary engineering the Applicant has performed on soil conditions and hydrologic conditions, which will be confirmed during the detailed engineering phase of the Project. The proposed design is needed to safely construct and operate the transmission line within the corridor proposed. Therefore, the Project complies with this criterion.

(4) No feasible upland locations exist on the property.

Finding: No feasible upland locations exist on the properties crossed by the Project where the transmission line could be routed to avoid the floodway. The floodway encompasses a significant area north of the existing BPA Tillamook Substation on both sides of Highway 101 and it cannot be avoided with routes crossing north of downtown City of Tillamook. Therefore, the Project complies with this criterion.

(5) The fill does not impede or alter drainage or the flow of floodwaters.

Finding: The no-rise analysis provided for the Project by Northwest Hydraulic Consultants and included in Appendix D shows that the power poles will not impede or alter drainage or the flow of floodwaters. Therefore, the Project complies with this criterion.

SECTION 3.545: SHORELAND OVERLAY (SH)

(2) AREAS INCLUDED: The SHORELAND OVERLAY ZONE is designated on the Tillamook County Zoning Maps. Included in this zone are:

(a) Lands contiguous with the ocean estuaries and coastal lakes that contain the following features shown in the Coastal Shoreland Element of the Comprehensive Plan:

(1) Areas subject to ocean flooding and lands within 100 feet of the ocean shore or within 50 feet of an estuary or a coastal lake.

Finding: The proposed transmission line corridor crosses the SH overlay zone in areas within 50 feet of the Applicant's delineated EC1 and EN zone boundaries shown on Figure 4 in Appendix A. Where possible, the Applicant designed the Project to span the SH overlay zone to avoid impacts within shoreland areas. Permanent disturbances within the SH overlay zone are limited to the construction of eight power poles (power poles 5, 8, 43 to 46, 48, and 49) shown on Figure 4 in Appendix A.

(b) Priority Dredged Material Disposal (DMD-1) and Mitigation (MIT-1) sites.

Finding: County planning staff reviewed mapping and information on the location of the various elements of the Shoreland Overlay Zone and no priority dredged material disposal or mitigation sites were identified as being crossed by the Project (Absher, 2017a, pers. comm.) Therefore, this criterion is not applicable to the Project.

(3) Categories of Coastal Shorelands: There are two categories of coastal shorelands included in the SHORELAND OVERLAY ZONE.

(a) Rural Shorelands are the first category of Coastal Shorelands. Rural Shorelands are those areas that are outside an urban growth boundary and do not fall within the second category of Coastal Shorelands.

Finding: County planning staff reviewed mapping and information on the location of the various elements of the Shoreland Overlay Zone and indicated that the only shorelands crossed by the proposed transmission line corridor within 50 feet of the Applicant's delineated EC1 and EN zone boundaries are rural and do not fall within the second category of significant shorelands (Absher, 2017b, pers. comm.)

(b) The second category are those shorelands identified in the Estuarine Element and Coastal Shorelands Element of the Comprehensive Plan as:

(1) Significant shoreland and wetland biological habitat.

(2) Exceptional aesthetic or scenic resources and coastal headlands.

(3) Priority dredged material disposal and priority mitigation sites.

(4) Beaches, active foredunes, conditionally stable foredunes that are subject to ocean undercutting or wave overtopping and interdune areas subject to ocean flooding.

Finding: County planning staff reviewed mapping and information on the location of the various elements of the Shoreland Overlay Zone and indicated that the only shorelands crossed by the proposed transmission line corridor within 50 feet of the Applicant's delineated EC1 and EN zone boundaries are rural and do not fall within the category of significant shorelands (Absher, 2017b, pers. comm.). Therefore, with the category of shorelands under TCLUO 3.545(3)(b) does not apply to the Project.

(4) USES PERMITTED: Uses authorized by the underlying zone as outright or conditional uses are permitted, except at locations identified in (3) above.

(a) Rural Shorelands in General:

(f) Other uses are allowed only upon a finding by the County that such uses satisfy a need which cannot be accommodated at any alternative upland location, except in the following cases:

(1) In built and committed exception shoreland areas, where all uses permitted in the underlying zone are permitted, and

(2) In the F-1, F, SFW-20, and RM zones, where the Other Uses listed in Sections 8.4.e, 8.4.f, 8.4.g and 8.5.e, respectively of the Coastal Shoreland Element, are permitted, if no suitable non-shoreland location exist on the parcel.

Finding: The proposed Project is permitted outright in the County's underlying F-1 base zone where it also crosses the SH overlay zone. As shown on Figure 4 in Appendix A, the 50-foot SH overlay buffer begins at the Applicant's delineated EC1 and EN zone boundaries and extends into the F-1 zone. The proposed Project does not cross other base zones where the SH overlay zone is located County planning staff confirmed that the proposed Project is allowed in rural shorelands to satisfy a need which cannot be accommodated at an alternative upland location as described in findings under TCCP 8.6c(c) for energy facilities in rural shorelands as follows (Absher, 2017a and 2017b, pers. comm.):

8.6c Energy Facilities and Utilities in Rural Shorelands

Tillamook County finds that:

c. There is a need to provide for normal domestic energy facilities and utility service within rural shorelands and to provide for energy sources such as WECS. This need cannot be met on upland locations or in urban or urbanizable areas;

The proposed Project is a utility facility necessary for public service. Project impacts to rural shorelands within the SH overlay zone are limited to the construction of eight power poles (power poles 5, 8, 43 to 46, 48, and 49) shown on Figure 4 in Appendix A. In accordance with TCCP 8.6c(c), there is a need for utility service in rural shorelands. The proposed Project corridor must cross rural shoreland within the County's SH overlay zone to connect the proposed transmission line between the existing BPA Tillamook Substation and the proposed Oceanside Substation (see Figure 2 and Figure 4 in Appendix A). Therefore, the Project is a permitted use in accordance with TCLUO 3.545(4)(a)(f) and TCCP 8.6c(c).

(6) STANDARDS: Uses within the SHORELAND OVERLAY ZONE are subject to the provisions and standards of the underlying zone and of this section. Where the standards of the SHORELANDS OVERLAY ZONE and the underlying zone conflict, the more restrictive provisions shall apply.

Finding: The proposed Project is permitted outright in the County's underlying F-1 base zone where it also crosses the SH overlay zone as shown on Figure 4 in Appendix A. The Applicant demonstrates compliance with the applicable criteria of the F-1 zone in responses to TCLUO 3.002 above. Therefore, the Project demonstrates compliance with this criterion.

(a) Riparian vegetation shall be protected and retained according to the provisions outlined in Section 4.140, REQUIREMENTS FOR PROTECTION OF WATER QUALITY AND STREAMBANK STABILIZATION.

Finding: The proposed Project corridor will cross rural shorelands in the SH overlay zone as defined within a 50-foot buffer from the delineated EC1 and EN zones and shown on Figure 4 in Appendix A. The SH overlay zone is adjacent to streams crossed by the proposed Project which include the Hoquarten, Dougherty, Hall, and Tomlinson Sloughs, the Trask and Tillamook Rivers, Stillwell Ditch, and S-09B Tomlinson Slough. Where possible, the Applicant designed the Project to span the SH overlay zone to avoid impacts within shoreland areas. Project impacts within the SH overlay zone are limited to the construction of eight power poles (power poles 5, 8, 43 to 46, 48, and 49) shown on Figure 4 in Appendix A. The Applicant demonstrates compliance with the applicable provisions of TCLUO 4.140 below. Therefore, the Project demonstrates compliance with this criterion.

(b) Development in flood hazard areas shall meet the requirements of Section 3.510, FLOOD HAZARD OVERLAY ZONE.

Finding: The Applicant demonstrates compliance with the applicable provisions of TCLUO 3.510 above and shows that the Project will not cause a rise in the base flood elevations, floodway elevations, and floodway widths and meets FEMA 'zero-rise' criteria as set forth in 44 CFR 60.3 and TCLUO 3.510 (see Appendix D). Therefore, the Project demonstrates compliance with this criterion.

(c) Development in beach and dune and other geologic hazard areas shall meet the requirements of Section 3.085, BEACH AND DUNE OVERLAY ZONE and Section 4.130, DEVELOPMENT REQUIREMENTS FOR GEOLOGIC HAZARD AREAS.

Finding: The proposed Project is not located in the Beach and Dune Overlay Zone and development standards associated with the Beach and Dune Overlay Zone do not apply to the Project. Portions of the proposed transmission line in the SH overlay zone are not located in geologic hazard areas as defined by TCLUO 4.130(1). The Applicant has conducted a geologic analysis of the transmission route and proposed Oceanside Substation site and provides findings for the applicable criteria from Section 4.130 below. A segment of the Project is located within geologic hazard areas, but this occurs in the forest west of Bayocean Road where located outside of the estuary and adjacent SH overlay zone. Therefore, this criterion does not apply.

(e) The productivity of resource land on Rural Shorelands shall be considered when determining the location of "Other Uses" within a given land parcel in the F-1, F, and SFW-20 zones. "Other Uses" within these zones shall be located so that the productivity of resource land is maintained.

Finding: The proposed Project is permitted outright in the County's underlying F-1 base zone where it also crosses the SH overlay zone as shown on Figure 4 in Appendix A. The Applicant demonstrates compliance with the applicable criteria of the F-1 zone in responses to TCLUO 3.002 above.

Specifically, permanent disturbances from the Project on surrounding lands devoted to farm use will be minimized as the transmission line conductor will be elevated above the ground and access roads in cultivated areas will be temporary and only necessary for construction. The only permanent impacts inside the proposed Project corridor are the areas necessary for power poles, guy wires, and anchors (see Table 3-2). Permanent impacts within the SH overlay zone will be limited to the construction of eight power poles (power poles 5, 8, 43 to 46, 48, and 49) shown on Figure 4 in Appendix A. Thus, permanent removal of farming activities will only be connected to the location of these specific components. Wherever possible, power pole locations have been selected along property lines on the edges of fields to minimize the impact on current farming activities Furthermore, impacts from the proposed Project have been minimized where the corridor is adjacent to or collocated with existing right-of-way and previously disturbed corridors (such as Port of Tillamook Bay's railroad right-of-way from the substation north to Wilson River Loop Highway). The areas inside the corridor can continue to be used for its current purpose if the underlying landowner chooses to do so, as long as the use does not conflict with the safe operation of the line and meets the NESC and Applicant standards for clearances and use. Allowed uses include agriculture, grazing, and associated irrigation activities.

New power poles constitute permanent impacts to underlying farmlands requiring a small footprint that will be spaced approximately 500 feet apart resulting in approximately less than 0.01 acre (or approximately 77 square feet) of permanent disturbance within the F-1 zone and SH overlay zone. During installation of the new poles, land or construction clearing will be minimized to reduce soil disturbances and to maintain water quality from stormwater runoff. The Applicant and its construction contractor will maintain awareness of irrigation systems near the proposed corridor and will coordinate with surrounding agricultural practices as construction occurs. As described in Section 3.3.5 (Reclamation), disturbed areas will be recontoured and seeded and restored to as near original condition as possible.

Temporary impacts outside the proposed Project corridor will be limited to new access roads and conductor pulling and tensioning sites (see Table 3-3). The Applicant will also use existing access roads whenever possible. Again, farm ground used for new access roads or conductor pulling and tensioning sites can return to production upon completion of construction. As described in Section 3.2.3 (Access Roads), approximately 2.8 miles of temporary access roads will be constructed on areas of central farmland within the F-1 zone as shown on Figure 2. Portions of these temporary access roads will cross the SH overlay zone and will be limited to the construction of eight power poles. These temporary access roads will consist of platforms (typically a mesh of wooden planks) that are installed on top of the existing farmland and capable of supporting the equipment needed to install the power poles and foundations. The temporary access roads will be needed for about 30 days for each power pole. The temporary access roads will result in approximately 0.2 acre of temporary disturbance to rural shorelands. Over cultivated lands, construction access roads may be temporarily reinstalled if equipment access is needed again for line maintenance.

For the reasons described herein and as shown in the Farm and Forest Impacts Assessment in Appendix C, the Project will minimize impacts on surrounding land devoted to farm use, will not force a significant change in accepted farm practices, and will not result in a significant increase in the cost of farm practices on surrounding farmlands. Therefore, the Project maintains the productivity of resource land associated with the F-1 zone and complies with this criterion.

SECTION 3.550: FRESHWATER WETLANDS OVERLAY (FW)

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

(a) Significant Goal 5 Wetlands: wetlands identified as "significant" in the Goal 5 Element of the Comprehensive Plan;

(b) Notification Wetlands: wetlands shown on the Statewide Wetland Inventory [NWI + LWI]. When required, the verification of zone boundaries shall be carried out in conjunction with the property owner and the Oregon Division of State Lands.

Finding: CH2M HILL Engineers, Inc. (CH2M) conducted a wetland delineation in April 2017 to identify potentially jurisdictional wetlands and other nonwetland waters of the United States on behalf of the Applicant for the proposed Project. The wetland delineation report is included as Appendix E to this application narrative. Fieldwork was conducted over 4 days, from April 24 through 27, 2017, in areas within the corridor where the Applicant had received landowner right-of-entry to conduct the survey. Aerial photography signatures, suggesting inundation and potential wetland vegetation located in the same area as the NWI- and LWI-mapped wetlands, were also used in advance of the field survey. The wetland delineation was completed in accordance with the implementing regulations for Section 404 of the federal Clean Water Act and the Oregon Removal-Fill Law. The study area of the wetland delineation report is within the Tillamook Bay watershed and crosses through the Trask and Tillamook subbasins. The east end of the study area travels through the Tillamook Valley along the floodplain of the Trask and Tillamook Rivers. It continues west to the timbered ridges above Oceanside. The study area consists of 100-foot-wide corridor along the preferred transmission line route where the Applicant has right-of-entry. As the Applicant secures right-of-entry to remaining properties crossed by the study area, these areas will be field delineated and an addendum to the wetland delineation report submitted to DSL and USACE.

Twelve wetlands were identified within the study area as documented in the wetland delineation report. Delineated wetlands and other waters are shown on Figure 6, maps 01 to 38, in Appendix E. Table 3 in Appendix E lists the wetlands and identifies their potential for state and federal jurisdiction. Table 5 in Appendix E contains a summary of the wetlands and nonwetland waters within the study area. Two of the wetlands are isolated and jurisdictional to DSL but not to USACE. All other wetlands identified in this

report are potentially subject to federal and state jurisdiction. Jurisdictional determinations, including the applicability of exemptions, are made on a case-by-case basis by the regulatory agencies. Therefore, the field delineated wetlands shown on Figure 6, maps 01 to 38, in Appendix E demonstrate the Project's compliance with these criteria. The Applicant will submit the wetland delineation report to DSL and USACE for review and approval in accordance with OARs 141-090-0005 through 141-090-0055 and by the USACE, Portland District. The Applicant's wetland delineation report (see Appendix E) should be considered a preliminary jurisdictional determination of wetlands and other waters until concurrence is received from DSL and the USACE.

(2) USES PERMITTED:

(a) Significant Goal 5 Wetlands:

(2) Other uses and developments permitted outright or conditionally in the underlying zone shall be permitted if they will not result in filling, drainage, removal of vegetation or other alteration which would destroy or reduce the biological value of the wetland. Minor drainage improvements necessary to ensure effective drainage on surrounding agricultural lands shall be allowed where such an action has been fully coordinated with the Oregon Department of Fish and Wildlife and the Tillamook County Soil and Water Conservation District. Existing drainage ditches may be cleared to original specifications without review.

Finding: The proposed Project is permitted outright or conditionally in the underlying zones it crosses (see Table 5-1). The Applicant's wetland delineation report is included as Appendix E to this application narrative. The Applicant will submit the wetland delineation report to DSL and USACE for review and approval in accordance with OARs 141-090-0005 through 141 090 0055 and by the USACE, Portland District. Notice of concurrence from DSL and USACE will be forwarded to the County once received. The Applicant will then permit wetland impacts as required by DSL and USACE. Therefore, the Project complies with this criterion.

(b) Notification Wetlands:

(1) uses permitted outright or conditionally in the underlying zone shall be permitted subject to approval by the Oregon Division of State Lands.

Finding: The proposed Project is permitted outright or conditionally in the underlying zones it crosses (see Table 5-1). The Applicant's wetland delineation report is included as Appendix E to this application narrative. The Applicant will submit the wetland delineation report to DSL and USACE for review and approval in accordance with OARs 141-090-0005 through 141 090 0055 and by the USACE, Portland District. Notice of concurrence from DSL and USACE will be forwarded to the County once received. The Applicant will then permit wetland impacts as required by DSL and USACE. Therefore, the Project complies with this criterion.

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

(a) Where dwellings are permitted in the underlying zone, the density of allowed development shall be determined by the size of the entire parcel.

Finding: The proposed Project does not include any dwellings. Therefore, this standard does not apply.

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

Finding: The Applicant's wetland delineation report is included as Appendix E to this application narrative. The Applicant will submit the wetland delineation report to DSL and USACE for review and approval in accordance with OARs 141-090-0005 through 141 090 0055 and by the USACE, Portland

District. Notice of concurrence from DSL and USACE will be forwarded to the County once received. The Applicant will then permit wetland impacts as required by DSL and USACE. Therefore, the Project complies with this criterion.

5.2.2 Article 4 – Development Standards

This section demonstrates compliance with the applicable development standards from Article 4 of the TCLUO.

SECTION 4.130: DEVELOPMENT REQUIREMENTS FOR GEOLOGIC HAZARD AREAS

Portions of the Project may be located through geologic hazard areas as defined by TCLUO 4.130(1) below. The Applicant has conducted a geologic analysis of the transmission route and proposed Oceanside Substation site and provides findings below for all applicable criteria from Section 4.130. Additionally, Appendix F contains a technical memorandum written by a professional geotechnical engineer at CH2M that documents geologic hazard areas in the vicinity of the Project.

The geologic hazards specified in the TCLUO Section 4.130(1) are listed below and addressed in detail in the technical memorandum included as Appendix F. As described below, two of the geologic hazards are present along the Project corridor. Therefore, the development standards included in TCLUO Section 4.130(2) will apply. However, no other required Tillamook County permit or approval listed under TCLUO Section 4.130(3), which automatically triggers the need for a Geologic Hazard Report (e.g., Building Permit or Partition), is necessary except for possibly a Building Permit for the substation. None of the permits or approvals listed under TCLUO Section 4.130(3) apply to the transmission line. During subsequent detailed design and engineering for the substation, a Geotechnical Report will be prepared and can be provided to Tillamook County prior to initiating construction.

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

(a) Active landslides identified in Oregon Department of Geology and Mineral Industries (DOGMI) Bulletins 74 and 79; Adopted May 27, 2015

Finding: The technical memorandum in Appendix F addresses this standard in detail. DOGAMI Bulletin 79 does not cover the Project area. Bulletin 74 identifies active landslides, several of which are in the general vicinity of the Project, however, Figure 1 in Appendix F shows that the Project does not cross any active landslide areas. Therefore, this criterion does not apply to the proposed transmission line.

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

Finding: As described in the technical memorandum included as Appendix F, no part of the Project is proposed in inactive landslide areas.

Bulletin 74 shows that part of the substation area is located in an area noted as landslide topography. However, as shown on Figure 2 in Appendix F, the slopes in the area of the substation, as provided in Bulletin 74 are listed as category 1 slopes (slopes between 0 and 9 percent). Since the slopes in this area are mapped as flatter than 19 percent, this criterion does not apply to the proposed substation.

Bulletin 74 shows portions of the transmission line in landslide topography so this potential geologic hazard applies to the Project. According to the slope map provided in Bulletin 74, the area between approximate transmission MP 4.3 and 8.0 is located in an areas having ground slopes generally between 10 and 24 percent. However, a review of the ground contours provided in Bulletin 74, and as shown on Figure 2 in Appendix F, shows that the only area where the ground slopes are greater than 19 percent is along a segment of approximately 600 feet directly west of Bayocean Road. Thus, this is the only location where this geologic hazard is crossed.

It is not unusual for transmission lines to be designed for crossing steep topography. Properly cited, transmission lines have generally performed very well in areas susceptible to landslides since the transmission poles and towers can be located to avoid active slides and/or installed into competent foundation materials not subject to instability.

CH2M understands that TriAxis Engineering, Inc., is designing and engineering the proposed transmission line. TriAxis specializes in providing design services and studies for electrical power systems, specifically transmission lines. TriAxis and the Applicant have selected a route that parallels existing access roads wherever possible where it crosses the industrial forest and steeper topography. Both have also worked to select transmission line power pole locations that avoid areas known or believed to be susceptible to landslides. In addition, the power pole types and foundations will be selected to safely support the transmission line and maintain the overall integrity of the Project.

(c) Areas prone to mudflows identified in DOGMI Bulletin 79;

Finding: Bulletin 79 does not cover the Project area. Therefore, this criterion does not apply to the proposed Project.

(d) Brallier Peat soils identified in Soil Survey, Tillamook Area, Oregon (USDA, Soil Conservation Service, 1964) and the unpublished Soil Conservation Service soils survey for coastal Tillamook County;

Finding: No Brallier Peat soils are identified in the soil survey for the Tillamook area of Oregon (USDA Soil Conservation Service, 1964). Therefore, this criterion does not apply to the proposed Project.

(e) Ocean front lots on bluffs in areas where erosion and sliding are identified as problems in the Goal 18 element of the Comprehensive Plan;

Finding: Based on the Goal 18 element of the TCCP, the Project is not located on oceanfront lots on bluffs where erosion and sliding are identified as problems. Therefore, this criterion does not apply to the Project.

(f) Other locally known areas of GEOLOGIC HAZARD based on evidence of past occurrences. (g) As required for development.

Finding: As documented and more fully described in Appendix F, the CH2M professional geotechnical engineer conducted research of other sources that identify geological hazards based on evidence of past occurrences including the DOGAMI *Statewide Landslide Information Database for Oregon* (SLIDO). As shown on Figure 3 in Appendix F, the transmission line crosses areas of documented landslide deposits and comes in close proximity to two documented landslides near MP 7.3 of the transmission route. As stated above in response to TCLUO 4.130(1)(b), it is expected that the transmission line power poles can be located to avoid areas of known historical landslides.

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

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

Finding: Vegetation removal of a 100-foot right-of-way will be required in the forested area to maintain the integrity of the transmission line corridor. Only vegetation that is necessary to be removed for construction and operation will be cleared. Certain vegetation types that are cleared for construction of the transmission line and substation that are not necessary to be cleared for the operation of either facility will be allowed to regrow, such as grasses and low-growing shrubs and trees. Therefore, the Project complies with this criterion.

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

Finding: The Applicant will obtain an NPDES 1200-C permit from DEQ prior to construction of the transmission line and electrical substation to ensure erosion and sediment control. Best management practices (BMPs) as documented in the NPDES 1200-C permit will be implemented during construction of the transmission line and substation to minimize impacts associated with erosion. Such BMPs include the installation of erosion and sediment control devices such as silt fences and straw bales along portions of the transmission line corridor, following vegetation clearing. In areas with steep slopes, near stream crossings, or where soils are more susceptible to erosion, additional erosion control measures may be implemented. Several of these erosion and sediment control measures will also have beneficial impacts to the long-term stability of slopes along the proposed Project. Erosion and sediment control devices will be installed and maintained following guidelines provided by the DEQ *Erosion and Sediment Control Manual* (DEQ, 2005) when specific guidelines exist. These measures may include the following:

- Straw wattles spaced perpendicular to the slope and flow of surface water
- Sediment basins and sediment barriers
- Plastic sheeting placed over stockpiled soil
- Rock check dams placed to interrupt surface water flow and direct water to undisturbed areas and natural drainages
- Temporary seeding, mulching, or erosion control matting
- Live stakes
- Trench plugs placed in excavated trenches to interrupt surface water or groundwater prior to that water entering streams or drainages

A copy of the NPDES 1200-C permit can be provided to the County prior to initiating construction. The implementation of standard and expanded erosion control measures will ensure the Project complies with this criterion.

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

Finding: Revegetation procedures will be implemented to ensure the rapid establishment of a vegetative cover within the corridor after completion of Project construction. The Applicant will revegetate areas disturbed or cleared during the construction process that do not need to remain clear for the operation of the transmission line and substation. Permanent seeding will be applied to finish grades for stabilization, and vegetation will be selected for compatibility with site conditions as well as adjacent natural plant communities and consistency with facility operations. Areas where vegetation is not sufficiently established will be reseeded and soil amendments will be used if necessary to establish vegetation.

Generally, the permanent transmission line easement will be rehabilitated to preconstruction conditions. Tall-growing trees and shrubs will be removed from the transmission line easement or will be maintained on a regular basis to ensure the safe operation of the transmission line. The proposed substation location will also be maintained to minimize the risk of equipment damage from fallen trees.

As all areas that are able to be restored will be restored to preconstruction conditions and other areas will be revegetated as is possible, the Project complies with this criterion.

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

Finding: Given the limited amount of ground disturbance resulting from the proposed Project, diversion of stormwater is not anticipated to occur during operation of the proposed transmission line. It is anticipated that stormwater will run off impervious surfaces at the substation site and infiltrate into the

ground. The amount of impervious surface created as a result of the Project will be low relative to a typical aboveground development.

The Applicant will obtain an NPDES 1200-C permit from DEQ prior to construction of the transmission line and electrical substation. In forested areas, enhanced water infiltration provided by well-vegetated cover may be temporarily lost until vegetation can be successfully reestablished. Near-surface soil compaction caused by heavy construction vehicles also could reduce the soil's ability to absorb water. In the unlikely event that groundwater resources are impacted, the Applicant will coordinate with appropriate agencies to determine mitigation measures to be taken. Following construction, the disturbed areas will be recontoured as closely as practical to preconstruction contours so stormwater is directed along natural drainage courses. These measures ensure that the Project complies with this criterion.

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

Finding: As demonstrated above, a few geologic hazards as described in TCLUO Section 4.130(1) are present along the transmission line route and at the proposed substation location. Therefore, the development standards included in TCLUO Section 4.130(2) will apply and the Applicant demonstrates compliance with the applicable criteria above. However, no other required Tillamook County permit or approval listed under TCLUO Section 4.130(3), which automatically triggers the need for a Geologic Hazard Report (e.g., Building Permit or Partition), is necessary except for possibly a Building Permit for the substation. During subsequent detailed design and engineering for the substation, a Geotech Report will be prepared and can be provided to Tillamook County prior to initiating construction. Therefore, the Project complies with this criterion.

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

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

Finding: As demonstrated above, a few geologic hazards as described in TCLUO Section 4.130(1) are present along the transmission line route and at the proposed substation location. Therefore, the development standards included in TCLUO Section 4.130(2) will apply and the Applicant demonstrates compliance with the applicable criteria above. However, no other required Tillamook County permit or approval listed under TCLUO Section 4.130(3), which automatically triggers the need for a Geologic Hazard Report (e.g., Building Permit or Partition), is necessary except for possibly a Building Permit for the substation. The proposed Project is not a planned development, coast resort, or sand mining operation and does not require a subdivision, partition, or mobile home permit. Therefore, these permits and approvals do not apply. During subsequent detailed design and engineering for the substation, a Geotech Report will be prepared and can be provided to Tillamook County prior to initiating construction.

SECTION 4.140: REQUIREMENTS FOR PROTECTION OF WATER QUALITY AND STREAMBANK STABILIZATION

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

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

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

(c) Fifteen (15) feet from all perennial rivers and streams where the river or stream channel is 15 feet in width or less.

For estuaries, all measurements are horizontal and perpendicular from the mean high water line or the line of non-aquatic vegetation, whichever is most landward. Setbacks for rivers, streams, and coastal lakes shall be measured horizontal and perpendicular from the ordinary high water line.

Finding: As documented in Appendix G to this application (the Applicant's *Biological Resources Report for the Tillamook-Oceanside 115-kilovolt Transmission Line Project*), the Project crosses 13 perennial water bodies with riparian buffers regulated by TCLUO 4.140. Figure 2 in Appendix G shows the specific water bodies and their regulated riparian buffers.

(2) All development shall be located outside of areas listed in (1) above, unless:

(a) For a bridge crossing; or

(b) Direct water access is required in conjunction with a water dependent use; or

(c) Because of natural features such as topography, a narrower riparian area protects equivalent habitat values; or

(d) A minimal amount of riparian vegetation is present and dense development in the general vicinity significantly degrades riparian habitat values.

Setbacks may be reduced under the provisions of (c) and (d) above only if the threat of erosion will not increase and a minimum 20 foot setback is maintained. Determinations of habitat values will be made by the Oregon Department of Fish and Wildlife.

Finding: Construction includes vegetation removal where necessary within the corridor to install the power poles and subsequently to protect the operational integrity of the transmission line consistent with NESC, RUS, and Applicant standards for clearances. Low-growing vegetation, such as low-lying shrubs and grass, will only be removed in the specific locations where power poles are being installed. This lower-growing vegetation will be allowed throughout the corridor following construction. Taller vegetation such as trees and tall shrubs exceeding 20 feet in height will likely need to be removed from within the corridor or topped to 20 feet, specifically within approximately 30 feet of power poles and directly underneath the conductor. In limited locations, taller vegetation in riparian buffers will need to be removed, such as where the line crosses Hoquarton Slough (see Figure 2 in Appendix G). Figure 2 in Appendix G shows where trees will need to be cut in riparian buffers. Trees will be replaced with low-growing native species within the right-of-way and similar vegetation including trees replanted in the vicinity of the right-of-way following construction. Vegetation removal in the vicinity of riparian areas will be avoided to the greatest extent practicable and will only be done to ensure safe operation of the line in a fashion that meets the NESC, RUS, and Applicant standards for clearances.

In a meeting with County planning staff on February 16, 2017, and in an interagency meeting with County planning staff, ODFW staff, and other agencies on March 7, 2017, the topic of tree removal within the regulated riparian buffers was discussed. The Applicant was informed that this type of tree removal within the riparian buffer will require mitigation consisting of two trees planted for every one removed in coordination and reviewed by ODFW. County planning staff indicated that this type of tree removal and proposed mitigation will require review and a letter from ODFW confirming the proposed mitigation has the potential to provide sufficient habitat value. As documented in Appendix G, which was sent to ODFW for review, the Applicant will mitigate for removal of native trees (tree defined as having a diameter at breast height [measured 4.5 feet off the ground] of 6 inches or greater) within the County's regulated riparian buffers by planting two trees for each one removed in the buffer. The

Applicant has requested a confirmation letter on the proposed plan from ODFW, which will be provided to the County. Therefore, this criteria is met.

(4) All trees and at least 50 percent of the understory vegetation shall be retained within areas listed in (1) above, with the following exceptions:

Finding: As described directly above in response to TCLUO 4.140(2), the Project will result in the cutting and removal of some existing trees within the County-regulated riparian buffers. However, the Applicant will mitigate as necessary for removed trees. The Applicant has requested a confirmation letter on the proposed plan from ODFW to confirm that the proposed mitigation for riparian buffer crossings is sufficient for proposed tree removal. Therefore, this criteria is met.

SECTION 4.160: PROTECTION OF ARCHAEOLOGICAL SITES

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

Finding: A cultural resource study was conducted within the Project corridor. The cultural resources study did not locate any significant historic, archaeological, or cultural resources within the County that will be impacted by the proposed Project. A description of the study and the study results is provided in the Cultural Resources Investigation report in Appendix H [confidential and not for public distribution]. The study will be submitted separately to the Oregon State Historic Preservation Office (SHPO). The cultural resource study incorporated a literature and records search of all recorded cultural sites within one-half mile to each side of the proposed centerline for the transmission line (1-mile-wide corridor in total). In addition, the study involved a field survey conducted by cultural resource specialists within a 100-foot-wide corridor for the entire length of the proposed corridor where landowner right-of-entry was available.

Again, the cultural resources study did not locate any significant historic, archaeological, or cultural resources within Tillamook County that will be impacted by the proposed Project. The Applicant will provide the County with future correspondence involving SHPO review of the Project's cultural resource study. Therefore, the proposed Project complies with this criterion.

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

Finding: The cultural resources study did not locate any significant historic, archaeological, or cultural resources within Tillamook County that will be impacted by the proposed Project. In addition, subsurface work associated with the Project will be limited to only the driving or installation of power poles and major grading or earth work will not occur. However, the Applicant will confirm the construction contractor's understanding that any Indian cairns, graves, and other significant archaeological resources uncovered during construction need to be preserved intact until a plan for their excavation or reinternment has been developed by SHPO. Therefore, the Project complies with this criteria.

5.2.3 Article 6 – Conditional Use Procedures and Criteria

This section demonstrates compliance with the applicable conditional use requirements and review criteria from Article 6 of the TCLUO.

SECTION 6.030: GENERAL REQUIREMENTS

A CONDITIONAL USE shall be authorized, pursuant to the procedures set forth in Section 6.020, if the applicant adequately demonstrates that the proposed use satisfies all relevant requirements of this Ordinance, including the review criteria contained in Section 6.040 or the Health Hardship provisions contained in Section 6.050, and the following general requirements:

(1) A CONDITIONAL USE shall be subject to the standards of the zone in which it is located, except as those standards have been modified in authorizing the CONDITIONAL USE. The size of a lot to be used for a public utility facility may be reduced below the minimum required, provided that it will have no adverse effect upon adjacent uses.

Finding: In a meeting with County planning staff on February 16, 2017, and in an email from planning staff on March 14, 2017 (Foote, 2017, pers. comm.), it was confirmed the proposed Project is a conditionally permitted use in the County's F, RR-2, RC, and EN zones. The Applicant demonstrates compliance with the applicable development standards and review criteria from the base zones and overlay zones crossed by the proposed Project in Section 5.2.1 above. Therefore, the proposed Project complies with this criterion.

SECTION 6.040: REVIEW CRITERIA

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

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

Finding: In a meeting with County planning staff on February 16, 2017, and in an email from planning staff on March 14, 2017 (Foote, 2017, pers. comm.), it was confirmed that the proposed Project is a conditional use where it crosses the County's F, RR-2, RC, and EN zones. The proposed Project is a permitted use within the F-1 zone and is permitted subject to the standards of TCLUO 3.120 and 3.140 in the EC1 zone. The F-1 and EC1 zones are not discussed further in responses to these conditional use review criteria. Accordingly, the proposed Project complies with this conditional use criterion.

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

Finding: The TCCP was first adopted in 1982 and has been updated several times since, including most recently in 2004. The TCCP is intended to provide a guide for future development of the County consistent with Oregon's Statewide Planning Goals. Each article of the TCCP contains policies established to guide development. While TCCP policies are not by themselves approval standards for development, the Applicant demonstrates in Section 5.3 below that the proposed Project is consistent with policies of the TCCP that apply to the Project's crossing of the County's F, RR-2, RC, and EN zones. Therefore, the proposed Project complies with this conditional use criterion.

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

Finding: The proposed Project includes construction and operation of approximately 8.4 miles of the 115-kV electric transmission line and a 115-kV to 24.9/14.4-kV distribution substation in the County (see Figure 2 in Appendix A). Per Table 5-1 (above), the proposed Project is a conditionally permitted use in the County's F, RR-2, RC, and EN zones.

The proposed Project is not proposed on a specific parcel, but will be established within easements and rights of way across various existing parcels in a corridor that is suitable for the proposed use considering its size, shape, location, topography, existence of improvements and natural features. Where the Applicant does not have an existing easement, a new easement will be obtained. The section of the Project from the BPA Tillamook Substation to Bayocean Road will require an easement width of

50 feet in the underlying RR-2, RC, and EN zones. The section of the Project in the F zone west of Bayocean Road will require an easement width of 100 feet to accommodate NESC standards for the operation and maintenance of a transmission line.

The proposed corridor for the Project is the result of a detailed, lengthy, and thorough alternatives analysis, which included the formation of a volunteer Citizens Advisory Group. This group was formed to review alternatives and recommend a corridor for the Project. The Citizen Advisory Group was made up of 14 volunteers from the general Project area and included landowners, agency staff, representatives from agricultural and dairy industries, and representatives from the business community. The proposed location for the Project was selected following a detailed analysis of potential alternative routes as well as recommendations received from the Citizen Advisory Group. This analysis incorporated a rating system that was established for evaluating each alternative. The Applicant examined each alternative against a set of established criteria such as permitability, ease of obtaining corridor approval, access, constructability, and a series of other environmental, land use, and financial factors. The original transmission line corridor recommended by the Citizen Advisory Group was then adjusted based on feedback from public meetings and individual meetings with affected landowners. Adjustment included relocating the transmission line from the middle of farmland to adjacent public corridors including the Port of Tillamook Bay's railroad right-of-way and Wilson River Loop Road, where the Project is east of Highway 101.

Wherever possible, the Project has been routed adjacent to or collocated with existing linear developments within the County. These linear developments include the Port of Tillamook Bay's railroad right-of-way from the existing substation in the RC zone, north to Wilson River Loop Highway in the RR-2 zone, along Wilson River Loop Highway, and various existing access roads through private forest land throughout the F zone to the west of Bayocean Road. Parallel construction or collocation with existing linear corridors (for example, highway and road rights-of-way, utility corridors, or previously developed areas) was one of the criteria used in evaluating routes. Collocation minimizes potential impacts to additional landowners, can reduce the need to clear new corridors, and lessens the potential environmental impact when compared to the clearing for new routes through previously undeveloped areas.

The Applicant demonstrates below that the proposed Project is a suitable use on the parcels crossed within the County's F, RR-2, RC, and EN zones (when considering parcel size, shape, location, topography, and the existence of improvements and natural features):

Forest (F) Zone: The proposed transmission line route will be developed within a 100-foot-wide easement across 9 tax lots within the County's F zone (see Figure 2 in Appendix A). The site boundary of the proposed Oceanside Substation will be located within an approximately 2-acre easement on a single tax lot within the F zone (see Map 8 to Figure 2 in Appendix A).

- ***Size –*** The existing parcels crossed by the Project in the F zone are large, which is consistent with the 80 acre minimum lot size in the F zone. In addition, the proposed corridor was routed wherever possible in the F zone adjacent to existing access roads (see Figure 3 in Appendix A). Therefore, the 100-foot-wide easement occupies a small portion of the parcels in the F zone, which all currently contain existing access road corridors as shown on Figure 3 in Appendix A. The existing parcel size will allow the underlying landowners to continue forest operations in the vicinity and directly adjacent to the Project.
- ***Shape*** – The shape of the parcels crossed by the proposed Project are sufficient to accommodate the transmission line and substation, while allowing the underlying landowners to continue forest operations in the vicinity and directly adjacent to the Project.
- ***Location*** – Wherever possible, the proposed Project is collocated with existing access roads across the parcels in the F zone. Again, the location of the Project across F zone parcels will allow the

underlying landowners to continue forest operations in the vicinity and directly adjacent to the Project.

- ***Topography*** – As described in response to TCLUO 4.130 (above), the Project will cross landslide topography along a segment of approximately 600 feet directly west of Bayocean Road. It is not unusual for transmission lines to be designed to cross steep topography. Properly sited, transmission lines have generally performed very well in areas susceptible to landslides since the transmission poles and towers can be located to avoid active slides and/or installed into competent foundation materials not subject to instability. TriAxis Engineering, Inc. is designing and engineering the proposed transmission line. TriAxis specializes in providing design services and studies for electrical power systems, specifically transmission lines. TriAxis and the Applicant have selected a route that parallels existing access roads wherever possible where it crosses the industrial forest and steeper topography. Both have also worked to select transmission line power pole locations that avoid areas known or believed to be susceptible to landslides. In addition, the power pole types and foundations will be selected to safely support the transmission line and maintain the overall integrity of the Project.
- ***Improvements*** – The Project has been collocated with existing access roads across the parcels in the F zone, which are the only improvements along the forested section of the corridor.
- ***Natural Features*** – The Applicant's *Biological Resources Report for the Tillamook-Oceanside 115-kilovolt Transmission Line Project* (Appendix G) demonstrates that no state- or federally listed endangered or threatened species are listed in the Project area; forest in the F zone is in various stages of succession from clear-cut to mid-succession and does not provide suitable habitat for listed species located in the vicinity of Project corridor; no ODFW Category 1 habitat was identified in the Project area; and, the Applicant has delineated water bodies and their regulated riparian buffers and will mitigate for trees removed from the riparian buffers in coordination with ODFW.

Estuary Natural (EN) Zone: The proposed transmission line route will be developed within a 50-foot-wide easement across one tax lot within the County's EN zone (see Map 4 to Figure 2 in Appendix A).

- ***Size, Shape, and Location*** – The Applicant has designed the Project to span above the EN zone to minimize impacts within estuarine areas. The EN zone where crossed by the Project is situated over the Tillamook River and one existing parcel. No power poles or other Project components are proposed within the EN zone except for the aerial conductor (see Figure 4 in Appendix A). The easement area in the EN zone will be adequate to accommodate the proposed construction work and operation described in Section 3 (Project Description). The Tillamook River where crossed by the Project is a navigable waterway. Therefore, to ensure the river remains navigable, the proposed crossing requires a permit from the USACE under Section 10 of the Rivers and Harbors Act of 1899.
- ***Topography*** – The EN zone where crossed by the Project is situated over the Tillamook River and one existing parcel. The EN zone where crossed by the Project's aerial conductor has no variance in topography.
- ***Improvements*** – The single parcel crossed by the Project in the EN zone does not have existing improvements.
- ***Natural Features*** – The Applicant's *Biological Resources Report for the Tillamook-Oceanside 115-kilovolt Transmission Line Project* (Appendix G) demonstrates that potential impacts from construction and operation of the Project to open water habitat and associated species in the EN zone will be avoided by the conductor spanning over the Tillamook River.

Rural Residential 2-acre (RR-2) Zone: An approximately 0.05-mile portion of the proposed transmission line route will be developed within a 50-foot-wide easement overlapping the corners of five tax lots within the County's RR-2 zone (see Map 2 on Figure 2 in Appendix A).

- ***Size, Shape, and Location*** – The majority of the proposed 50-foot-wide transmission line corridor within the RR-2 zone will be collocated with the public right-of-way for Wilson River Loop Road and only crosses the corner of three tax lots. Only one power pole will be developed within the County's RR-2 zone. Except for one power pole, the proposed transmission line corridor is sited south of and adjacent to Wilson River Loop Road to minimize impacts to residential property within the RR-2 zone.
- ***Topography*** – The topography is flat along the entire crossing of the RR-2 zone, which simplifies construction and installation of the transmission line.
- ***Improvements*** – No existing improvements will be impacted by the Project in the RR-2 zone.
- ***Natural Features*** – The vast majority of the transmission line corridor is located adjacent to an existing public road (Wilson River Loop Road) and will not impact natural resources in the RR-2 zone.

Rural Commercial (RC) Zone: An approximately 0.1-mile portion of the proposed transmission line route will be developed within a 50-foot-wide easement overlapping the northern portion of three tax lots within the County's RC zone (see Map 1 on Figure 2 in Appendix A).

- ***Size, Shape, and Location*** – Two power poles (power pole 1 and 3) will be developed within the County's RC zone in the area where the Applicant's existing substation is already located, along with multiple other existing transmission lines. The proposed transmission line corridor must cross the RC zone to exit the existing substation.
- ***Topography*** – There is a slight slope off the northern edge of the existing substation, which can easily be accommodated by the placement of the proposed power pole.
- ***Improvements*** – The two parcels crossed in the RC zone are already developed with an existing substation and multiple transmission lines.
- ***Natural Features*** – The transmission line corridor is located in a previously developed commercial area and will not impact natural resources in the RC zone.

Therefore, the Project complies with this conditional use criterion.

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

Finding: The proposed Project will not alter the character of the surrounding area in a manner, which substantially limits, impairs, or prevents the use of surrounding properties for the permitted uses listed in the underlying zone. As previously described in response to TCLUO 6.040(3) above, the Applicant focused on selecting a route that maximizes use of existing rights-of-way. Specifically, impacts from the proposed Project will be minimized where construction will be adjacent to or collocated with existing right-of-way and previously disturbed corridors (such as Port of Tillamook Bay's railroad right-of-way from the existing substation in the RC zone, north to Wilson River Loop Highway in the RR-2 zone, along Wilson River Loop Highway, and various existing access roads through private forest land throughout the F zone to the west of Bayocean Road). Collocation with existing rights-of-way minimizes potential impacts to additional landowners, reduces the need to clear new corridors, lessens potential environmental impacts, and limits impacts to surrounding properties for uses permitted in the underlying zone. In the F, RR-2, RC, and EN zones, the Project was specifically routed to avoid existing structures and buildings so the easement and transmission line do not limit, impair, or prevent use of the properties crossed in these zones.

After construction, the corridor will be used by the Applicant as needed to perform inspection and maintenance work on the transmission line. As described in Section 3.3.5 (Reclamation), areas disturbed during construction will be seeded and restored to as near original condition as possible. The corridor

under and around the transmission line can continue to be used for its current use. Future uses will be restricted in the easement area to ensure a new use does not conflict with the safe operation of the line and meets the NESC, RUS, and Applicant standards for clearances and use. Allowed new uses typically include agricultural, grazing, hunting, and some development such as parking lots or roads.

The Applicant demonstrates below that the proposed Project will not alter the character of the surrounding area in a manner that substantially limits, impairs, or prevents the use of surrounding properties for the permitted uses listed in the underlying County's F, RR-2, RC, and EN zones.

Forest (F) Zone: The proposed transmission line route will be developed within a 100-foot-wide easement across 9 tax lots within the County's F zone (see Figure 2 in Appendix A). The site boundary of the proposed Oceanside Substation will be located within an approximately 2-acre easement on a single tax lot within the F zone (see Map 8 to Figure 2 in Appendix A).

Where possible, the proposed transmission line route through the County's F zone is located directly adjacent to a network of existing private forest roads to minimize impacts on surrounding lands. Parallel construction along existing forest roads also increases the ease of access to the transmission line for future maintenance activities.

As described in response to TCLUO 3.004(8)(1) above, construction and operation of the proposed Project within the County's F zone will not force a significant change in, or increase the cost of, accepted forest practices on forest lands. Construction of the proposed Project may cause some minor changes to the pattern selected for timber harvest or reforestation activities on surrounding lands during the temporary construction period. However, these changes will not substantially limit allowed uses on surrounding properties and will not significantly increase the cost of forest practices on land surrounding the proposed Project. The Applicant will coordinate with individual landowners to schedule construction so potential increases in cost associated with disruptions to planned forest operations on surrounding lands are limited to the greatest extent possible. All methods of timber harvesting or reforestation activities, or the equipment used for these activities, can continue on lands surrounding the permanent easements for the proposed transmission line corridor and Oceanside Substation. Therefore, landowners will not encounter costs associated with switching to a different method of harvesting or reforestation. This will be confirmed with establishment of easements. The presence or operation of the proposed Project will not preclude the use of any type of timber harvesting or reforestation activity on adjacent or nearby lands surrounding the permanent easement or proposed Oceanside Substation site. Furthermore, the proposed Project will not substantially limit, impair, or prevent the allowed uses of surrounding properties or the permitted uses in the F zone listed in Table 1 of TCLUO 3.004(13).

Estuary Natural (EN) Zone: The proposed transmission line route will be developed within a 50-foot-wide easement across one tax lot within the County's EN zone (see Map 4 to Figure 2 in Appendix A). The Applicant has designed the Project to span above the EN zone to minimize impacts within estuarine areas. The EN zone where crossed by the Project is situated over the Tillamook River and one existing parcel. No power poles or other Project components are proposed within the EN zone except for the aerial conductor (see Figure 4 in Appendix A). The easement area in the EN zone will be adequate to accommodate the proposed construction work and operation described in Section 3 (Project Description). The Tillamook River where crossed by the Project is a navigable waterway. Therefore, to ensure the river remains navigable, the proposed crossing requires a permit from the USACE under Section 10 of the Rivers and Harbors Act of 1899.

The Applicant demonstrates specific compliance with standards for Project development in response to the applicable criteria under TCLUO 3.140(6) for energy facilities and utilities and TCLUO 3.140(7) for fill in estuarine waters, intertidal areas, and tidal wetlands. As described above in responses to TCLUO 3.120(2)(a through f), the Project does not include the development of regulated activities in the EN zone and an impact assessment is not required under TCLUO 3.120(5).

The Project was specifically routed to avoid existing and planned public access areas and will not preclude the public from using estuarine areas within the EN zone. The presence of the Project will not interfere with public use and access to the Tillamook Bay estuary in general. The general public will maintain access to and use of the estuarine resources crossed by the Project in the County during construction and operation. Thus, the Project will not unreasonably interfere with the public use and enjoyment of the Tillamook Bay estuary.

Rural Residential 2-acre (RR-2) Zone: An approximately 0.05-mile portion of the proposed transmission line route will be developed within a 50-foot-wide easement overlapping the corners of three tax lots within the County's RR-2 zone (see Map 2 on Figure 2 in Appendix A). The majority of the proposed 50-foot-wide transmission line corridor within the RR-2 zone will be collocated with the public right-of-way for Wilson River Loop Road and only crosses the corner of three tax lots. Only one power pole will be developed within the County's RR-2 zone, will be located within the right-of-way for Wilson River Loop Road, and therefore, will not limit or prevent permitted uses on surrounding properties. Except for one power pole, the proposed transmission line corridor is sited south of an adjacent to Wilson River Loop Road to minimize impacts to residential property within the RR-2 zone on the north side of the road.

Rural Commercial (RC) Zone: An approximately 0.1-mile portion of the proposed transmission line route will be developed within a 50-foot-wide easement overlapping the northern portion of two tax lots within the County's RC zone (see Map 1 on Figure 2 in Appendix A). Two power poles (power pole 1 and 3) will be developed within the County's RC zone in the area where the Applicant's existing substation is already located, along with multiple other existing transmission lines. The proposed transmission line corridor begins in the RC zone to connect the existing BPA Tillamook Substation (also located in the RC zone) to the proposed Oceanside Substation. The proposed transmission line corridor must cross the RC zone to exit the existing substation. The transmission line corridor is located in a previously developed commercial area, is similar in character to existing electrical transmission and substation facilities within the zone, and will not limit or prevent existing uses on surrounding properties or within this discrete area within the RC zone.

Based on the response above, the Project will not alter the character of the surrounding area in a manner that substantially limits, impairs, or prevents the use of surrounding properties for the permitted uses listed in the County's underlying F, RR-2, RC, and EN zones. Therefore, the Project complies with this conditional use criterion.

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

Finding: No solar energy systems, wind energy conversion systems, or wind mills exist within the vicinity of the proposed Project where it could interfere with their operation. Therefore, this criterion is satisfied.

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

Finding: The proposed Project is a utility facility necessary for public service that provides a timely improvement to transmission capacity and reliability, and replaces aging infrastructure as described in Section 4 (Purpose and Need). Specifically, the Project is necessary to:

- Ensure the Applicant's system capacity in the central Tillamook Valley does not exceed the RUS recommended peak loading capacity, allow for additional system capacity and growth in the central Tillamook Valley and Netarts-Oceanside areas, and allow for the transfer of load capacity between substations to prevent load curtailments to customers.

- Improve the reliability of service to approximately 1,800 customers in the Tillamook Valley crossed by the proposed Project and substantially reduce the number of customers affected by an outage and the length of the outage.
- Replace the failing infrastructure associated with the existing radial distribution line that is over 50 years old and serves the Netarts-Oceanside area. Based on the age of the infrastructure, industry safety practices require that power is cut to the line during repairs, which creates an outage and cuts power to approximately 1,800 customers during each maintenance event.

The proposed Project will transfer approximately 10 MW of load at peak times from the Wilson River Substation to the proposed Oceanside Substation, allowing for ongoing development and growth in the central Tillamook Valley and Netarts-Oceanside areas and allowing the Wilson River Substation to support additional growth in the Applicant's greater service area of the Tillamook Valley. Therefore, the Project complies with this conditional use criterion for the underlying F, RR-2, RC, and EN zones crossed in the County.

5.3 Compliance with Tillamook County Comprehensive Plan

The TCCP is intended to provide a guide for future development of the County consistent with Oregon's Statewide Planning Goals. Each article of the TCCP contains policies established to guide development. While TCCP policies are not by themselves applicable standards for development, under the TCLUO 6.040(2), Conditional Development Review must be consistent with applicable policies of the TCCP. The following TCCP policies are addressed to demonstrate the Project's compliance with TCLUO 6.040(2). Policies not applicable to the portions of the Project within the County's F, RR-2, RC, and EN zones are not included below.

5.3.1 Forest Lands (Goal 4)

Policy 4.1 Forest Lands Zoning

Tillamook County will maintain its Forest zone (F) to retain forest land for forest use and to encourage the management of forest lands for the growing, harvesting and processing of forest crops consistent with the requirements of the Oregon Forest Practices Act. This zone will also continue to provide for other forest uses including watershed and soil protection, wildlife and fisheries habitat, outdoor recreation activities, open space and scenic preservation, and agricultural activities, free from the encroachment of conflicting nonforest uses and influences. All nonforest uses proposed for the Forest zone will be reviewed by the County Planning Commission to assure that they are compatible with forest and farm uses on adjacent and nearby land, and to assure that these uses meet all other criteria and standards described in the zoning ordinance. Before forest land is changed to another use, the productive capacity of the land in each use shall be evaluated. the County will not attempt to regulate actions on federal lands except to assure that those actions which significantly affect nonfederal lands are consistent with the County's comprehensive plan as provided for in Oregon's coastal Zone Management Program and as required by the Federal Coastal Zone Management Act.

Finding: The Project will cross approximately 4.2 miles of industrial forest in the County's F zone located between Bayocean Road and the new proposed Oceanside Substation (see Figure 2 in Appendix A). The Project does not cross federal land within the County's F zone. As described in response to the applicable provisions under TCLUO 3.004, the proposed Project is a utility facility necessary for public service [see TCLUO 3.004(2)(dd)]. Pursuant to TCLUO 3.004(13), the Project is permitted as a conditional use in the F zone subject to demonstrating compliance with the applicable criteria under TCLUO 3.004(8) and TCLUO 6.040. The Applicant demonstrates compliance with these criteria above.

The substation is the required terminus of the transmission line and mandatory between electrical transmission and distribution. Substation equipment is listed as accessory equipment in the use

category for local distribution lines in Table 1 of TCLUO 3.004(13) (see Table 1 section for *Utility, Power Generation, and Solid Waste Uses*). The substation is needed to reduce the high voltage of the electrical power transmission to a lower voltage suitable for supply to consumers through the distribution lines. The local distribution lines use category in Table 1 is listed as an allowed use in the F zone. Therefore, the Project complies with the definition of a "utility facilities necessary for public service" and is permitted conditionally in the County's F zone.

Therefore, the Project complies with applicable F zone standards of the TCLUO as demonstrated above and is consistent with this Policy.

Policy 4.9 Extension of Public Services and Facilities

Extension of services, such as sewer and water, into rural forested areas shall be appropriate for the needs of forest management and for those nonforest uses permitted in the Forest Zone. Maximum utilization of utility rights-of-way shall be achieved before new ones are permitted.

Finding: The Project is designed in part to improve transmission capacity, reliability, and service to the Oceanside-Netarts area. The Project corridor route must cross the F zone to reach the proposed Oceanside Substation, which is located to serve the needs of County residents and businesses in these communities. As described above in response to the applicable provisions under TCLUO 3.004, the proposed Project is a utility facility necessary for public service [see TCLUO 3.004(2)(dd)]. Pursuant to TCLUO 3.004(13), the Project is permitted as a conditional use in the F zone subject to demonstrating compliance with the applicable criteria under TCLUO 3.004(8) and TCLUO 6.040. The Applicant demonstrates compliance with these criteria above in Section 5.2.

Furthermore, the Applicant has made significant efforts to route the proposed Project along existing road corridors through the forest to minimize impacts to surrounding forestlands. As demonstrated in response to TCLUO 3.004(9)(d and e), parallel construction along existing corridors minimizes impacts to additional landowners, reduces clearing of new corridors, and lessens potential environmental impacts. Therefore, the Project is consistent with this policy.

5.3.2 Natural Resources Element (Goal 5)

Policy 3.1b.2 Fish and Wildlife Habitats

1. *To ensure that future development does not unduly conflict with major and peripheral big game range, the County will:*
    1. *Require that conditional uses in the Forest zone and outright and conditional uses in the SFW-20 zone be sited so that conflicts with big game range are minimized.*

Finding: As described in response to the applicable provisions under TCLUO 3.004, the proposed Project is a utility facility necessary for public service [see TCLUO 3.004(2)(dd)]. Pursuant to TCLUO 3.004(13), the Project is permitted as a conditional use in the F zone subject to demonstrating compliance with the applicable criteria under TCLUO 3.004(8) and TCLUO 6.040. The Applicant demonstrates compliance with these criteria above.

The Project only crosses the F zone in industrial forest between Bayocean Road and the proposed substation. This is an area of privately owned industrial forest, which is on a cycle of logging via clear-cut. The Applicant has routed the proposed Project adjacent to or collocated with existing forest access roads wherever possible as shown on Figure 3 in Appendix A. Parallel construction or collocation with existing linear corridors reduces the need to clear new corridors and lessens the potential environmental impact when compared to the clearing for new routes through previously undeveloped areas. Finally, the transmission line will include an aerial conductor with more than adequate ground to conductor clearance in all areas to allow wildlife to move freely underneath. Therefore, the Project complies with this policy.

2. *The County shall rely on strict enforcement of the Forest Practices Act to protect riparian vegetation along Class I streams and lakes and Class II streams affecting Class I streams from potential adverse effects of forest practices.*

Finding: As stated above in response to the applicable criteria of TCLUO 4.140, the proposed transmission line route crosses 13 perennial water bodies with regulated riparian buffers. Construction includes vegetation removal where necessary within the corridor to install the power poles and subsequently to protect the operational integrity of the transmission line consistent with NESC, RUS, and Applicant standards for clearances. Low-growing vegetation, such as low-lying shrubs and grass, will only be removed in the specific locations where power poles are being installed. This lower-growing vegetation will be allowed throughout the corridor following construction. Taller vegetation such as trees and tall shrubs exceeding 20 feet in height will likely need to be removed from within the corridor or topped to 20 feet. In limited locations, taller vegetation in riparian buffers will need to be removed, such as where the line crosses Hoquarton Slough (see Figure 2 in Appendix G). Figure 2 in Appendix G shows where trees will need to be cut in riparian buffers. Trees will be replaced with low-growing native species within the right-of-way and similar vegetation including trees replanted in the vicinity of the right-of-way following construction. Vegetation removal in the vicinity of riparian areas will be avoided to the greatest extent practicable and will only be done to ensure safe operation of the line in a fashion that meets the NESC, RUS, and Applicant standards for clearances.

In a meeting with County planning staff on February 16, 2017, and in an interagency meeting with County planning staff, ODFW staff, and other agencies on March 7, 2017, the topic of tree removal within the regulated riparian buffers was discussed. The Applicant was informed that this type of tree removal within the riparian buffer will require mitigation consisting of two trees planted for every tree removed in coordination with and reviewed by ODFW. County planning staff indicated that this type of tree removal and proposed mitigation will require review and a letter from ODFW confirming the proposed mitigation has the potential to provide sufficient habitat value. As documented in Appendix G, which was sent to ODFW for review, the Applicant will mitigate for removal of native trees [tree defined as having a diameter at breast height (measured 4.5 feet off the ground) of 6-inches or greater] within the County's regulated riparian buffers by planting two trees for each one removed in the buffer. The Applicant has requested a confirmation letter on the proposed plan from ODFW, which will be provided to the County. Therefore, the Project demonstrates compliance with this policy.

Policy 3.1d.2 Scenic Views and Sites

a) *The County will rely on the Board of Forestry's Scenic Conservation designation to protect the scenic qualities of sites so designated. The State Department of Forestry shall notify the County of any proposal to change a Scenic Conservation designation for sites listed in the Comprehensive Plan as having scenic values. Any designations change by the Department of Forestry shall be preceded by a full evaluation under the Goal 5 Administrative Rule.*

Finding: The proposed Project does not cross state-owned land in the F zone and will not impact any lands designated by the Oregon Department of Forestry (ODF) as High Value Conservation Areas, which are areas associated with state owned forest land (ODF, 2017). The Applicant has reviewed the TCCP and conducted a desktop review of publicly available ODF resources and is not aware of any scenic conservation designations or scenic conservancy sites within or along the proposed Project route in the County. No National Wild and Scenic River Systems or State Scenic Waterways are located within the proposed Project corridor or within the vicinity of Project. The nearest scenic water body is the Nestucca River located over 10 miles south of the proposed Project corridor. Therefore, the Project will not impact scenic views and sites in the County and is consistent with this policy.

Policy 3.1f.2 Wetlands

a) The County will protect identified significant freshwater wetlands, for which no conflicting uses have been identified, from incompatible uses.

Finding: As described in response to TCLUO 3.550 above, CH2M conducted a wetland and nonwetland waters delineation in April 2017 to identify potentially jurisdictional wetlands and other nonwetland waters of the United States on behalf of the Applicant for the proposed Project. The wetland delineation report is included as Appendix E to this application narrative. Fieldwork was conducted over 4 days, from April 24 through 27, 2017. Aerial photography signatures, suggesting inundation and potential wetland vegetation located in the same area as the NWI- and LWI-mapped wetlands, were also used in advance of the field survey. The wetland delineation was completed in accordance with the implementing regulations for Section 404 of the federal Clean Water Act and the Oregon Removal-Fill Law. The study area of the wetland delineation report is within the Tillamook Bay watershed and crosses through the Trask and Tillamook sub-basins. The east end of the study area travels through the Tillamook Valley along the floodplain of the Trask and Tillamook Rivers. It continues west to the timbered ridges above Oceanside. The study area consists of 100-foot-wide corridor along the preferred transmission line route where the Applicant has right-of-entry. As the Applicant secures right-of-entry to remaining properties crossed by the study area, these areas will be field delineated and an addendum to the wetland delineation report submitted to DSL and USACE.

Twelve wetlands were identified within the study area as documented in the wetland delineation report. Delineated wetlands and other waters are shown on Figure 6, maps 01 to 38, in Appendix E. Table 3 in Appendix E lists the wetlands and identifies their potential for state and federal jurisdiction. Table 5 in Appendix E contains a summary of the wetlands and nonwetland waters within the study area. Two of the wetlands are isolated and jurisdictional to DSL but not to USACE. All other wetlands identified in this report are potentially subject to federal and state jurisdiction. Jurisdictional determinations, including the applicability of exemptions, are made on a case-by-case basis by the regulatory agencies. Therefore, the field delineated wetlands shown on Figure 6, maps 01 to 38, in Appendix E demonstrate the Project's compliance with these criteria. The Applicant will submit the wetland delineation report to DSL and USACE for review and approval in accordance with OARs 141-090-0005 through 141-090-0055 and by the USACE, Portland District. The Applicant's wetland delineation report (see Appendix E) should be considered a preliminary jurisdictional determination of wetlands and other waters until concurrence is received from DSL and the USACE.

Policy 3.1g.2 Recreation Trails

b) Tillamook County supports the efforts of the Department of Transportation to maintain the existing portion of the Oregon Coast Trail.

d) The County encourages the State Department of Transportation to continue the portion of U.S. Highway 101 used as a bike route, by widening highway shoulders, or where feasible constructing separate bike trails.

Finding: The proposed Project corridor will cross the Oregon Coast Trail (OPRD, 2017) at approximately MP 1.9 where the corridor crosses Highway 101 from east to west, and at approximately MP 4.3 near power pole 60 where the corridor crosses Bayocean Road from east to west. The proposed Project corridor also crosses the Oregon Coast Bike Route (ODOT, 2017) at approximately MP 1.9 where the Project crosses Highway 101. Construction and operation of the Project will not preclude the use of the Oregon Coast Trail and Oregon Coast Bike Route from their existing use as recreational trails. At these crossing locations, the trails follow existing sidewalks along Highway 101 and along the shoulder of Bayocean Road. Project conductors will span the trails at these locations and Project components, such as power poles, will not obstruct the trails from use. The Project is similar in height and scale to existing aboveground transmission line and distribution line infrastructure located along Highway 101 and

Bayocean Road and will not significantly alter the recreational experience along the roads at these respective locations. Therefore, the Project is consistent with Policy 3.1g.2 of the TCCP.

Policy 3.1i.2 Historic Areas

a) Should funding become available, Tillamook County will cooperate with the State Historic Preservation Office and the Tillamook County Pioneer Museum in improving the County's inventory of historic buildings and sites. Such a study would re-examine the sites presently on the State Inventory, as well as considering additional sites or structures.

b) Tillamook County encourages the State Parks Division to place commemorative plaques at identified historic sites.

c) Tillamook County encourages the private restoration and re-use of historic properties.

d) Tillamook County will establish a review procedure for historic buildings proposed for demolition.

e) The County shall review alterations and additions to structures identified in the Comprehensive Plan as bearing significant historic and architectural merit.(Isom/Fox Cottage, Povey Cottage, Wentz Cottage, Doyle Cottage, Churchill Cottage and the Tillamook Naval Air Station). The purpose of the review is to ensure the compatibility of a proposed alteration with the maintenance of a historic building's character. The review shall be carried out by the Planning Director and the Curator of the Pioneer Museum. The following activities shall be reviewed; exterior alterations (except painting); additions to the building; and construction of auxiliary buildings. The criteria used in evaluating the proposed alteration are: a) use of exterior materials and details that are consistent with the building's historical character; and b) maintenance of the buildings predominant architectural features.

f) The restoration of historical waterfront areas, including the provision for public access, is encouraged where it is compatible with adjacent estuary values and uses.

Finding: As described in response to TCLUO 4.160(1) above, a cultural resource study was conducted of the proposed Project area. The cultural resources study did not locate any significant historic, archaeological, or cultural resources within the County that will be impacted by the proposed Project. A description of the study and the study results is provided in the Cultural Resources Investigation report in Appendix H [confidential and not for public distribution]. Therefore, the Project is consistent with this policy.

Policy 3.1j.2 Cultural Areas

a) The County will review land use activities that may affect known archaeological sites. It is determined that a land use activity may affect the integrity of an archaeological site, the County shall consult with the State Historic Preservation Office on appropriate measures to preserve or protect the site and its contents.

b) Indian cairns, graves and other significant archaeological resources uncovered during construction or excavation shall be preserved intact until a plan for their excavation or reinternment has been developed by the State Historic Preservation Office.

Finding: As described in response to TCLUO 4.160(1) above, a cultural resource study was conducted of the proposed Project area. The cultural resources study did not locate any significant historic, archaeological, or cultural resources within the County that will be impacted by the proposed Project. A description of the study and the study results is provided in the Cultural Resources Investigation report in Appendix H [confidential and not for public distribution]. The study will be submitted separately to SHPO. The cultural resource study incorporated a literature and records search of all recorded cultural sites within one-half mile to each side of the proposed centerline for the transmission line (1-mile-wide corridor in total). In addition, the study involved a field survey conducted by cultural resource specialists

within a 100-foot-wide corridor for the entire length of the proposed corridor where land owner right-of-entry was available.

Again, the cultural resources study did not locate any significant historic, archaeological, or cultural resources within Tillamook County that will be impacted by the proposed Project. In addition, subsurface work associated with the Project will be limited to the driving or installation of power poles and major grading or earth work will not occur. However, the Applicant will ensure that the construction contractor understands that any Indian cairns, graves, and other significant archaeological resources uncovered during construction need to be preserved intact until a plan for their excavation or reinternment has been developed by the SHPO. Therefore, the proposed Project complies with these policies.

5.3.3 Air, Water, and Land Resources Quality Element (Goal 6)

Policy 2.43 Program for Improvement in Water Temperature

The County shall regulate the removal of riparian vegetation as the best means of improving or maintaining water temperature levels for beneficial uses of surface waters.

Finding: As stated above in response to the applicable criteria of TCLUO 4.140, the proposed transmission line route crosses the Tillamook and Trask Rivers. Thus, the riparian buffer of 50 feet applies to these two rivers. In addition, the transmission line route in Tillamook County is proposed across seven other rivers and streams with channel widths greater than 15 feet and three perennial streams with channel widths at 15 feet or less. Thus, riparian buffers ranging from 15 to 25 feet apply to these rivers and streams. In Tillamook County, the riparian buffers are measured from the ordinary high water line. The Applicant demonstrates that riparian vegetation will be protected and retained according to the applicable provisions of TCLUO 4.140 addressed in Section 5.2.2 (Article 4 – Development Standards). Therefore, the Project demonstrates compliance with this policy.

5.3.4 Hazards (Goal 7)

Policy 2.1 Landslides

a. Development shall not be allowed in areas of active sliding.

d. All excavations, fills and drainage changes, and vegetation removal programs in areas of mass movement topography shall be engineered to minimize the possibility of sliding.

f. Where strata slope toward cuts, slides are easily initiated, and excavation in areas with such unfavorable bedrock conditions should be properly excavated.

h. Projects which include plans for modifying the topography of sloping areas should be evaluated in terms of the effect these changes would have on drainage and slope stability.

k. Proposed development in close proximity to active or inactive landslides shall require site investigation.

Finding: Portions of the proposed transmission line and Oceanside Substation may be located through geologic hazard areas as defined by TCLUO 4.130(1). The Applicant has conducted a geologic analysis of the transmission route and proposed Oceanside substation site and provides findings for the applicable criteria from Section 4.130, above. Additionally, Appendix F contains a technical memorandum written by a professional geotechnical engineer to document geologic hazard areas in the vicinity of the Project. Figure 1 in Appendix F shows that the Project does not cross any active landslide areas. The transmission line crosses to the north of one active landslide area identified just to the west of Bayocean Road. DOGAMI Bulletin 74 shows that the substation is not proposed on an active landslide area.

The transmission line does not cross any areas noted as inactive landslide areas, but it does cross areas of landslide topography. According to the slope map provided in Bulletin 74, the area between approximately transmission MPs 4.3 and 8.0 is located in an area having ground slopes generally between 10 and 24 percent. However, a review of the ground contours provided in Bulletin 74, shows that the only area where the ground slopes are greater than 19 percent is along a segment of approximately 600 feet directly west of Bayocean Road.

It is not unusual for transmission lines to be designed to cross steep topography. Properly sited, transmission lines have generally performed very well in areas susceptible to landslides since the transmission poles and towers can be located to avoid active slides and/or installed into competent foundation materials not subject to instability.

TriAxis Engineering, Inc. is designing and engineering the proposed transmission line. TriAxis specializes in providing design services and studies for electrical power systems, specifically transmission lines. TriAxis and the Applicant have selected a route that parallels existing access roads wherever possible where it crosses the industrial forest and steeper topography. Both have also worked to select transmission line power pole locations that avoid areas known or believed to be susceptible to landslides. In addition, the power pole types and foundations will be selected to safely support the transmission line and maintain the overall integrity of the Project.

Bulletin 74 shows that part of the substation area is located in an area noted as landslide topography but is not located near inactive landslides. The slopes in the area of the substation, as provided in Bulletin 74 are listed as category 1 slopes (slopes between 0 and 9 percent). Since the slopes in this area are mapped as flatter than 19 percent, this criterion does not apply to the proposed substation. CH2M notes that the proposed substation is to be located directly adjacent to and south of the existing Netarts-Oceanside Sanitary District wastewater treatment facility in area that is generally flat. It is expected that the area is acceptable for the design and construction of a substation, as it was for the wastewater treatment plant.

Therefore, the Project is consistent with the TCCP policies listed above.

Policy 2.2 Weak Bearing Soils

Proper engineering investigations should precede all medium to large construction in regions of possible compressible soils. Engineering solutions include excavation and backfilling with more suitable material, preloading, and the use of piling, or spread footings, depending upon the nature of the specific structure being considered and the degree of severity of the hazard.

Finding: TriAxis Engineering, Inc. is assisting the Applicant in designing and engineering the proposed transmission line. TriAxis specializes in providing design services and studies for electrical power systems, specifically transmission lines. TriAxis and TPUD have selected a route that parallels existing access roads wherever possible where it crosses the industrial forest and steeper topography. Both have also worked to select transmission line power pole locations that avoid areas of known geologic hazards including landslides and weak bearing soils. In addition, the power pole types and foundations are being designed and engineered to safely support the transmission line and maintain the overall integrity of the Project. Therefore, the Project is consistent with this policy.

Policy 2.3 Earthquakes

Care shall be taken when reviewing development proposals to insure that development does not take place on faults which are highly susceptible to earthquakes.

Finding: In compliance with TCLUO 3.130(1)(f), the Applicant reviewed locally known areas of geologic hazard based on evidence of past occurrences including the U.Sg. Geological Survey (USGS) Quaternary Fault and Fold Database to identify any potentially active (Class A or B) faults (USGS, 2006). This USGS database shows the closest active fault to the Project is the Happy Camp Fault located approximately 1-

mile south from the proposed substation location (U.S. Geological Survey, 2006). The Project does not cross any known faults considered to be potentially active. Therefore, the Project is consistent with this Policy.

Policy 2.4 Erosion

a. Prevention or remedial action shall include any or all of the following:

2. Maintenance of existing vegetation in critical areas;

3. Rapid revegetation of exposed areas following construction;

4. The stabilization of shorelines and stream banks with vegetation and/or riprap;

5. Maintenance of riparian buffer strips;

6. Structural accommodation of increased runoff in areas of development;

7. Seasonal restriction of construction in critical areas;

8. Set-back requirements for construction or structures near slope edge, stream banks, etc.; and,

9. Any other measures deemed appropriate to deal with site specific problems.

b. Development on slopes of 15% or greater shall require the submission of topography and other information to show that no significant detrimental effects will occur.

Finding: The Applicant will obtain an NPDES 1200-C permit from DEQ prior to construction of the Project to ensure erosion and sediment control. BMPs as documented in the NPDES 1200-C permit will be implemented during construction of the Project to minimize impacts associated with erosion. Such BMPs include the installation of erosion and sediment control devices such as silt fences and straw bales along portions of the transmission line corridor, following vegetation clearing. In areas with steep slopes, near stream crossings, or where soils are more susceptible to erosion, additional erosion control measures may be implemented. Several of these erosion and sediment control measures will also have beneficial impacts to the long-term stability of slopes along the proposed Project. Erosion and sediment control devices will be installed and maintained following guidelines provided by the DEQ Erosion and Sediment Control Manual when specific guidelines exist. These measures may include the following:

- Straw wattles spaced perpendicular to the slope and flow of surface water
- Sediment basins and sediment barriers
- Plastic sheeting placed over stockpiled soil
- Rock check dams placed to interrupt surface water flow and direct water to undisturbed areas and natural drainages
- Temporary seeding, mulching, or erosion control matting
- Live stakes
- Trench plugs in excavated trenches to interrupt surface water or groundwater prior to that water entering streams or drainages

The implementation of standard and expanded erosion control measures will ensure the Project complies with these Policies.

Policy 2.5 Flooding

a) Tillamook County's flood control regulations as stipulated under the "F-H" Flood Hazard Zone shall apply to all areas designated as flood areas on the County's Flood Insurance Rate Maps.

Finding: The proposed Project crosses the County's Flood Hazard Overlay Zone. The portion of the Project located between the existing BPA substation and Bayocean Road is generally identified within Zone AE, which is a Special Flood Hazard Area susceptible to a 1 percent annual chance flood or 100-year flood event. However, the Project also crosses Regulated Floodway. Thus, the Applicant has prepared a zero-rise analysis to demonstrate that any portion of the Project constructed within the floodway will not cause any rise in base (100-year) flood elevations when compared to existing conditions consistent with FEMA 'zero-rise' criteria as set forth in 44 CFR 60.3 and TCLUO 3.510 (see Appendix D). The floodway is shown on Figure 1 in Appendix D. Therefore, the Project demonstrates compliance with this policy.

5.3.5 Public Facilities (Goal 11)

Policy 3.2 Types and Level of Urban and Rural Facilities and Services

m). Energy service is appropriate for all areas of the County where there is a significant amount of development.

Policy 3.9 Coordination with Service Providers

d) Tillamook County will coordinate the establishment and change or urban growth boundaries around unincorporated communities with affected service districts. The County will work with service districts to assure that all areas within the urban growth boundaries will be served.

Finding: The proposed Project is a utility facility necessary for public service that provides a timely improvement to transmission capacity and reliability, and replaces aging infrastructure as described in Section 4 (Purpose and Need). Specifically, the Project is necessary to:

- Ensure the Applicant's system capacity in the central Tillamook Valley does not exceed the RUS recommended peak loading capacity, allow for additional system capacity and growth in the central Tillamook Valley and Netarts-Oceanside areas, and allow for the transfer of load capacity between substations to prevent load curtailments to customers.
- Improve the reliability of service to approximately 1,800 customers in the Tillamook Valley crossed by the proposed Project and substantially reduce the number of customers affected by an outage and the length of the outage.
- Replace the failing infrastructure associated with the existing radial distribution line that is over 50 years old and serves the Netarts-Oceanside area. Based on the age of the infrastructure, industry safety practices require that power is cut to the line during repairs, which creates an outage and cuts power to approximately 1,800 customers during each maintenance event.

The proposed Project will transfer approximately 10 MW of load at peak times from the Wilson River Substation to the proposed Oceanside Substation, allowing for ongoing development and growth in the central Tillamook Valley and Netarts-Oceanside areas and allowing the Wilson River Substation to support additional growth in the Applicant's greater service area of the Tillamook Valley. Therefore, the Project complies with this conditional use criterion for the underlying F, RR-2, RC, and EN zones crossed in the County.

5.3.6 Transportation (Goal 12)

Policy 2.1 Road Network Planning Policies

The following planning policies are included in this element of the Comprehensive Plan in order to implement the Tillamook County Transportation System Plan (TSP).

b. The County shall provide regulation and control for development along roads in order to maintain the function of major roads consistent with the adopted TSP.

Finding: The Applicant will construct and operate the Project in a way that maintains the function of major County roads crossed by the Project and will remain consistent with the County's adopted TSP. Therefore, the Project is consistent with this Policy.

5.3.7 Estuarine Resources (Goal 16)

Policy 8.1 (Implementation Policies)

Estuaries of Tillamook County shall be managed through implementation of the Tillamook County Comprehensive Plan by means of the Tillamook County Land Use Ordinance, which shall contain estuary development standards, estuary zone descriptions and zoning maps.

Finding: In a meeting with County planning staff on February 16, 2017, and in an email from planning staff on March 14, 2017 (Foote, 2017, pers. comm.), it was confirmed that the Project is a permitted use in the EC1 zone and permitted conditionally in the EN zone subject to the applicable review and development standards of TCLUO 3.120 and 3.140. The proposed Project is a non-water-related use where it crosses the County's EC1 and EN zones. As described in this application in response to the applicable review and development standards under TCLUO 3.120 and 3.140 respectively, the proposed Project will not alter, reduce or degrade estuarine resources and values. The Project complies with these development standards. Therefore, the Project complies with this Policy.

5.3.8 Coastal Shorelands Element (Goal 17)

Policy 10.1 (Implementation Policies)

Shorelands of Tillamook County shall be managed through implementation of the Tillamook County Comprehensive Plan by means of the zoning ordinance, which shall contain the Land and Water Use Standards, shoreland zones and zoning maps.

Finding: The proposed transmission line corridor crosses the SH overlay zone in areas within 50 feet of the Applicant's delineated EC1 and EN zone boundaries shown on Figure 4 in Appendix A. Where possible, the Applicant designed the Project to span the SH overlay zone to avoid impacts within shoreland areas. Project impacts within the SH overlay zone are limited to the construction of eight power poles (power poles 5, 8, 43 to 46, 48, and 49) shown on Figure 4 in Appendix A.

County planning staff reviewed mapping and information on the location of the various elements of the Shoreland Overlay Zone and indicated that the only shorelands crossed by the proposed transmission line corridor within 50 feet of the Applicant's delineated EC1 and EN zone boundaries are rural and do not fall within the second category of significant shorelands (Absher, 2017b, pers. comm.).

The proposed Project is permitted outright in the County's underlying F-1 base zone where it also crosses the SH overlay zone. As shown on Figure 4 in Appendix A, the 50 foot SH overlay buffer begins at the Applicant's delineated EC1 and EN zone boundaries and extends into the F-1 zone. The proposed Project does not cross other base zones where the SH overlay zone is located County planning staff confirmed that the proposed Project is allowed in rural shorelands to satisfy a need which cannot be

accommodated at an alternative upland location as described in findings under TCCP 8.6c(c) for energy facilities in rural shorelands as follows (Absher, 2017a and 2017b, pers. comm.):

8.6c Energy Facilities and Utilities in Rural Shorelands

Tillamook County finds that:

c. There is a need to provide for normal domestic energy facilities and utility service within rural shorelands and to provide for energy sources such as WECS. This need cannot be met on upland locations or in urban or urbanizable areas;

The proposed Project is a utility facility necessary for public service. Project impacts to rural shorelands within the SH overlay zone are limited to the construction of eight power poles (power poles 5, 8, 43 to 46, 48, and 49) shown on Figure 4 in Appendix A. In accordance with TCCP 8.6c(c), Tillamook County finds that there is a need for utility service across the SH overlay zone. The proposed Project corridor must cross rural shoreland within the County's SH overlay zone to connect the proposed transmission line between the existing BPA Tillamook Substation and the proposed Oceanside Substation (see Figure 2 and Therefore, the Project is consistent with this policy in accordance with TCLUO 3.545(4)(a)(f) and TCCP 8.6c(c).

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PCN-2

In the Matter of the Petition of TILLAMOOK PEOPLE'S UTILITY DISTRICT **PETITION FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY**	)

TESTIMONY OF KC FAGEN

ON BEHALF OF TILLAMOOK PEOPLE'S UTILITY DISTRICT

October 6, 2017

Q. PLEASE STATE YOUR NAME AND YOUR EMPLOYER.

A. My name is KC Fagen. I am the engineering manager of Tillamook People's Utility District ("Tillamook PUD").

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I graduated from the University of Oklahoma with a Bachelor's of Science in Electrical Engineering and have 27 years of experience in the electric utility business. My resume is attached as Exhibit TPUD/201.

Q. ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

A. I am appearing on behalf of Tillamook PUD.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to generally describe the Tillamook PUD system and to describe the need for and the design of Tillamook PUD's proposed transmission line from the Wilson River Substation to a new Oceanside Substation ("Transmission Line"). I will also discuss safety and the alternative routes considered.

Q. WHERE IS TILLAMOOK PUD'S SERVICE TERRITORY?

A. Tillamook PUD serves all of Tillamook County and parts of Clatsop and Yamhill Counties. Included as Exhibit TPUD/102 to the Testimony of Todd Simmons is a map showing Tillamook PUD's service territory.

Q. WHERE DOES TILLAMOOK PUD RECOMMEND LOCATING THE TRANSMISSION LINE IN RELATION TO ITS EXISTING TRANSMISSION SYSTEM?

A. Exhibit TPUD/202 included with my Testimony shows Tillamook PUD's transmission system and the proposed Transmission Line.

Q. CAN YOU DESCRIBE THE TRANSMISSION LINE?

A. Yes. Tillamook PUD's proposed Transmission Line will be operated at 115 kV and will

be sourced from an existing breaker in BPA's Tillamook Substation. The Transmission Line will run approximately eight (8) miles from the Tillamook Substation and terminate at the new Oceanside Substation located approximately one mile north of Netarts and adjacent to a waste water treatment plant that serves that area. Included with my testimony as Exhibit TPUD/203 is a Site Plan Mapbook showing the details of the route. This is the specific site plan submitted to Tillamook County for land use approval.

BPA's Tillamook Substation, the eastern terminus of the line, is an existing major transmission switching station with numerous lines running from that substation to serve Tillamook PUD's service territory as well as counties to the north and south of Tillamook.

Q. WHY DID TILLAMOOK PUD CHOOSE THE PROPOSED ROUTE FOR THE TRANSMISSION LINE?

A. Tillamook PUD, in collaboration with the community and its leaders, has developed a route that is practical and has the least overall impact on the community. The starting and ending points are guided by Tillamook PUD's and BPA's existing infrastructure. As noted below, the Wilson River Substation is approaching capacity. The closest substation to the Netarts/Oceanside area where capacity can be gained is BPA's Tillamook Substation. By utilizing that substation, Tillamook PUD can rely on existing infrastructure and construct a shorter line than if other starting points were chosen. The preferred route also allows Tillamook PUD to rely on existing rights of way in many areas, thereby reducing potential conflicts and impacts on surrounding uses.

Q. WHY IS TILLAMOOK PUD BUILDING THE TRANSMISSION LINE?

A. The Transmission Line is needed to adequately provide reliable service to existing and new customer loads in large portions of Tillamook PUD's service territory, and is most critical for customers in the coastal areas around Netarts and Oceanside. The area to be served directly by the proposed Transmission Line is currently served from a 14-mile

radial 24.9 kV line sourced from Tillamook PUD's Wilson River Substation. The existing 24.9 kV line is aging, has limited capacity and poor reliability, and has subjected Tillamook PUD customers to long outages of increased frequency. In part because of the load growth Tillamook PUD has and continues to experience in coastal areas, reliability issues on the existing 24.9 kV line are expected to increase and if a solution is not forthcoming, a moratorium will have to be imposed on new electric connections. The proposed Transmission Line will increase overall system reliability and ensure that Tillamook PUD can adequately serve its existing and future customers.

Q. ARE THERE OTHER BENEFITS TO BUILDING THE TRANSMISSION LINE TO THE TILLAMOOK PUD SYSTEM?

A. Yes. Approximately two miles of the existing radial distribution line serving the Netarts, Oceanside, and Whiskey Creek Road areas consist of a double-circuit pole line that is more than 50 years old. The top circuit is a Copper-Weld Copper wire that is failing due to the rusting of the inner steel core of the wire. Industry safety practice does not allow personnel to work on the wire while energized.

This existing double circuit line needs to be replaced with a single circuit of much larger wire. Currently, this work cannot be accomplished without several long, extended outages to all customers in the Netarts, Oceanside, and Whiskey Creek Road areas. By constructing the Transmission Line and substation, this segment of line can be removed from service and reconductored without interrupting service to any customers.

Q. CAN YOU PROVIDE MORE DETAIL ON HOW THE TRANSMISSION LINE WILL INCREASE RELIABILITY?

A. Yes. The Transmission Line will directly serve approximately 1,800 electric meters (customer), which equates to service to a population of 3,800 people in the geographic area along Highway 131 that is west of the Tillamook River. This includes the communities of Oceanside and Netarts, as well as Whiskey Creek Road. Currently, this

area is served by a more than 14-mile-long radial distribution line that passes through forest lands and tree-lined rights of way out of the Wilson River Substation. Most of the customers served from the existing line are located near the ends of the line and have experienced many outages. Included with my testimony as Exhibit TPUD/212 is an outage summary on Tillamook PUD's system.

The Transmission Line will provide a new, more reliable source of power to the Netarts/Oceanside areas, will provide a connection to other power sources (normally open looped connection), and substantially reduce the number of customers involved in an outage and the length of the outage. Transmission lines are built to a higher degree of reliability than distribution lines due to their more critical nature and have wider rights of way than distribution lines that help protect the lines. The new Oceanside substation will provide a second source of power near the end of the existing line. If an outage occurs, Tillamook PUD will be able to isolate the damaged line from the undamaged portions of the line and restore service from the substations at each end of the line. This will substantially reduce the length of the outage for customers not located along the damaged line segment.

The new substation will also have two distribution feeders. As a result, there will be fewer customers on each feeder and an outage on one of the feeders will not affect customers on the other feeder.

The new line will also increase reliability for other customers not directly serviced by the new line. For example, during outages related to the Wilson River Substation, the Transmission Line will allow Tillamook PUD to transfer loads from the City of Tillamook and the surrounding area on to the Transmission Line and substation.

Q. HOW HAS LOAD GROWTH IMPACTED THE SYSTEM?

A. Tillamook PUD is experiencing load growth and it has put stress on the system. For example, the Wilson River Substation is approaching its capacity due to load growth in

the City of Tillamook, Bay City, and the communities of Netarts and Oceanside. This electrical load at peak winter times is approximately 65 megawatts ("MW"). The load is served by two power transformers in the Wilson River Substation that have nameplate ratings of 33 megavolt-ampere ("MVA") and 44 MVA. Under normal conditions, the load is shared by these two transformers. When one of the transformers is not available, however, the load is served by the other transformer and the load is shifted to power transformers in the Trask River and Garibaldi Substations. As loads have grown, the ability to transfer loads to the adjoining substations has exceeded the capacity of the system elements (i.e. conductors and transformers) to carry the additional load.

The existing 24.9 kV distribution line already has two voltage regulators in series and is approaching the limits of these regulators. As additional loads are connected to the system, the existing infrastructure will no longer be able to reliably provide adequate service, affecting the quality of the power to the Netarts-Oceanside customers.

Q. HOW WILL THE TRANSMISSION LINE ADDRESS THESE PROBLEMS?

A. The Transmission Line will allow Tillamook PUD to transfer approximately 11 MW of load at peak times from the Wilson River Substation to the new Oceanside Substation. This will allow the new substation to accommodate continued development and growth in the Netarts-Oceanside area, while the Wilson River Substation supports additional growth in other areas of Tillamook PUD's service area. It will also allow for additional reserve capacity to allow for the transfer of loads from the Wilson River, Garibaldi or Trask River Substations during outage or maintenance conditions.

Q. DID TILLAMOOK PUD CONSIDER OTHER OPTIONS FOR USING OTHER TRANSMISSION LINES AND SUBSTATIONS TO PROVIDE THESE SERVICES?

A. Yes. Tillamook PUD considered the following four options: (1) do nothing; (2) improve the system by providing redundant 24.9 kV feeder to Netarts and Oceanside,

strengthening the tie points between the Wilson River and Trask Substations, and performing improvements to resolve voltage and loading issues; (3) constructing those same improvements but also upgrading one of the transformers in the Wilson River Substation transformers; and (4) constructing the Transmission Line. Included with my testimony as Exhibit TPUD/204 is a summary of the options we considered.

The first two options were rejected because they do not allow for the addition of any capacity, which is one of the purposes of and need for the Transmission Line. Between the third and fourth options, Tillamook PUD concluded that the Transmission Line provides the lowest cost per unit of capacity while at the same time having the longest life expectancy, thereby achieving a greater overall public benefit.

Q. DID TILLAMOOK PUD LOOK AT ALTERNATE TRANSMISSION ROUTES?

A. Yes. Tillamook PUD analyzed several alternate transmission line routes. Tillamook PUD initially sought approval to site the Transmission Line out of the Trask Substation traversing west about 3 miles south of the City of Tillamook to the Whiskey Creek Highway 131 junction. This route was denied by BPA as they were no longer constructing a 115 kV switching near the Trask substation. The second route we considered originated out of the Tillamook substation and continued along a route that headed west through the City of Tillamook, then across a short segment of farm land, proceeded along Highway 131 and then crossed the forested timberlands between the west side of the city and the Oceanside Substation. After a lengthy land use permitting process, the City of Tillamook ultimately declined to issue a conditional use permit for the line, citing concerns that the location might interfere with planned commercial development in that portion of town.

Following the city's denial of a land use permit, Tillamook PUD committed to working with multiple stakeholders to identify an alternative route. The primary effort to work with stakeholders involved the formation of a Citizens Advisory Group ("CAG"),

which consisted of property owners, elected officials, business owners, farmers, and citizens at large. During that process, Tillamook PUD identified several routes that were feasible. Working with the CAG, Tillamook PUD then analyzed each alternative route and developed criteria for a successful transmission line route. Those criteria included:

- Maximizing co-location of the route with existing linear corridors, such as highways, roads, railroad rights of way, and utility corridors
- Maximizing existing rights of way and pole locations
- Minimizing the number of landowners and properties affected, with a prioritization to avoid residential areas over commercial areas and commercial areas over farm/agricultural areas
- Minimizing space requirements
- Minimizing the need for access roads

While other alternative routes remain feasible, those alternatives were eventually ruled out because they did not meet the criteria above as well as the preferred route does. A full explanation of the alternative routes and the process Tillamook PUD used to choose the preferred route is included as Exhibit TPUD/205 with my testimony.

Q. WHAT IS THE PROPOSED VOLTAGE AND CAPACITY OF THE TRANSMISSION LINE?

A. The voltage of the transmission line will be 115 kV, which is the common voltage used for transmission lines in this area. The maximum capacity of the proposed line is limited to the rating of the proposed Oceanside Substation transformer, which is 33 MVA and equates to 165 amps at 115 kV. The capacity of conductor to be installed, which is 465 MCM AAAC, is greater and is rated at 630 amps. A next smaller conductor that Tillamook PUD has in stock is not recommended by RUS or IEEE guidelines for use on 115kV lines. Normal loading of the transmission line will be 5 MW or 25 amps and will peak in the winter months at 11 MW or 55 amps.

Q. COULD TILLAMOOK PUD AVOID BUILDING THE TRANSMISSION LINE THROUGH CONSERVATION EFFORTS?

A. In my opinion, no. Tillamook PUD already has a robust energy efficiency and conservation program. The significant load growth in the area and need to replace aging infrastructure cannot be addressed through conservation gains.

Q. DOES TILLAMOOK PUD HAVE EASEMENTS TO BUILD THE TRANSMISSION LINE?

A. Not at this time. Tillamook PUD is in the process of obtaining consent, in the form of easements, from all landowners along the Transmission Line route. Tillamook PUD remains optimistic that it can continue to negotiate with property owners to reduce the overall number of parcels to be condemned, with the goal of avoiding condemnation altogether.

Q. WHAT LAND WOULD BE CONDEMNED?

A. As of the filing of this application, Tillamook PUD cannot describe with specificity the land that will definitely be condemned. Tillamook PUD is in the process of obtaining consent, in the form of easements, from all landowners along the proposed Transmission Line route. A sample easement is included with my testimony as Exhibit TPUD/210. The sample easement provides the minimum terms Tillamook PUD will need in an easement. Each easement, however, will be tailored to the specific property. For example, language will be added to the easements on farm properties to expressly allow the continuation of most agricultural activities within the easement area. Such specific changes to the easement can be made during either the negotiation process or prior to any condemnation proceedings.

Tillamook PUD is hopeful that it can continue to negotiate with property owners to reduce the overall number of parcels to be condemned, with the goal of avoiding condemnation altogether.

In order to provide the Commission with information adequate to address the rule requiring information on land that will be condemned, Tillamook PUD is providing information relating to all land along the route of the Transmission Line. Exhibit TPUD/206 included with my testimony lists each parcel the Transmission Line will cross. That exhibit provides the detail that includes property owner information, an aerial photo, and a depiction of the easement on the subject property. As Tillamook PUD continues to negotiate and to seek easements along the Transmission Line route, it will update the record to reflect any easements that are obtained.

Q. HAVE YOU CALCULATED THE ESTIMATED COST TO TILLAMOOK PUD IN THE EVENT CONDEMNATION IS NECESSARY?

A. Yes, using Exhibit 206 to identify the properties, we have calculated a range for the total approximate value of the easements as $350,000 to $550,000, which would be the estimated cost of the land easements if land was to be condemned. That value is based on the assessed value of the affected properties as determined by the County. As already stated, Tillamook PUD hopes that it will be able to reach mutually satisfactory agreements concerning all real property issues with condemnation only resorted to if absolutely necessary.

Q. PLEASE PROVIDE A GENERAL DESCRIPTION FOR THE CONFIGURATION AND CONSTRUCTION OF THE TRANSMISSION LINE.

A. The electrical conductor is the wire (or wires) that carries or moves electric current. The proposed single-circuit line will consist of three conductors, one per phase, that carries the electrical current making up the single-circuit configuration. The conductors will not be covered with insulating material; instead, they will use air for insulation and ground clearance for public safety. Conductors will be attached to power poles using insulators to prevent the electricity in the conductors from moving to other conductors, the power poles, and the ground. Arial markers will be used at river and slough crossings to provide

visibility in accordance with an Avian Protection Plan.

A smaller overhead shield wire will be attached to the top of the power poles within a mile of the Tillamook Substation. The overhead shield wire extending for about a mile out of the proposed Oceanside Substation will have a core containing optical fibers used to transmit system protection data. The shield wire will provide ground protection to the transmission line from lightning damage.

Along the line, 87 power poles are proposed to hold the conductor. The power poles will vary in height, ranging approximately between 50 to 125 feet above ground. The actual height and diameter of each pole will be determined by topography and safety requirements for conductor clearances. Power poles will be either steel or wood consisting of a single pole or of two or three poles per structure depending on soil types and span lengths.

Monopoles are used from MP 0.2 to MP 2.8, at which point the line turns south off of Goodspeed Road. 2-pole and 3-pole structures are used from MP 2.8 to the end of the project. Wood poles will be used from MP 0.0 to 1.6 and from MP 4.7 (west of Bayocean Road) to the end of the project, except for self-supporting structures where steel poles will be used. The steel power poles will be tubular with a painted galvanized coating and will measure approximately 1.5-feet-in-diameter to 3.5-feet-in-diameter at the ground line. It is anticipated that the steel power poles will be placed on a vibratory concrete caisson base from Highway 101 to Bayocean Road. The depth of the base and the use of vibratory caisson will vary from 20 to 40 feet deep based on soil conditions and the loads supported by the base.

The distance between power poles will vary depending on different factors including but not limited to topography, location of jurisdictional waters, existing land use, and clearance requirements. In general, the distance between power poles ranges between approximately 300 and 1,600 feet. The minimum conductor clearances from the

ground and other power poles will exceed the requirements of the National Electrical Safety Code ("NESC") and the Rural Utility Service ("RUS"), maximizing the underlying property owner's use of the land.

Dead-end power poles will be used at regular intervals on the line to accommodate adequate conductor tensioning. Guy wires support some of the dead-end power poles and are held in place by subsurface anchors. Other power poles are self-supporting and do not require additional down guys, thereby reducing impacts on land usage. Included with my testimony as Exhibit TPUD/207 is a diagram showing typical power pole structures proposed for the project. The spacing of power poles is depicted in Exhibit TPUD/208 which shows the profile of the entire line.

Q. HOW DOES TILLAMOOK PUD PLAN TO ADDRESS SAFETY RELATED ISSUES?

A. Tillamook PUD has substantial experience in operating and maintaining transmission lines in a safe, efficient manner. All energized wires/conductors will be supported by insulators that will isolate the conductors from the poles. The clearance for transmission conductors/wires above ground will meet all design and safety requirements for transmission lines. The proposed Transmission Line has been designed by registered professional engineers, and the design will meet appropriate industry standards including federal RUS requirements, and all state and local requirements regarding safety, clearances, strength, and design. Further, the Transmission Line will be constructed, operated, and maintained to meet or exceed all applicable National Electrical Safety Code standards, as well as all applicable federal, state and local laws, regulations, and ordinances. A copy of Tillamook PUD's Safety manual is included with my testimony as Exhibit TPUD/211.

Q. WHAT IS THE ESTIMATED COST OF THE TRANSMISSION LINE?

A. Included with my testimony as Exhibit TPUD/209 is a detailed breakdown of the various

costs estimated for the design, engineering, and construction of the Transmission Line. The total estimated cost is $13,208,700.

Q. HOW DID YOU ARRIVE AT THAT ESTIMATED AMOUNT?

A. TriAxis Engineering provided planning level cost estimates for the transmission line and substation components of the Transmission Line. The breakdown of costs for those components are included with Exhibit TPUD/209.

To estimate the cost of the easements, I developed a conservative methodology using Tillamook County's records to determine the maximum amount Tillamook PUD would pay for the easements. I began by identifying the real market value ("RMV") of each property as listed in the County's records. Based on that RMV, I then calculated a property value within the easement area based on the acreage of the proposed easements. Specifically, I calculated that value by dividing the RMV of the land by the total acreage of the land, and then multiplying that figure by the proportional acreage proposed for the easement. For farm parcels, I then determined that the value of the easement would be 100 percent of the RMV of the easement area. I did this even though there would be very little impact to current farming practices – only the areas occupied by power poles would be impacted. I used 50 percent of the RMV for commercial property, as the transmission line easement would not impact the current use of a commercial property, but could limit future development. I used a separate value for the easement on Port of Tillamook Bay ("POTB") property, based on a current rate sheet POTB has for use of its land and based on discussions I have had with POTB representatives. Because of the highly speculative nature of the easement costs, I then added back a large contingency of 50 percent for the farm and commercial properties. The easement cost for the forested land was based on the most current easement Tillamook PUD purchased, with an adjustment to reflect the fact that the timber would remain with the land owner.

My estimate of permitting costs is based on actual costs to date, with 90 percent

of the permitting effort completed, and anticipated costs through completion of the permitting process. The permits include applications to Tillamook County, Division of State Lands, and the U.S. Army Corp of Engineers.

The overall estimate also includes Tillamook PUD's internal costs for project management, construction management, inventory management and tracking, record keeping, and associated overhead.

Q. WHAT IS THE ESTIMATED COST OF THE ALTERNATIVE LINE ROUTES THAT TILLAMOOK PUD CONSIDERED?

A. Exhibit TPUD/205 contains cost estimates for alternative routes. TPUD has determined that these alternative routes are reasonable, but that based on feedback from the Community Advisory Group and others, are not preferable. The costs of the alternatives ranged from $400,000 less expensive to $500,000 more expensive, depending on which alternative is considered. The less expensive route was rejected because of its potential to impact farm practices in the area.

I used a range for these costs because the alternatives we considered consisted of two routes with several permutations rather than fixed routes. For purposes of identifying a preferred route, we split potential routes into three areas: (1) the East section with 3 alternative routes; (2) the Central section with two alternative routes; and (3) the West section with two alternative routes. Specific estimates were developed for each alternative in the Central and West routes. That information is included in Exhibit TPUD/205, with a breakout of costs in Exhibit TPUD/209. The cost estimates for the alternatives in the East section were based on the detailed estimates for route E1 and adjusting that estimate for the other alternatives by taking into account the revised distances of those alternative routes and the revised structure types, such as dead-end, angle and tangent structures. The low end of the range I identified above is calculated by taking the cheapest alternative in each of the East, Central, and West sections, and the

high end consists of the most expensive alternatives in each of those sections.

Only the transmission line component of the project is expected to change, as the costs of the substation, permitting, and internal costs should be the same under all alternatives, and the easement costs are not expected to be appreciably different.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 201

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

FAGEN RESUME

October 6, 2017

KC Fagen, P.E.

9250 Willowbrook Drive
Tillamook, OR 97141
206-355-4743 kcfagen@tpud.org, kcinsea@yahoo.com

EDUCATION

B.S. in Electrical Engineering, University of Oklahoma, 1989

Graduate class in power system analysis
Senior Project – Designed and built the solar car prototype that raced in the 1990 Australian World Cup Challenge – and finished!

Alaska Cold Regions Course, University of Alaska, 2008

Protective Relaying - Principles and Applications, J Lewis Blackburn

PROFESSIONAL REGISTRATIONS/ CERTIFICATIONS

Professional Electrical Engineer: WA (Dec 1994), AK, HI

Published articles in Transmission and Distribution and International Metering magazines, and published and presented conference papers at IEEE, NWPPA, EUCI conferences.

Instructor of Volt/Var Optimization and Distribution Efficiency classes for EUCI.

Board Member – Economic Development Committee – Tillamook OR

AREAS OF EXPERTISE

- Project Management
- Management/Supervision
- Smart and Micro Grid - Distribution and Substation Automation
- Substation Protection and Control design
- Transmission Line Routing and Design
- Electric System Planning Studies and Design
- Distribution Efficiency – Volt/Var Optimization

WORK EXPERIENCE

Tillamook PUD, May 2016 to Present.
Establishing annual budgets, supervision of staff including hiring responsibilities, interfacing with public officials and organizations, Interface with BPA and WEC adherence for all metering and protection requirements, Interface with Pacificorp and BPA regarding interconnection and mutual aid agreements, attend and present at Board meetings, equipment and material purchasing, adherence to RUS requirements, planning of major projects.

EES Consulting Inc. July 2015 to May 2016.
Client Manager, Senior Electrical Engineer. Responsibilities include business development, proposal writing, client management, project management, and project design for the Kirkland electrical group. Manage projects for substations design, system planning, distribution design, arc flash studies, relay coordination, and hydro-electric electric power system design. Interface with BPA regarding potential substation interconnection to address growing loads.

Leidos Engineering (Formerly SAIC and R. W. Beck, Inc.) November 2001 to June 2015.
Client Manager, Senior Project Manager, Member of the Seattle Office Leadership Team. Responsible for business development for the Seattle office and supervision of staff. Manage projects for substation design, system planning, and transmission and distribution design. Responsible for proposal writing, project management, and office management. Development of measurement and verification protocols for BPA's ESUE program.

City of Austin, Austin Energy September 1999 to November 2001.
Supervising Engineer. Hired as an Engineer C (Senior Engineer) and was promoted to Supervising Engineer in early 2000. Responsible for major distribution capital projects for the Kramer Lane north district. Supervised a staff of 22 engineers and designers. Updated distribution construction standards. Developed

the electrical plan for re-purposing the old Municipal Airport into an industrial park with redundant electrical feeders.

R. W. Beck, Inc. March 1990 to September 1999
Electrical Engineer. Preform electric system planning studies for distribution and some transmission grids. Developed Long Range and 2-Year Construction Work Plans. Developed and ran distribution system models for analyzing the performance of the distribution grid. Performed relay coordination studies for distribution substations and feeders. Developed SCADA systems, designed relay replacements, and performed distribution line design and field staking.

Hobbies – Cub Scout Den Leader for Wolf, Webelos, and Arrow of Light. All 15 of the Arrow of Light Scouts received their Arrow of Light ranking. Scout Masker Troop 582 Tillamook. Snowmobiling, motorcycles, restoring 1969 TriumphTR6.

PROJECT EXPERIENCE

Relay Coordination Study - Kodiak Electric Association Inc. (KEA), Alaska. Project Manager. Managed and distribution protection engineer for the relay coordination study that encompassed KEA entire electric grid including two 12.5 MWA hydro units, two diesel generation power plants, two 2 MW distributed peaking diesel units, 138 kV and 69 kV transmission systems, and the 12.47 kV distribution system. Developed the scope, budget and overall schedule for the project, as well as managed the Leidos team delivering the project on-time and within budget. Performed the final analysis for the power flow and relay coordination from the transformer high-side projection to the lateral line fuses, including substation breakers, load tap changer (LTC) and voltage regulator settings, reclosure settings, and main line fuse protection. Developed the protective device model in Milsoft's WindMil® and Light Table applications, verified existing coordination issues, and developed recommended changes to the protective device settings.

Power Distribution Program Management and Consulting Services - City of Pasadena Water and Power Department/California. Project Manager/Project Engineer. Provided program management and consulting services to assist the City of Pasadena in addressing an aging electrical distribution system infrastructure and increasing residential and commercial electric demands. Responsible for updating the City's electric distribution standards for the underground and overhead 34-kV, 17-kV, and 4-kV systems. His responsibilities included working with the Distribution Standards Committee, updating existing standards to meet current codes and equipment specifications, creating new standards based on current design and construction practices, and managing the day-to-day operations of the design team.

Hawaii Inter-Island Cable Study - U.S. Department of Energy. Lead Electrical Engineer. Responsible for assessing the feasibility and viability of electrically interconnecting 400MW of wind generation from the islands of Lana'I and Moloka'i and delivering the power to Maui and O'ahu using a combination of HVAC and HVDC deep water cables and AC substations and DC conversation stations. Working collaboratively with the local utility, governmental agencies, and the Technical Review Committee (TRC) to identify over 20 submarine and underground interconnection scenarios. The undersea routes took into account marine animal sanctuaries, existing undersea cables, topology of the sea floor, and ocean depths. Worked with Siemens, ABB, and Prysmian in developing cost estimates of various HVAC and HVDC cable routing scenarios. Key findings were that HVDC was the technology of choice to interconnect O'ahu and that HVAC could be used to interconnect Maui. Findings were presented to the technical review committee.

Highland-Tap to Central Park Transmission Lines - Grays Harbor Public Utility District, Washington
Project Manager/Project Engineer. The Highland Tap to Central Park transmission line experienced damage due to the 2007 winter storms along the four mile stretch that parallels the state highway. Mr. Fagen was the project manager for upgrading four miles of a 69-kV wooden-pole line to a 115-kV transmission line including the distribution underbuild circuit. His responsibilities included overseeing the design team,

managing the subconsultant performing the survey, reviewing design calculations performed in PLS CAD, performing the Department of Transportation's control zone calculations, determining environmental issues completing the environmental SEPA and JARPA checklists, working with the Department of Fish and Wildlife, controlling project budgets, and developing the material ordering and construction cost estimates using the District's in-house MOS software system.

Transmission Pole Replacement Project - Austin Energy/Texas Project Manager. Mr. Fagen managed the design for the replacement of approximately 60 wooden transmission structures containing distribution underbuild circuits with new steel transmission structures for the 69-kV and 138-kV transmission network. His efforts included reviewing and providing the Texas Professional Engineering Seal for the distribution design drawings, coordinating with the transmission design department, and preparing bid documents. Mr. Fagen also oversaw the mechanical pole loading and guy and anchor calculations.

Transmission and Distribution Line Analysis - City of Cleveland, Ohio Electrical Engineer. Mr. Fagen collected field data for the study of EMFs related to an existing distribution line. He developed computer models of the distribution line and a 138-kV transmission line to perform EMF analyses under various conditions and assumptions. The computer model verified existing EMF levels and predicted future impact at various conductor loading scenarios.

Upriver Transmission Line and Relaying Study Eugene Water and Electric Board/Oregon Electrical Engineer. Mr. Fagen assisted in the analyses of this 115-kV and 69-kV transmission system serving a Weyerhaeuser mill and Upriver basin. He developed a computer database for the system, which experienced a peak load of 130 MW, and performed power-flow analyses and short-circuit studies. He also prepared one-line diagrams for the existing system and two alternative systems for the years 1994, 2000, and 2010. He prepared the cost estimates for the recommended alternatives. His analytical, engineering, and cost estimates were integrated into the final written report.

EMF Study of Talbot-Berrydale 230-kV Transmission Line Upgrade - EDAW/Seattle, Washington Electrical Engineer. To support the required environmental impact study for the planned upgrade of the Talbot-Berrydale 115-kV Transmission Line, Mr. Fagen collected EMF data in residential areas near the transmission line. He calculated EMFs for the peak power flow of the existing transmission line as well as for the proposed upgrade to 230-kV. His analysis of EMF included reviewing epidemiology studies and other written articles on the subject. In addition, he analyzed mitigation techniques.

138-kV Transmission Line Routing Study ACME Metals, Inc./Riverside, Illinois Lead Engineer. Mr. Fagen evaluated alternate routes for a double-circuit, 138-kV transmission line along an existing railroad right-of-way. His analysis included reviewing photo logs of the routes, contacting railroad companies, and evaluating railroad valuation maps of selected routes. He created maps showing the recommended route and submitted an application for occupancy of right-of-way to the two railroad companies involved.

Stafford Creek/Harding Road to Highlands Transmission Line Projects Grays Harbor Public Utility District/Washington ***Project Engineer.*** Mr. Fagen performed project management and engineering design tasks for the two proposed transmission upgrade projects which rebuilt ten miles of 69-kV to 115-kV transmission line with distribution underbuild using 795 AAC conductor for both circuits. In addition, he designed the fiber optic ADSS communication line system for the two transmission line projects. Mr. Fagen was responsible for QA/QC reviews, transmission and distribution line layout, developing the engineer's cost estimate using the client's in-house Material Ordering System, mitigating environmental issues with the Department of Fish and Wildlife and completing the Department of Transportation application including Control Zone Calculations, Utility Relocation, and Utility Facilities Description. Mr. Fagen performed field measurements and field staking of poles, guys, and anchors. He also

coordinated with the design team on issues involving the use of PLS CADD and the District's construction standards.

Distribution Efficiency Initiative - Northwest Energy Efficiency Alliance, Oregon. Project Manager. Implemented a region-wide study to determine the potential energy savings that could be achieved through design and operational efficiencies. Recruited 500 residential customers and multiple utilities in the Pacific Northwest region to participate in a load research and feeder pilot demonstration initiative. Helped educate utilities on effective methods to reduce system losses to achieve a potential energy savings of two to three percent. Performed system analysis to demonstrate how improvements could be implemented and the average system voltage lowered without increased losses or subjected customers to voltage levels below the recommended limits. Built business case models quantifying the costs and benefits associated with distribution efficiency and voltage reduction.

Winona and Flower Substation Temperature Monitoring Design and Programming, Burbank Water and Power, California. Project Manager, Lead Electrical Protection and Controls Engineer. Designed the controls, power supply, and communications for the installation of the SEL-2414 temperature monitoring and fan control equipment. Performed site inspection and as-built existing drawings, revised and created new control schematics, wiring diagrams, and point to point interconnection wiring diagrams. Programmed the SEL-2414 using AcSELerator® QuickSet and provided rdb settings files.

Transformer Differential and Overcurrent Coordination and Settings, Northern Wasco County PUD, The Dalles, OR – Project Manager/Electrical Engineer, prepared the electric model using OTI's ETAP® software for the 115kV source and the 69kV transmission line and connected substations. Ran short circuit analysis to determine fault levels on the 115kV bus the 69kV system, and the low side of the 69kV to 12.47kV substations connected to the 69kV transmission line. Performed a coordination for the 115kV overcurrent relays in the SEL-751 and the SEL-487, the SEL-487 transformer differential relay, and the SEL-751 69kV overcurrent relays. Developed settings to coordinate the 115kV relay and the 69kV transmission relay; and to coordinate the 69kV relay with the down line protection for each of the connected substations. Used AcSELerator Quick set and provided the rdb files to Northern Wasco. The project was energized on-time and has been operating correctly.

Point of Service Study, Kittitas Public Utility District, Kittitas County, Washington - Project Manager/Lead Engineer. Invested multiple alternatives for rebuilding or establishing redundant sources for remote locations in Kittitas PUD service Territory. Study include rebuilding existing power line that used a 1910 railroad bridge as the supporting structure for the towers to cross the Columbia River near the Wanapum hydroelectric dam. Approximately 300 feet of the bridge deck burned during a wild fire and require repairing in order to reestablish an easement with the Department of Natural Resources. Additional routes were explored for crossing the river include a 115kV transmission line, a 15kV submarine crossing, and directional drilling. Cost estimates were developed including coordination with construction companies, permitting agencies, and neighboring public utilities. Utility interconnection with BPA and Grant County PUD were explored and included in the Plan.

Power Flow, Short Circuit, Coordination, and Arc Flash Studies. Guam International Airport Authority, Guam Territory – Project Lead Engineer. Developed EasyPower model of electric infrastructure including relays, cables, breakers, switchgear, transformers, load centers, panel boards, and load recording. An EasyPower model was developed for three source levels included all of Guam Power Authorities generators on-line, base generators on-line, and only the GIAA's back-up generators on-line. Load studies were conducted at major load center were voltage, power, and power factor were recorded for a two-week period. Relay setting were documented and entered into the model and a coordination study was performed with recommendations for improving coordination and limiting arc flash exposure. Arc Flash study was performed in accordance with NFPA 70E and OSSH requirements. Recommended improvement to the relay settings were provided and documented in the final report.

Beverly Park Substation Upgrade – Snohomish County Public Utility District #1, Washington. Lead Electrical Protection and Controls Engineer. Team lead over engineers, designers, and computer-aided design and drafting (CADD) for designing the protection and control schemes for the 230 kV to 115 kV substation including five breaker-and-a-half bays, a 230kV bay, 115 kV buses, transmission lines, and the 300 MVA auto transformer. Design including interchange metering for the neighboring utility's lines and the Bonneville Power Administration lines, metering and SCADA systems, POTT for the 230 kV line, battery sizing and design, and sizing and layout of the control building.

Airport, Swampy Acres, and Terror Lake Substations 138 kV and 15 kV Breaker, Relays, SCADA Remote Terminal Units (RTU), and Controls Replacement - Kodiak Electric Association Inc. (KEA), Alaska Project Manager. KEA identified aging infrastructure that required replacement including three 138 kV and eight 15 kV breakers at one of their main generating plants. Performed project management for the three projects including site visit, developing equipment specifications, assistance during bidding and procurement, project definitions, budgets, design architecture, onsite construction management, and project schedules. The project included replacing 138 kV and 15 kV breakers and associated relays, developing integration with older SCADA systems using SEL-3530 Real-Time Automation Controller (RTAC) and SEL-2440 Discrete Programmable Automation Controller (DPAC) hardware, relay settings and testing, implementing SEL Mirrored Bits® fast bus tripping scheme, and as-built final construction drawings. He coordinated the design team efforts including electrical and civil disciplines and performed the final quality control review of the design, as well as onsite construction management of the three projects. Mr. Fagen developed the SCADA road map for upgrading the existing fiber optic cable link and RTUs. The projects included shop drawing review, replacement of the two 67 kV breaker with gas-insulated breakers, relay and control wiring, engineering during construction, and as-built of drawings.

On-site Project Manager and Lead Design Engineer - Hawaiian Electric Company Project Manager and Lead Substation Engineering. On-site for a year to support an expanding capital program and help train and mentor engineering staff. Performed project management and engineering for substation expansion projects, provided construction support, and procured the materials and equipment's need to construction. Assignments included the replacement of an 80MVA 138/46kV transformer, 138kV and 46kV breaker replacements, relay replacements and upgrades to SEL-311, SEL-487, and SEL 351 relays, and DC battery bank replacements.

Phillips 66 Substation Upgrade - Public Utility District No. 1 of Whatcom County (Whatcom County PUD), Washington Project Manager/Engineer. Responsibilities for the rehabilitation of two of the three power transformers and associated switchgear for the Whatcom County PUD 115 kV-13.8 kV. His duties included managing the overall project, developing the scope of services and budgets for the three remaining task orders, assigning the appropriate team members to the tasks, interfacing with the prime consultant and Whatcom County PUD, and approving invoices. In addition to his management of Leidos' portion of the project, Mr. Fagen performed load flow studies, short-circuit studies, engineering during construction, and relay coordination studies. Each of these studies looked at the existing and projected loads under multiple switching configurations. The unique aspect of the relay coordination study relay settings was that it included coordinating existing General Electric's (GE) Multilin relays, GE IAC53 relays, and the new SEL-351 relays under normal switchgear configuration, as well as contingency configurations. In addition, the relay coordination had to compensate for fault current contribution from the customer's large motors. Mr. Fagen worked with SEL's field service engineers for the implementation of the protection scheme that he developed for paralleling three power transformers and paralleling two distribution feeders.

Smart Grid Initiative Engineering Planning Services - Guam Power Authority, Guam Deputy Project Manager and Systems Engineer. Provided two roles in developing the Smart Grid requirements and specifications for the design of the Load Control Management System, Distribution Automation, Substation Automation, Distribution Management System, and Volt/Var Optimization systems. As the deputy project manager, Mr. Fagen lead the efforts in developing the strategy documents that defined the business

requirements for each of the five smart grid initiatives and the development of the design documents including drawings, communication architectural diagrams, equipment specifications, and project requirements that are the technical specifications that will be included as part of the bid documents. In addition, he worked with other smart grid initiatives including automated metering infrastructure, meter data management, outage management systems, telecommunication and networking, and SCADA/energy management systems. Mr. Fagen was also the systems engineer for the development of the design document for the Volt/Var and Substation Automation smart grid initiatives. He ran power flow studies to determine optimal placement and size of both fixed and switched capacitor banks, load and phase balancing, voltage control settings, real-time end-of-line monitoring scheme, and the communication interface to provide real-time monitoring and control of the field devices by the centralized distribution management and energy management system. He developed the communications diagrams for each substation and designed the upgrades to the existing D20 RTUs for the migration to an Ethernet based IEC 61850 communication network.

Interconnection Requirements Studies – Hawaiian Electric, Hawaii. ***Project Quality Control Manager.*** Responsible for work order authorizations and providing quality control and assurance for multiple Interconnection requirements Study (IRS) projects for interconnection to the 138 kV, 46 kV, 26 kV, and 12 kV systems. Studies include impact on power flow, voltage flicker, reactive power requirements, load tap changer operations, capacitor switching, transient and stability analysis, ride through capability, protective devices, islanding conditions, and updates to the interconnection one-line diagram.

Distribution Short Circuit Protection Study, Elmhurst Mutual Power & Light, Tacoma, Washington – Project Manager/Electrical Engineer, used CYME to study configuration and settings of the medium voltage distribution protection scheme and to perform an Arc Flash Analysis. Reviewed and modeled the existing protective relay settings and developed time current coordination curves for each grouping of settings. Using the source impedances of the transmission system and adding the distribution transformer to the model, ran the short circuit analysis for the substation equipment and for the primary feeders down to the low voltage terminals of distribution transformers. Developed recommended settings to improve operations times and to coordinate with the new downline reclosers. Evaluated arc flash hazard and presented mitigation options on the primary and secondary networks.

Electric System Capital Needs and Reliability Assessment, Northern Wasco County PUD, The Dalles, OR – Project Manager/Electrical Engineer, prepared a long range capital plan for the PUD. Developed and used an engineering model using Milsoft's WindMil® software to simulate power flows and to develop switching contingencies. Assessed the condition and capability of the PUD's transmission systems and substations relative to current load and projected growth over a 15-year planning horizon. Review and assess existing and planned projects, including estimated costs, and establish short and long term facility upgrades in a comprehensive and efficient manner, including estimated costs. Analyze contingency situations such as the loss of a substation and determine the impact to the PUD. Alternative plans were developed for major system upgrades and life cycle economic evaluation was performed to determine the most cost effective solution.

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 202

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

EXISTING AND NEW TRANSMISSION LINE

October 6, 2017

TPUD/202
Fagen/1

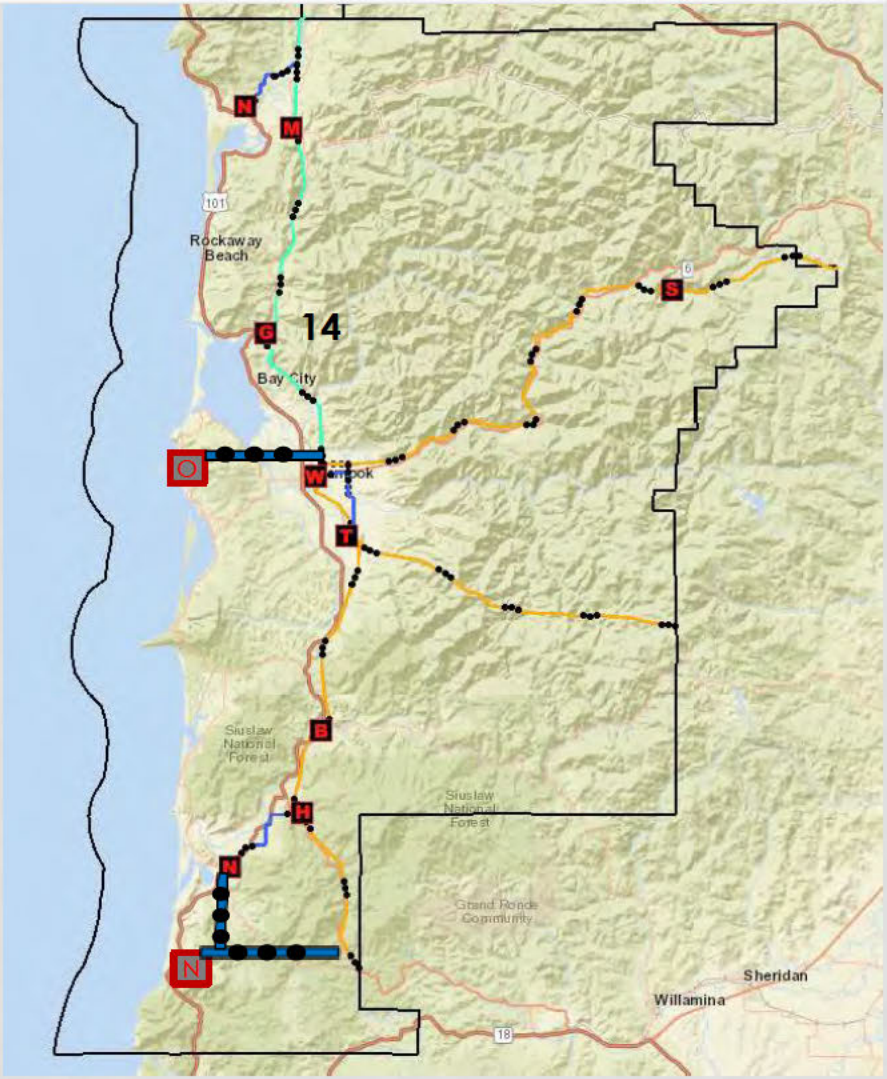
TRANSMISSION SYSTEM

Legend:

TPUD 115kV
PacifiCorp 115kV
BPA 115kV
BPA 230kV

Substations:
Nehalem
Mohler
Garibaldi
Wilson T1
Wilson T2
Trask
Beaver
Hebo
Nestucca
South Fork

Proposed Oceanside
Planned Neskowin



BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 203

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

ROUTE SITE PLAN MAP BOOK

October 6, 2017

LEGEND

- Preferred Transmission Route
- Proposed 50- to 100-foot-wide Corridor
- Preliminary Substation Location
- Power Pole
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Milepost

NHD Flowline

- ArtificialPath
- StreamRiver
- Township and Range
- Section

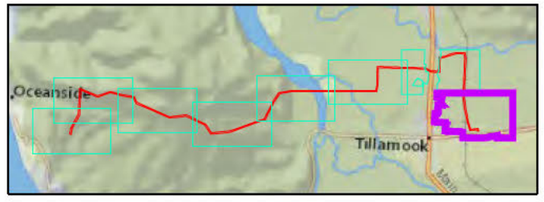


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Figure 3 Map 1 of 8
Site Plan Mapbook
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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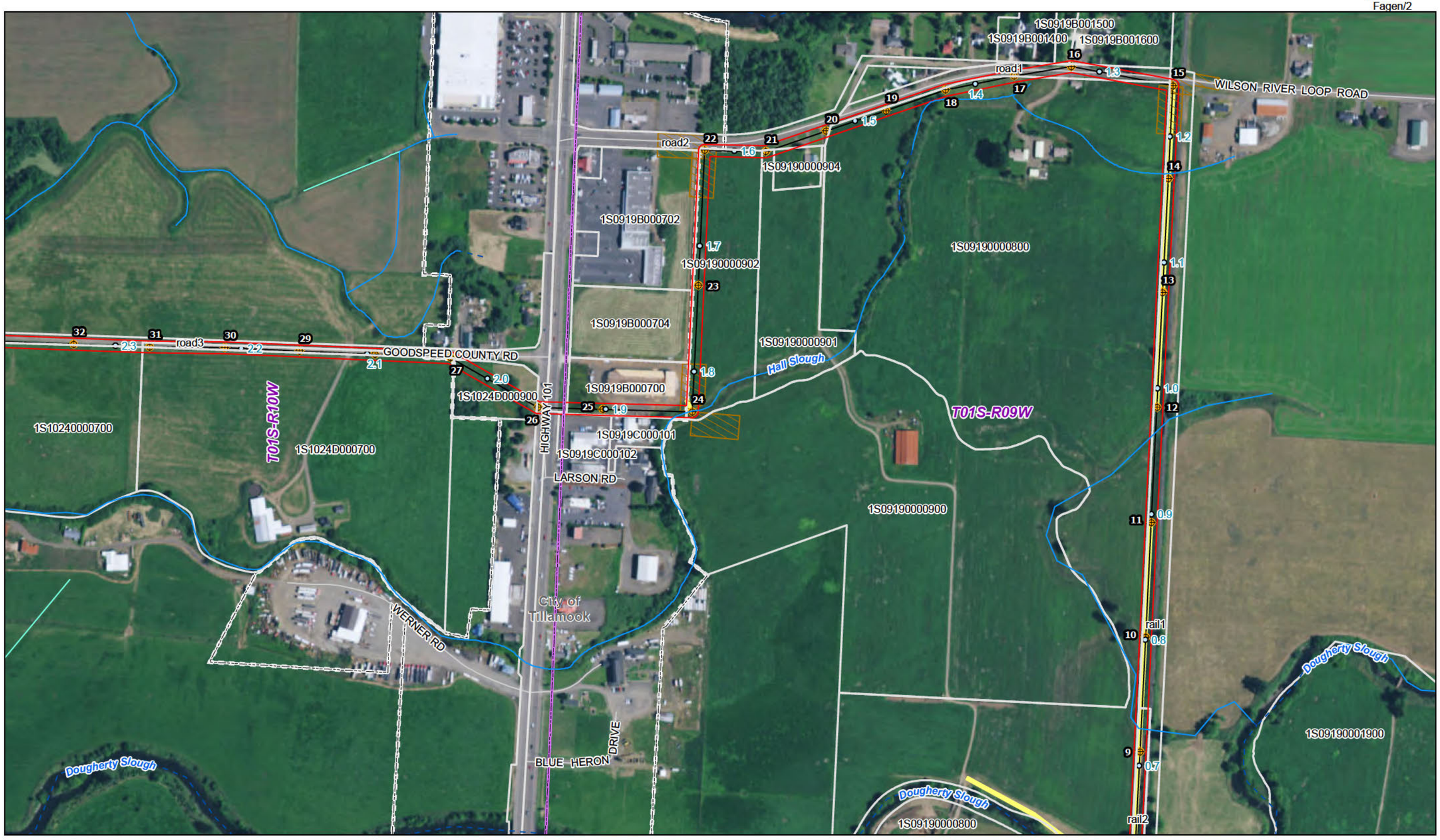

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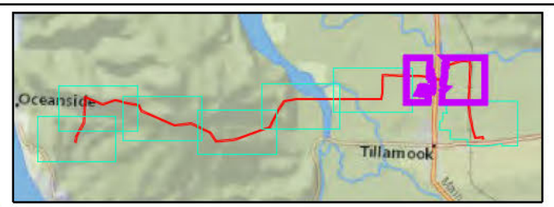

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Figure 3 Map 2 of 8
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Tillamook-Oceanside
115-kilovolt Transmission Line Project
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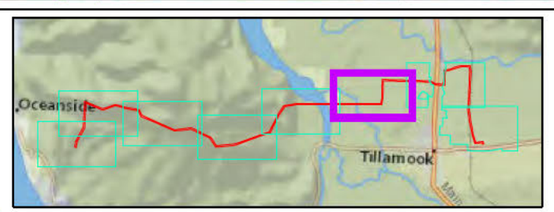

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Figure 3 Map 3 of 8
Site Plan Mapbook
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD
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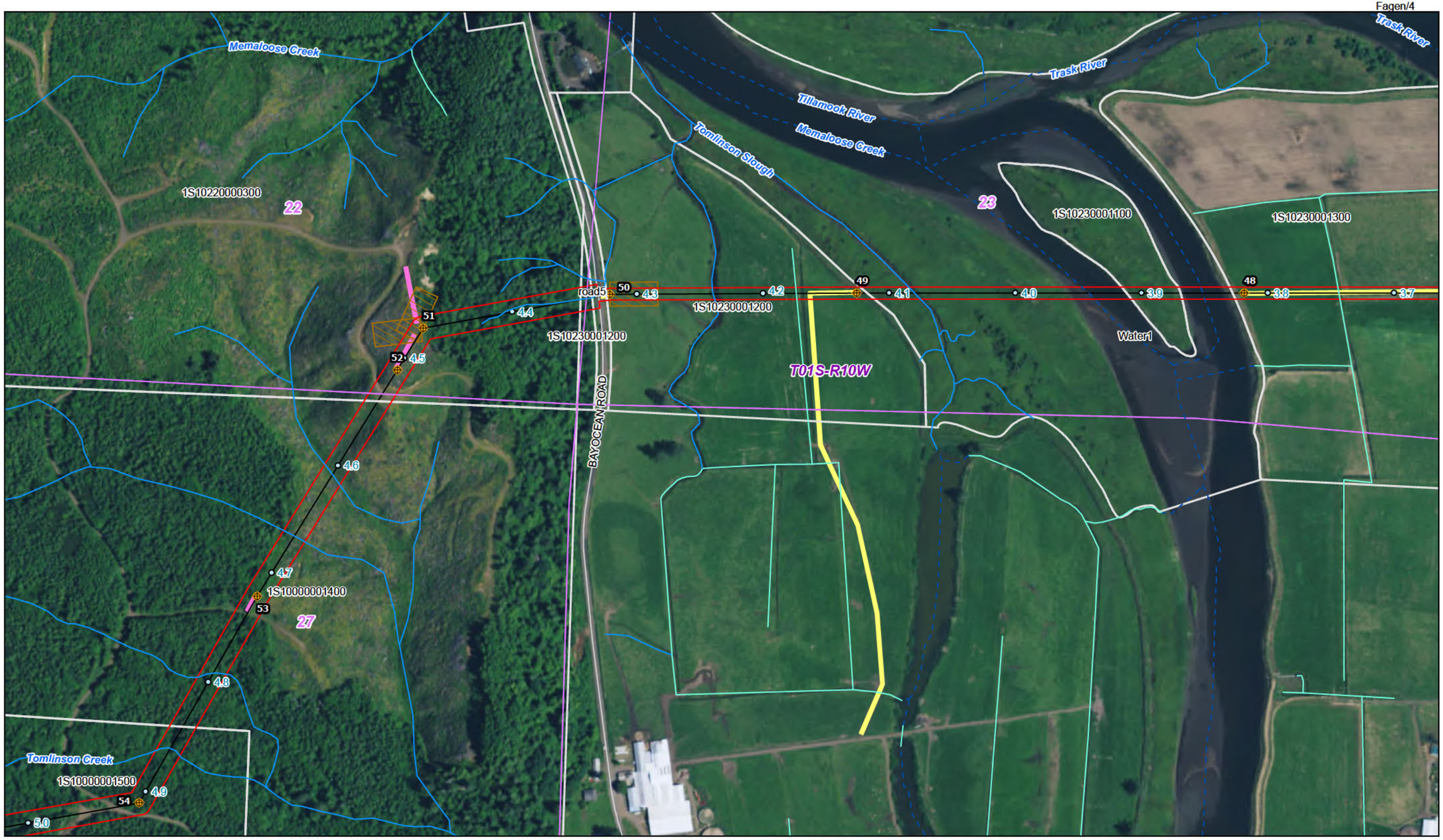

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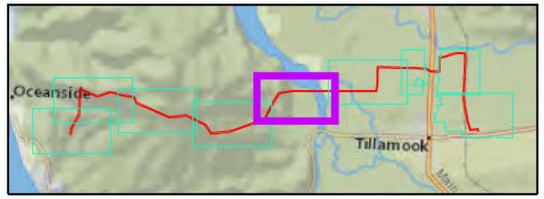

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115-kilovolt Transmission Line Project
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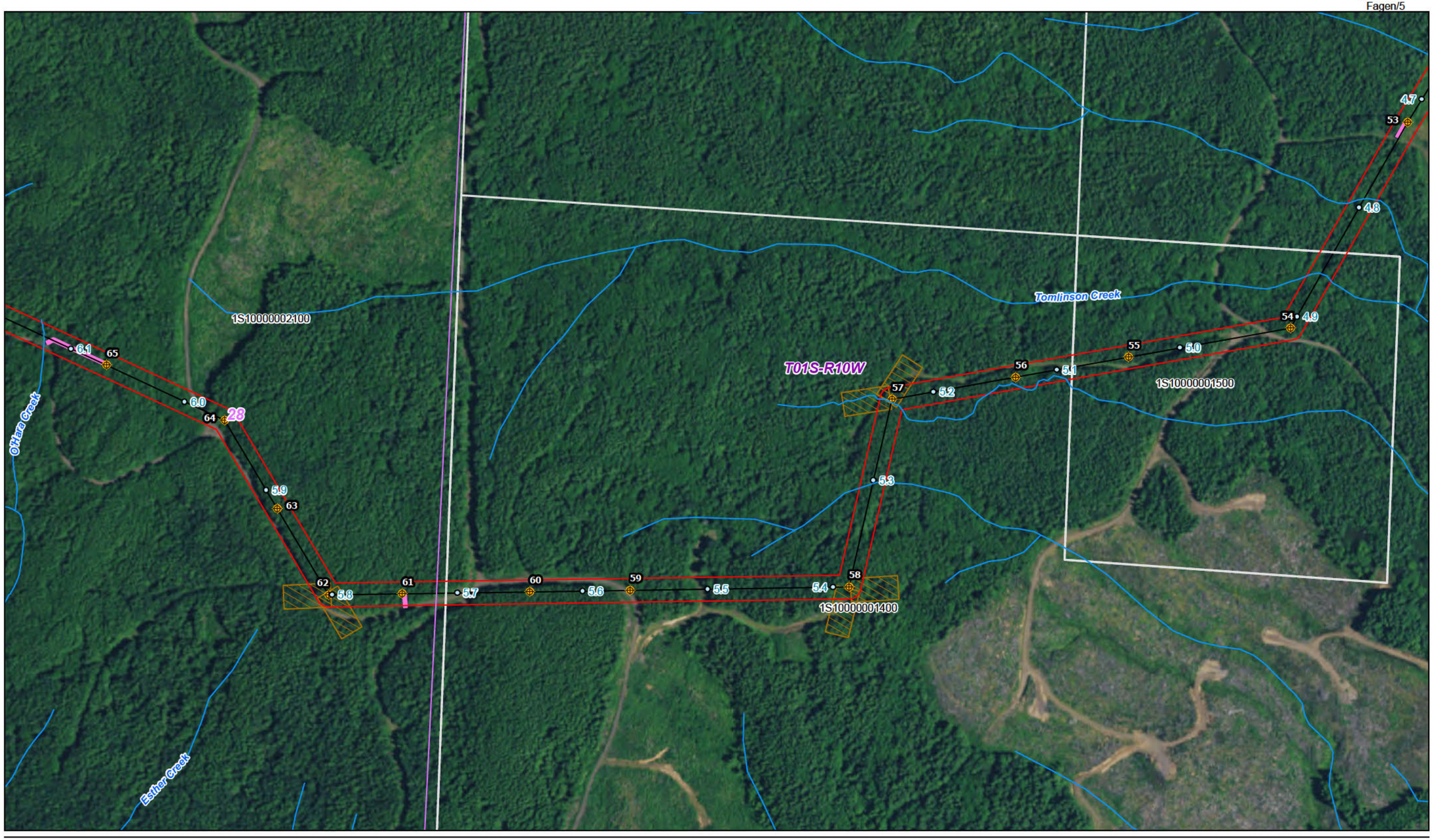

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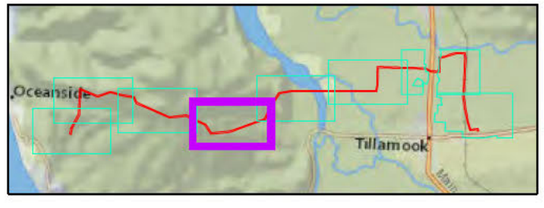

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Figure 3 Map 5 of 8
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Tillamook-Oceanside
115-kilovolt Transmission Line Project
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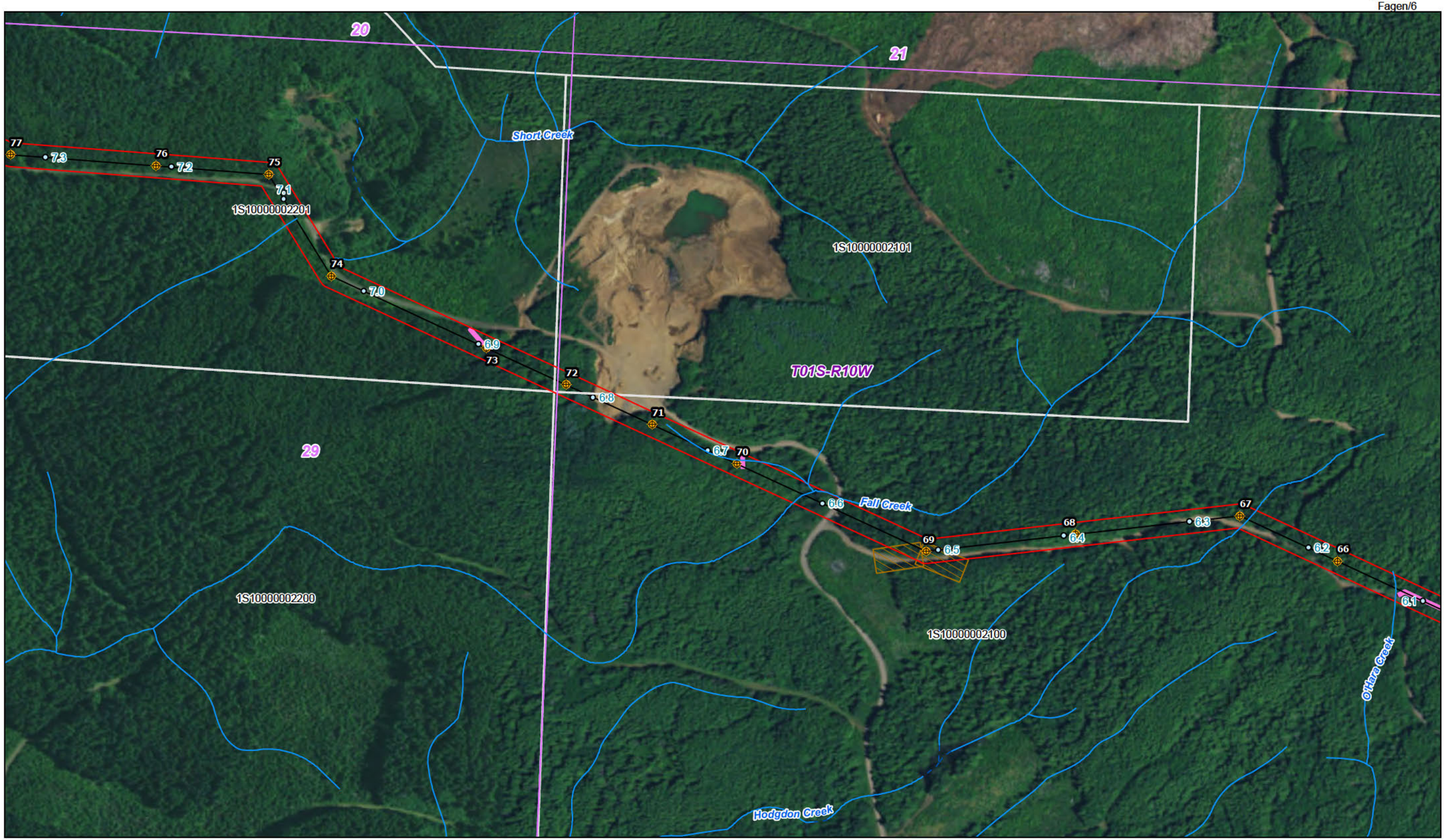

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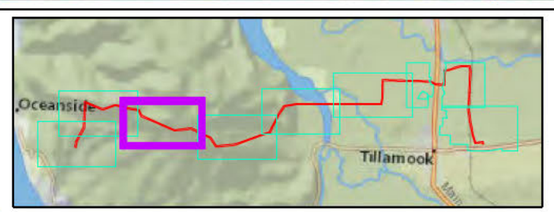

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Figure 3 Map 6 of 8
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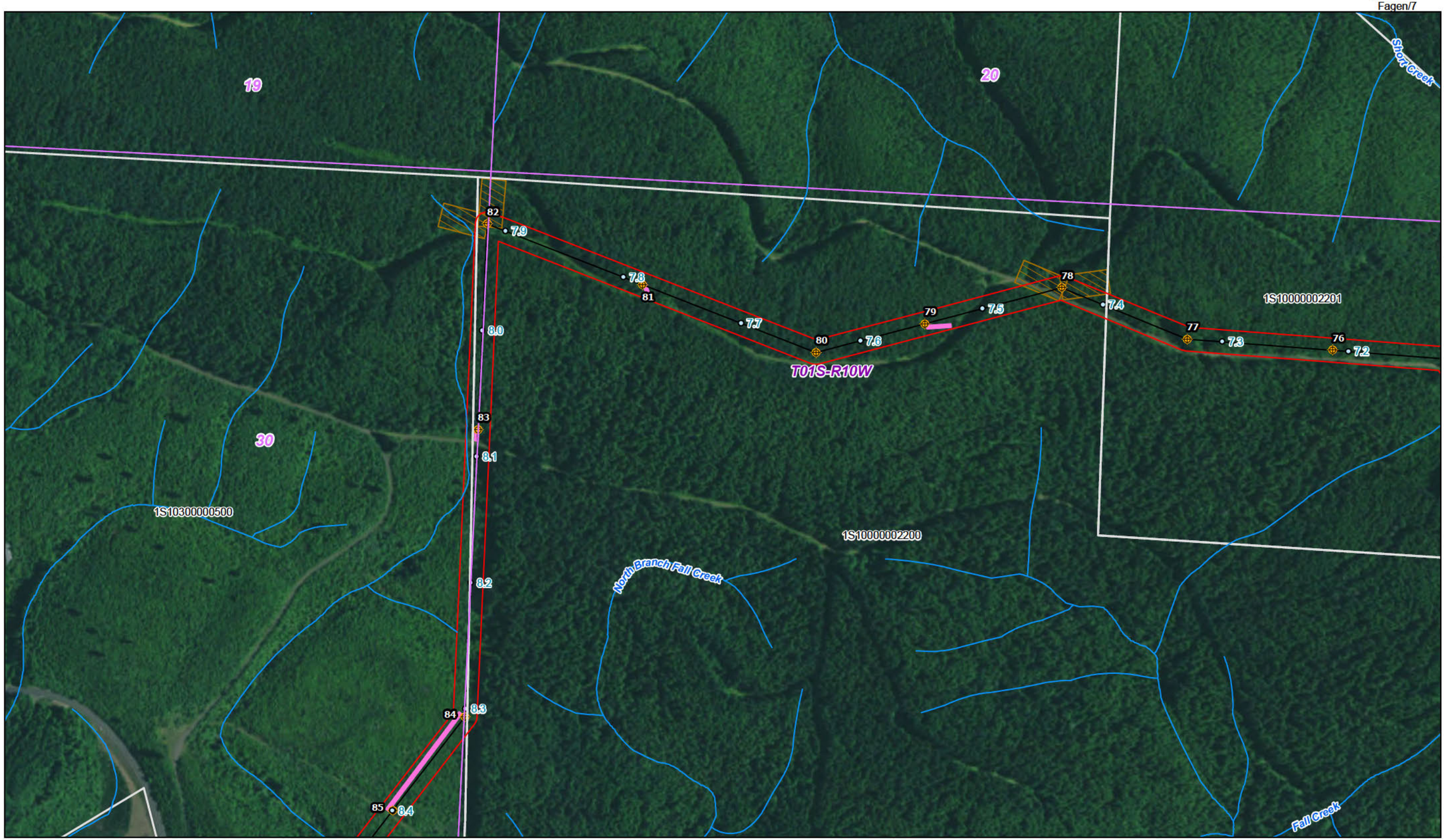

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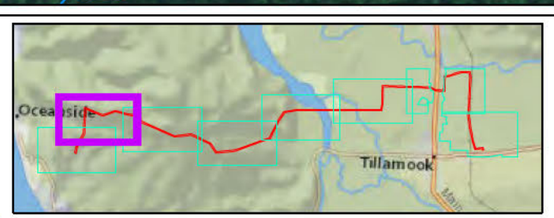

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Figure 3 Map 7 of 8
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Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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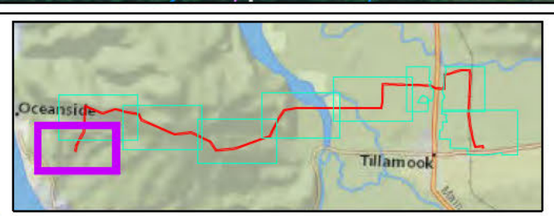

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Figure 3 Map 8 of 8
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115-kilovolt Transmission Line Project
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BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 204

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

OPTIONS ANALYSIS

October 6, 2017

CAPACITY
ADDITIONAL CAPACITY NEEDED

- Results of Power Flow Simulation Model
- Loss of Transformer T2 at Wilson River Sub – Normal less one condition (N-1 = Largest Component Out of Service)

Substation (year built)	Load (MVA)	Capacity (MVA)	Loading (%)
Garibaldi (1994)	22.7	25.0	91%
Wilson T1 (1971)	33.2	33.3	100%
Wilson T2 (2002)	0.0	0.0	
Trask (1996)	35.3	36.9	96%
Totals	91.2	95.2	96%

- After addition load transfers to South Fork and Mohler substations to reduce loads on Garibaldi and Wilson T1
- There are areas that have poor voltage and overloaded conductors

OPTIONS CONSIDERED

Option 1

- Do nothing

Option 2

- Improve system to provide redundant 26kV feeders to Netarts and Oceanside
- Strengthen tie points between Wilson and Trask substations
- Perform improvements to resolve voltage and loading issues

Option 3

- Same improvements as Option 2
- Replace Wilson T1 with equivalent size of Wilson T2 (44 MVA)

Option 4 – Preferred Option

- Construct the Tillamook to Oceanside transmission line and a 33 MVA substation

SUMMARY OF OPTIONS

TPUD/204
Fagen/3

	Option 1	Option 2	Option 3	Option 4
Cost (Million)	$0.8	$3.8 - $4.2	$5.5 – $6.0	$9-$10.5
Capacity Addition	0 MVA	0 MVA	12 MVA	33 MVA
$/MVA	0	0	0.5	0.3
Reliability	None	Good	Good	Excellent
Longevity	0 years	2 years	13 years	33 years

CONCLUSION: The Tillamook to Oceanside transmission line project provides the lowest cost per unit of capacity (MVA) and has the life expectancy of 33 years (2.8 times the non-transmission line option).

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 205

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

ALTERNATIVE ROUTE ANALYSIS

October 6, 2017

TPUD/205
Fagen/1

Tillamook People's Utility District

Tillamook to Oceanside Transmission Line Route Recommendation

Prepared by:
Engineering Department

November 21, 2016

Final

A Customer-Owned Electric Utility
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Tillamook, Oregon 97141-0433

Table of Contents

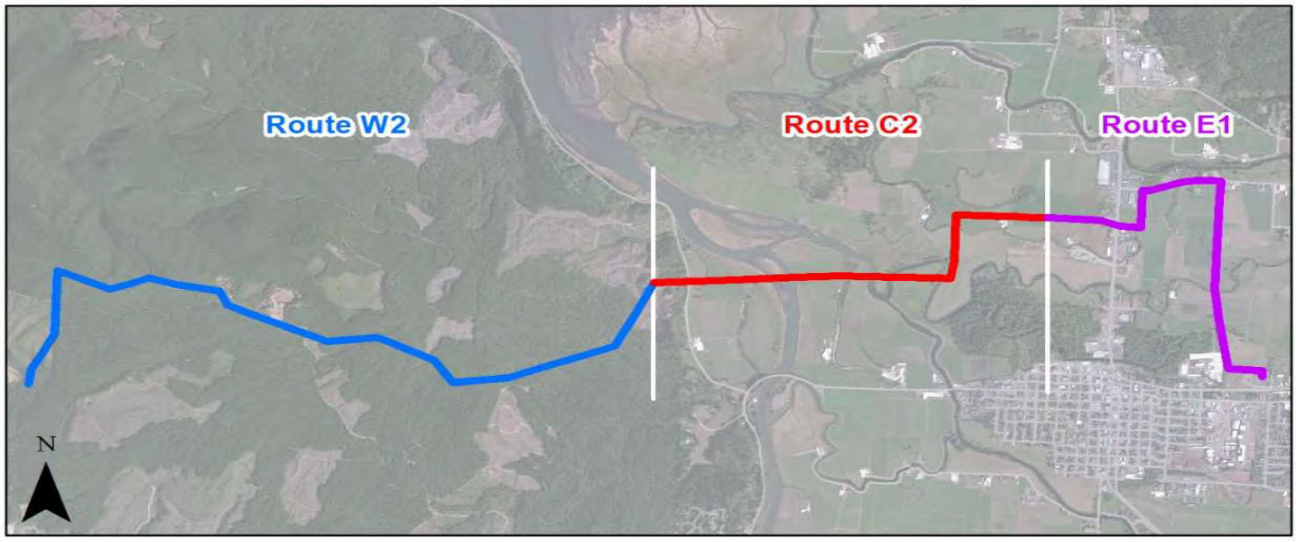
Introduction and Recommendation

The Tillamook People's Utility District staff was tasked with developing a recommendation for the proposed Tillamook to Oceanside Transmission Line Project. The project will improve reliability, allow crews to perform operations and maintenance without lengthy outages, and add needed capacity to the central Tillamook valley. This document provides an overview of the process that District staff used in developing its recommendation for routes E1, C2, and W2 for the proposed Tillamook to Oceanside transmission line, shown in Figure 1 below. This recommendation is based on input from multiple stakeholders and various other sources of information including:

- Comments received through individual meetings held over the past few months between District staff and 24 of the potentially-affected 37 landowners;
- Feedback from public workshops and meetings;
- Recommendations from the Citizen Advisory Group (CAG);
- Results from the Decision Table process, which included input from four landowners, six public members, and seven District staff;
- Meetings with state and local regulatory and permitting agencies; and,
- Professional judgment of District staff.

Please note, minor adjustments to the recommended route segments may be necessary during the permitting and engineering design phases of the project.

Figure 1 – District Staff Recommended Transmission Line Route



Several methods were used to determine which route might be the least impactful. When an obvious route could not be clearly identified, a Decision Table tool was employed, which quantified data for each route that could be used for comparisons. Potentially affected landowners and the public were invited to complete the Decision Table using a voting-type process. However, few participants completed the Decision Table, so in making its recommendation, District staff relied heavily on previous

discussions with potentially-affected landowners and the Route Evaluation Criteria developed during the CAG process, which is summarized below and the full version is included in Appendix A. The predominate criteria from the CAG process used in developing the District Staff recommended route included:

- Maximize co-location within existing linear corridors
    - Highway/road/railroad rights-of-way and utility corridors
- Maximize use of existing rights-of-way and pole locations
    - Reduce the number of poles by placing more than one set of wires on a pole, provided that two circuits do not serve the same geographical area
- Minimize the number of landowners and properties affected in order of importance
    - Residential
    - Commercial
    - Farm/Agriculture
- Minimize Space requirements
    - Impacts to property and development
- Minimize need for access roads
    - Increases environmental impacts
    - Increases space requirements
    - Increases costs

Below is a brief synopsis of the process that District staff used in determining the recommended routes.

Citizens Advisory Group

The process for selecting a transmission line route started with the route identified in the CAG process, Route 3A. In addition, the CAG recommended that the District explore a route further north in the Central region, see Appendix A for notes from the final CAG meeting. The resulting routes were presented at a May 25, 2016 public workshop and are shown in Figure 2 below.

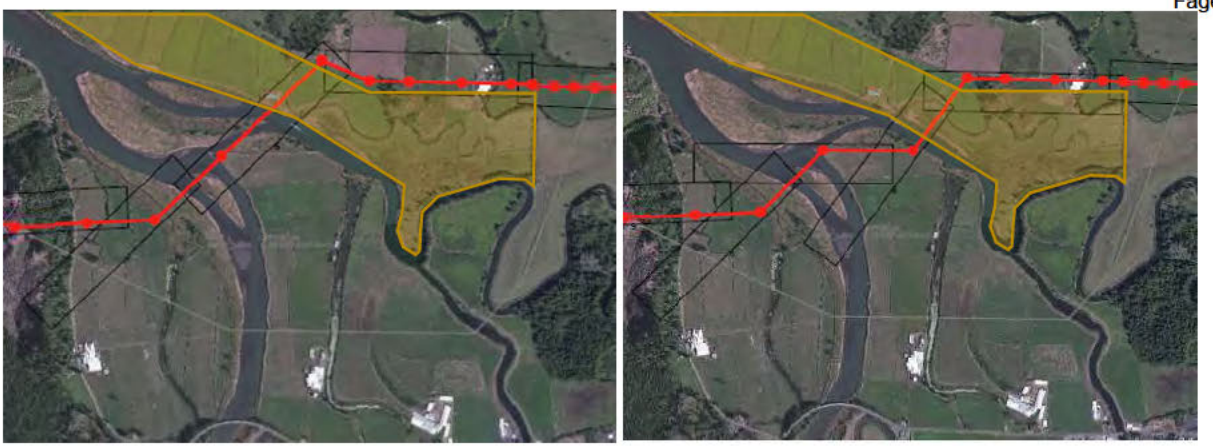
Figure 2 – CAG Proposed Route 3A with Northern Route 1D

The new Roby's Furniture store on Highway 101, has come to fruition since the CAG recommendation in the fall of 2015, which required staff to look for an alternative location for the transmission line to cross Highway 101 at Goodspeed Road. Discussions with landowners and the public during the May 25, 2016 public workshop and feedback after, indicated that the transmission line should be rerouted from the middle of farmland, where possible, and the District should explore crossing the Tillamook County Southern Flow Corridor (SFC) tidal wetlands further north.

Regulatory Agencies

The District staff met with Tillamook County and the Oregon Watershed Enhancement Board (OWEB) on August 9, 2016 to explore potential routes located within the SFC project area. Two potential routes were identified that crossed the SFC project without placing poles within the area that would be returning to the natural tidal action, the yellow shaded area in Figure 3 below. These two potential routes required approximately 1,200 to 1,500 foot wire spans and thus, required preliminary engineering calculations to determine if these spans would be technically feasible. The preliminary engineering calculations determined that the route would be technically feasible, pending a soils investigation, requiring special conductors to keep the pole heights in the 125 feet to 150 feet range. Figure 3 shows the potential routes that were explored with Tillamook County and OWEB in the August 9, 2016 meeting.

Figure 3 – Northern Route SFC Crossing



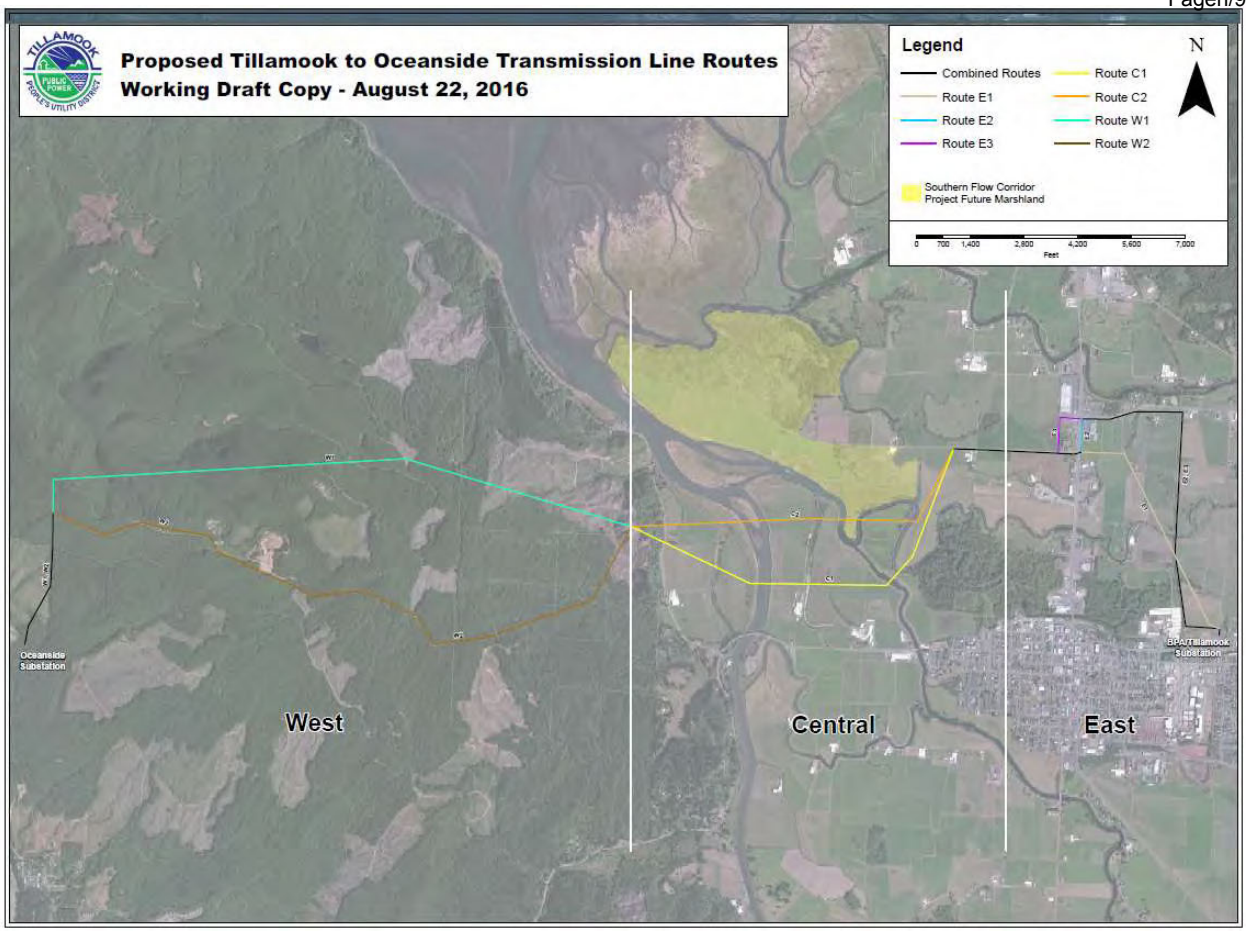
OWEB reviewed the data and information provided by the District at the August 9, 2016 meeting. In a letter from OWEB dated August 18, 2016, OWEB informed the District that these two routes could not be approved as they were inconsistent with the purpose of the conservation easement and federal notice. Appendix B includes two letters from OWEB to the District with a more detailed explanation. The District approached Tillamook County in a follow-up meeting on September 20, 2016 and again explained the advantages of the line crossing further north. However, as explained in the August 18, 2016 letter from OWEB, a line crossing in the middle of the SFC project area would not be approved based on the terms of the easement agreement.

Revised Transmission Routes

District staff re-aligned portions of the route based on the comments from landowners, regulatory agencies, and public workshops. A route east of Highway 101 was added that followed the existing railroad tracks from BPA's Tillamook substation north to Wilson River Loop Road, then followed Wilson River Loop Road west to Highway 101. Two alternate paths were then explored; Route E2 traveled south from Wilson River Loop Road down Highway 101 to Goodspeed Road. The second Route E3, crossed Highway 101 at Wilson River Loop Road to behind Denny's and Fred Meyer and turned south behind Debbie D's to Goodspeed Road.

Both routes relocated the line off the middle of farm land, co-located with public right-of-way (Port of Tillamook Bay railroad and Wilson River Loop Road), and co-located with existing power lines along Wilson River Loop Road. The tradeoff is an additional seven residential houses and six or 11, depending on the route, commercial buildings that would be within 100 feet of the transmission center line compared with the original route (shown as E1 in Figure 4 below), which had one residential house and four commercial buildings. The additional buildings are located along Wilson River Loop Road and Highway 101, and existing power lines are present where the potential transmission line would be located. The Central and West routes remained unchanged. Figure 4 shows the route modifications.

Figure 4 – Proposed Re-alignment of Transmission Line Routes



Landowner Meetings

With the route adjustments as shown in Figure 4 above, District staff met individually with landowners to solicit input and comments. District staff met with 24 of the potential 37 landowners beginning in August through November 2016. Several new alignments were suggested by landowners for the sections of transmission line on their property. Based on comments and discussions during the landowner meetings, final potential route segments were identified. With each adjustment, some landowners became potentially more impacted than others. Figure 5 shows the final proposed transmission line routes.

For the East section, Route E1 that had cut through the middle of farm land from the Tillamook Substation to Highway 101 and Goodspeed Road, was removed from the potential routes. The landowner suggested that a route along the railroad tracks and Wilson River Loop Road was more palatable and would have far less impact on existing farming practices. The landowner further suggested a route to the east of the commercial shopping center at the corner of Highway 101 and Wilson River Loop Road would be preferred, rather than crossing through the middle of the property. This became the new E1 route.

Further adjustments were made pertaining to where route E1 crossed Highway 101. The original route crossed between Roby's and the Hathaway's property. The landowner for Roby's preferred that the line be as far from the property as possible, but if it were to be

located near the Roby's property, there was a preference for the line to pass to the south side of the property rather than to the north side, sharing an existing easement with the City of Tillamook.

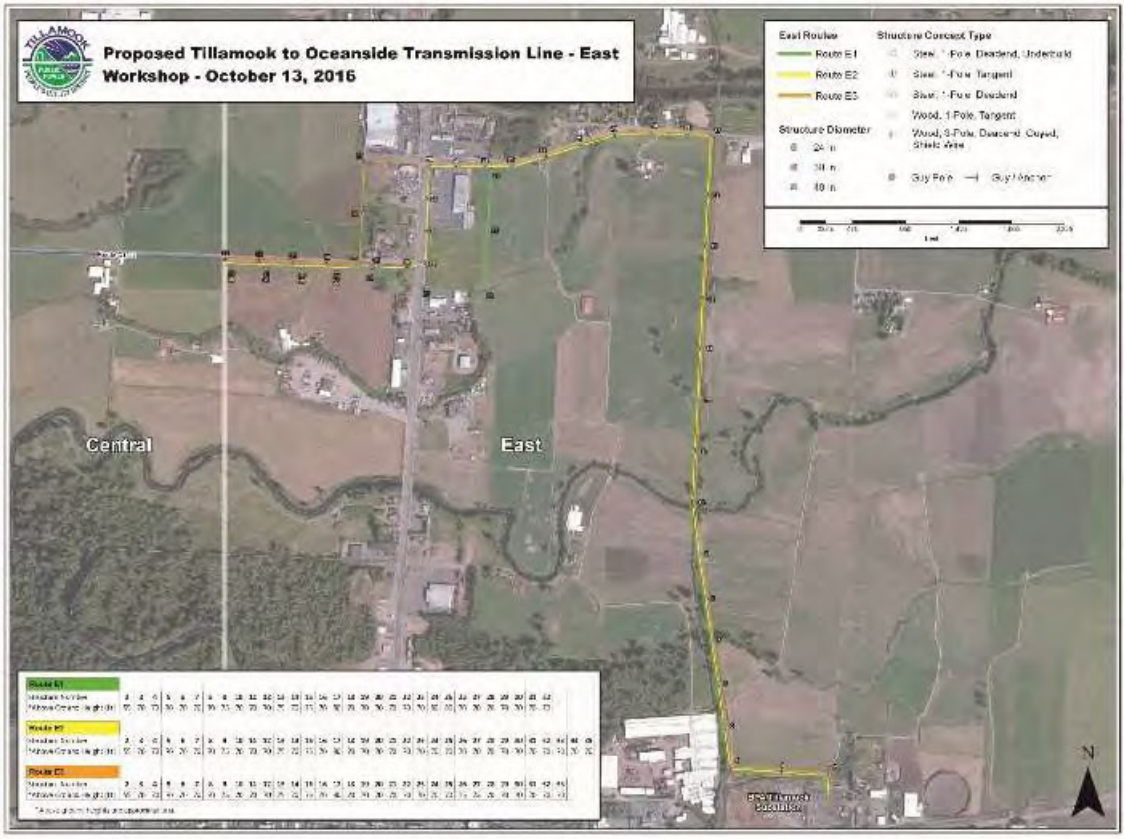
District staff met with the owner of the New Age Car Wash located adjacent to Roby's property to the south. The landowner had a strong preference for the line not to be located between the Car Wash and Roby's and preferred route E3.

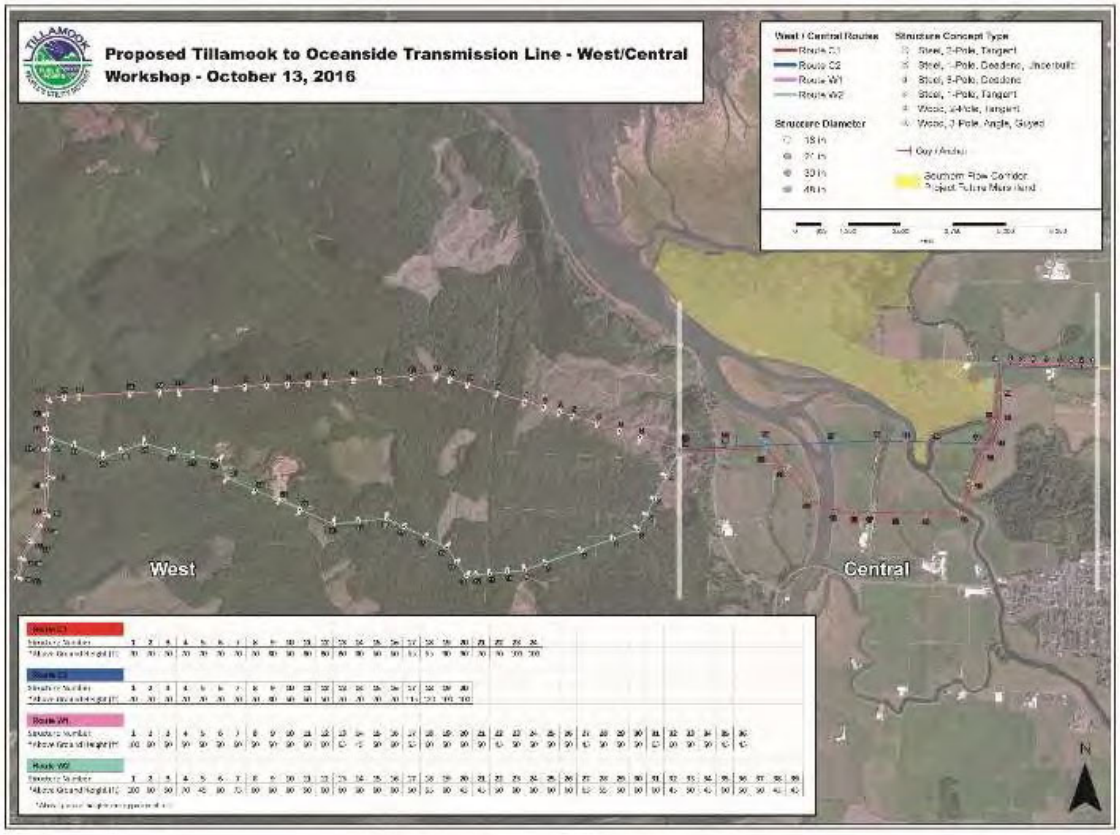
Routes E2 and E3 remain the same, down Highway 101 and along the west side of the commercial properties, respectively.

In general, the comments received from the landowners were to stay as far from their property as possible. No real conclusion could be determined, given each adjustment favored one landowner at the expense of another. Given this lack of consensus, District staff developed the Decision Table, with a goal of showing data in an objective venue and poll stakeholders on the potential routes to see if one was more popular than another.

Figure 5 – Final Proposed Transmission Line Routes

TPUD/205
Fagen/11





Decision Table

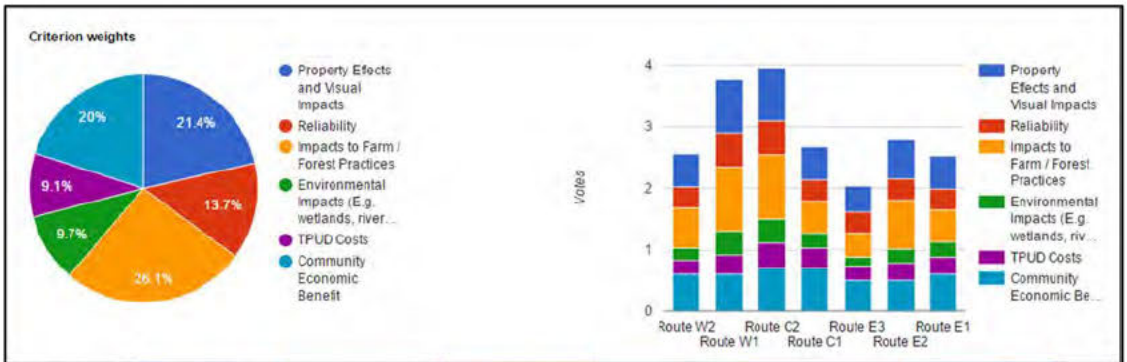
The District conducted three public meetings, which occurred on October 13, October 17, and October 25, 2016. During the October 13 meeting, District staff presented information concerning the purpose and need of the transmission line project, project history, current route segments under consideration, and introduced the Decision Table tool and associated data. A copy of the presentation is included in Appendix C. The District's October 17 meeting was dedicated to providing potentially-affected landowners the opportunity to complete the Decision Table with the collective results being shared at the conclusion of the meeting. Similarly, the October 25 meeting provided an opportunity for members of the public to complete the Decision Table. Following that, District staff completed the Decision Table.

It is important to note that the results of the Decision Table do not necessarily represent a consensus of the groups. Sensitivity analysis was performed where the weights from the landowner and public where interchanged, which resulted in a change in the outcome. Also, multiple comments made during the meeting with landowners and during the workshops did not concur with the landowner results.

Provided below are the results from the Decision Table process. Figure 6 shows the results from the landowners where four landowners completed and submitted a Decision Table. The route selection by the landowners can be summarized as follows:

- **East**, route segment E3 was ranked low in comparison to segments E1 and E2, which were basically ranked equally;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 6 – Results of Landowners (4 participants)

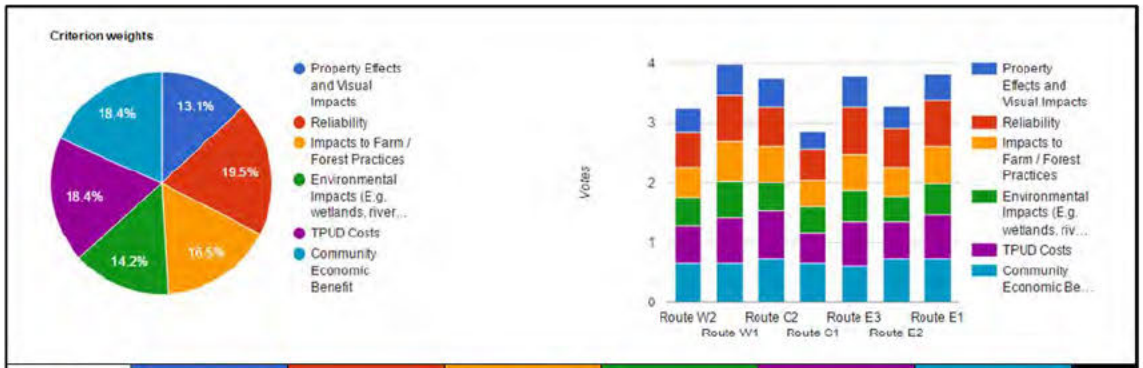


Evaluation Factor:	Property Effects and Visual Impacts	Reliability	Impacts to Farm / Forest / Commercial	Environmental Impacts	TPUD Costs	Community Economic Benefit	TOTAL
Weight:	21.4	13.7	26.1	9.7	9.1	20.0	100.0
Route E1	2.5	2.5	2.0	2.5	3.0	3.0	2.52
Route E2	3.0	2.5	3.0	2.5	3.0	2.5	2.78
Route E3	2.0	2.5	1.5	1.5	2.5	2.5	2.04
Route C1	2.5	2.5	2.0	2.5	3.5	3.5	2.66
Route C2	4.0	4.0	4.0	4.0	4.5	3.5	3.95
Route W1	4.0	4.0	4.0	4.0	3.5	3.0	3.75
Route W2	2.5	2.5	2.5	2.0	2.5	3.0	2.55

Figure 7 shows the results from the public where six participants of the public completed and submitted a Decision Table. The route selection by the members of the public can be summarized as follows:

- **East**, route segment E2 was ranked low in comparison to segments E1 and E3, which were basically ranked equally;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 7 – Results of Public (6 participants)



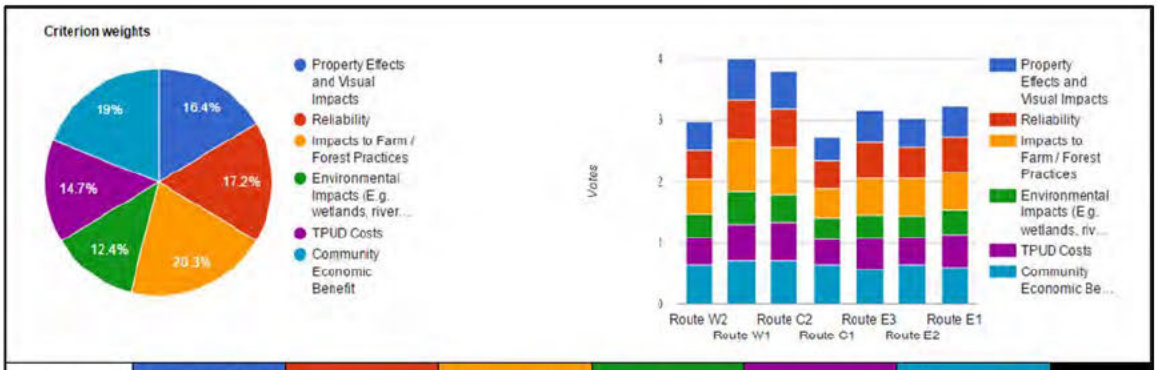
Evaluation Factor:	Property Effects and Visual Impacts	Reliability	Impacts to Farm / Forest / Commercial	Environmental Impacts	TPUD Costs	Community Economic Benefit	TOTAL
Weight:	13.1	19.5	16.5	14.2	18.4	18.4	100.0
Route E1	3.3	4.0	3.7	3.7	4.0	4.0	3.81
Route E2	2.7	3.3	3.0	3.0	3.3	4.0	3.27
Route E3	4.0	4.0	3.7	3.7	4.0	3.3	3.78
Route C1	2.3	2.7	2.7	3.0	2.7	3.7	2.85
Route C2	3.7	3.3	3.7	3.3	4.3	4.0	3.74
Route W1	4.0	4.0	4.0	4.3	4.0	3.7	3.99
Route W2	3.0	3.0	3.0	3.3	3.3	3.7	3.23

For comparison, Figure 8 displays the results of combining the landowners' Decision Tables with the Decision Tables from the members of the public. When combined, the results are as follows:

- **East**, route segment E2 was ranked lower in comparison to segments E1 and E2. However, all three routes were basically ranked equally;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 8 – Results of Combined Landowners and Public (10 participants)

TPUD/205
Fagen/14

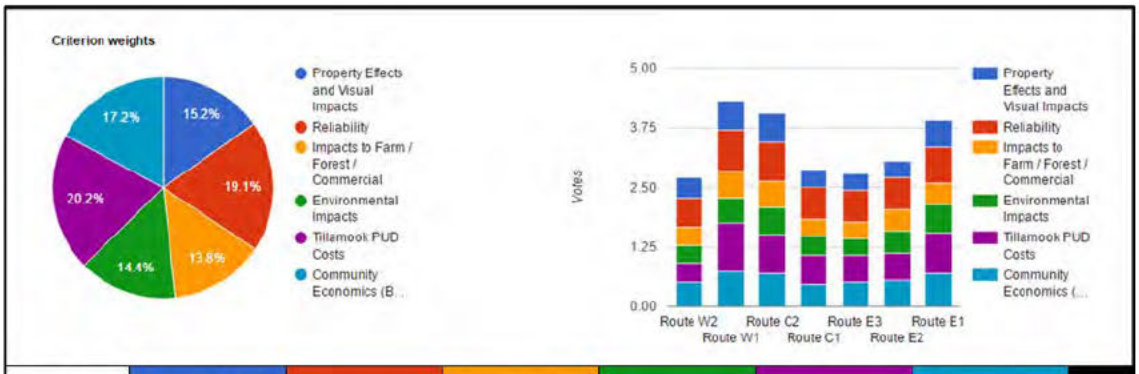


Evaluation Factor:	Property Effects and Visual Impacts	Reliability	Impacts to Farm / Forest / Commercial	Environmental Impacts	TPUD Costs	Community Economic Benefit	TOTAL
Weight:	16.406	17.202	20.327	12.395	14.650	19.019	100.0
Route E1	3.0	3.4	3.0	3.2	3.6	3.2	3.22
Route E2	2.8	3.0	3.0	2.8	3.0	3.4	3.02
Route E3	3.2	3.4	3.0	3.0	3.4	3.0	3.16
Route C1	2.4	2.6	2.4	2.8	2.8	3.4	2.73
Route C2	3.8	3.6	3.8	3.6	4.2	3.8	3.80
Route W1	4.0	3.8	4.2	4.2	4.0	3.8	3.99
Route W2	2.8	2.8	2.8	3.0	3.0	3.4	2.97

Figure 9 shows the results of the Decision Table filled out by District staff and the results are as follows:

- **East**, route segment E1 was ranked higher than segment E2 and E3;
- **Central**, route segment C2 was ranked higher than segment C1; and
- **West**, route segment W1 was ranked higher than W2.

Figure 9 – Results of TPUD Staff (7 participants)



Evaluation Factor:	Property Effects and Visual Impacts	Reliability	Impacts to Farm / Forest / Commercial	Environmental Impacts	TPUD Costs	Community Economic Benefit	TOTAL
Weight:	15.2	19.1	13.8	14.4	20.2	17.2	100.0
Route E1	3.8	4.0	3.3	4.0	4.3	4.0	3.91
Route E2	2.3	3.5	3.3	3.3	2.8	3.3	3.04
Route E3	2.3	3.5	2.5	2.5	2.8	3.0	2.79
Route C1	2.5	3.5	2.5	2.8	3.0	2.8	2.87
Route C2	4.0	4.3	4.0	4.0	4.0	4.0	4.05
Route W1	4.0	4.5	4.0	3.8	5.0	4.3	4.30
Route W2	2.8	3.3	2.8	2.5	2.0	3.0	2.70

Sensitivity analysis was performed where inputs were changed to see how the outcome might change. In general, if the results don't change then one could say that the results are firm. If the results change, then this would be an indication that the results are extremely close and a consensus among participants is unlikely. Figure 10 shows the results for the landowners, the public, the owner weights with public vote, the public weights with the landowners vote, and the combination of landowner and public results. The East routes change based on the inputs, and thus reflect the lack of a consensus among participants. The Central and West routes results are the same regardless of the changes in the inputs.

Figure 10 – Sensitivity Analysis

Evaluators:	1) Owners	Rank	2) Public	Rank	3) Owner Weight Public Vote	Rank	4) Public Weight Owner Vote	Rank	6) Owners and Public Combined	Rank
n	4		6		4/6		6/4		10	
Route E1	2.52	2	3.81	1	3.74	2	2.60	2	3.22	1
Route E2	2.78	1	3.27	3	3.20	3	2.74	1	3.02	2
Route E3	2.04	3	3.78	2	3.75	1	2.13	3	3.16	3
Route C1	2.66	2	2.85	2	2.83	2	2.78	2	2.73	2
Route C2	3.95	1	3.74	1	3.72	1	4.00	1	3.80	1
Route W1	3.75	1	3.99	1	3.97	1	3.72	1	3.99	1
Route W2	2.55	2	3.23	2	3.20	2	2.52	2	2.97	2

District Staff had hoped that more potentially-affected landowners and members of the public would have participated in the Decision Table process facilitated at the October 17 and October 25 meetings. We note that several landowners were in attendance, but opted not to fill out a Decision Table. Given the low participation, the results of the Decision Table were only used as a reference point in the District staff's recommendation.

Conclusion

The results from the Decision Table were inconclusive as indicated from the sensitivity analysis. Because of this, District staff's recommendation is based on the comments received through individual meetings between District staff and potentially-affected landowners, District staff's professional judgment, meetings with regulatory agencies, and the results of the CAG process, with some consideration for the results of the Decision Table process.

District staff's recommendation for route segment E1 was based on the following:

1. Several landowners who didn't directly participate in the Decision Table process indicated having a transmission line going down Highway 101 was the worst route of the three potential eastern routes
2. Encompassed fewer buildings within 100 feet of the center of the transmission line
3. Has a lower estimated construction cost
4. Would have less disruption to commercial business during construction
5. Reflects the favorable ranking from Decision Table, albeit routes E1 and E2 were ranked the same by the landowners

District staff's recommendation for route segment C2 was based on the following:

1. Has the fewest transmission structures
2. Is the shorter route
3. Has a lower estimated cost of construction
4. Would occupy less acreage of farm land, even when considering that route C2 has a short section co-located with an existing road and distribution power line
5. Consistent with the Decision Table results from the landowners, members of the public, and District staff

District staff's recommendation for route segment W2 was based on the following:

1. The two (sole) property owners in this region, Stimson and Green Crow report that route segment W2 appears to have less of an impact on forestry practices
2. Is co-located with existing roads, thereby fewer roads will need to be constructed
3. Co-locating with existing road is one of the criteria used for the Tillamook County Conditional Use permitting process

Please be advised that District staff recommends route segment W2 notwithstanding the results of the Decision Table process, which ranks segment W1 higher. Route W2 is also the more costly of the two routes given that W2 is 0.25 miles longer and has more structures. Stimson did express that they would like to see more information on route W1 to better analyze which route would be least impactful to logging practices.

Please note, minor adjustments to the recommended route segments may be necessary during the permitting and engineering design phases of the project.

Appendices

Appendix A – CAG Meeting Notes June 23, 2016 and Route Evaluation Criteria

Tillamook to Oceanside Transmission Line Project

Route Evaluation Proposed Criteria

Must Have:

Criteria that **must** be met for a successful project

Maximize:

Opportunities that we would like to **happen as often** as possible (frequency) or to the **greatest extent** (magnitude) to reduce impacts

Avoid or Minimize:

Impacts that we want to **avoid** from happening, **happen as little** as possible (frequency) or reduce to the **least extent** (magnitude)

Must Have: Criteria that **must** be met for a successful project

- Meets project purpose – start at Wilson River substation and end at proposed Oceanside substation
- Is siteable – meets local, state and federal requirements
- Can be obtained – easements and permits
- Is buildable – ability to accomplish required construction activities
- Operate and maintain in all but the most severe conditions

Maximize: Opportunities that we would like to **happen as often** as possible (frequency) or to the **greatest extent** (magnitude) to reduce impacts

- Co-location within existing linear corridors
- Use of existing rights-of-way and pole locations
- Constructability and accessibility for maintenance during poor weather conditions
- Distance from existing structures, residences, etc.
- Ability to obtain desired rights-of-way width
- Length of straight sections
- Design elements to reduce impacts
- Cost effectiveness

Avoid or Minimize: Impacts that we want to **avoid** from happening, **happen as little** as possible (frequency) or reduce to the **least extent** (magnitude)

- Number of landowners and properties affected
- Visual impacts
- Conflicts with existing land uses, structures, congestion
- Environmental issues
- Effects on existing vegetation
- Special structures
- Space requirements
- Angle poles
- Co-location of circuits serving same geographic area
- Need for access roads

KEARNS & WEST

June 23, 2015

MEMORANDUM

TO: **Tillamook to Oceanside Transmission Line (TOTL) Siting Process Citizen Advisory Group (CAG)**

FROM: Debra Nudelman and Annie Kilburg, Kearns & West

SUBJECT: Tillamook to Oceanside Transmission Line (TOTL) Siting Process Citizen Advisory Group (CAG) Meeting – June 23, 2015 Meeting Summary and Action Items

Thank you for your participation and effort at the Tillamook to Oceanside Transmission Line (TOTL) Siting Process Citizen Advisory Group (CAG) meeting held at the Tillamook PUD, Carl Rawe Meeting Room, located, at 1115 Pacific Avenue in Tillamook, OR on Tuesday, June 23 2015, from 6:00 – 8:30 PM. This memo includes a meeting summary, agreed-upon action items and information on the upcoming Tillamook PUD Board meeting.

Upcoming Meeting Dates	Who	Location
Wednesday, August 12, 2015; 6:00 PM	Tillamook PUD Board/TOTL CAG	Tillamook PUD, Carl Rawe Meeting Room, located, at 1115 Pacific Avenue in Tillamook, OR

Action Items	Who	When
1. <u>Information Follow-Up</u>		
• Develop and distribute draft meeting summary for CAG review and comment; final meeting summary posted to the website	K&W	By week of 7/20
• Contact absent CAG member for their recommendation on route option	K&W	By week of 7/20
• Develop FAQs to post on the website and distribute	Project Team	By 7/31
2. <u>CAG Preferred Proposed Route Recommendation(s)</u>		
• Add route options 1a, 1b and 3a to 6/23 TOTL CAG Overview map	Project Team	By 8/12 mtg.
• Create final TOTL CAG maps, including the above three options, in two versions as follows: - Full Preferred Routes (Options 1, 1a, 1b, 2, 3 and 3a) from BPA Substation to Oceanside		

- Zoomed in version of Preferred Routes from the BPA Substation to the forest, west of Bayocean Road		

List of Attendees

Member	Representing	Affiliation
Tim Carpenter	Citizen-at-Large	Fire Chief for the Netarts Oceanside District
Tom Connaughton	Business	Tillamook Revitalization Association
Dick Crossley	Landowner	Tillamook Country Smoker
Rudy Fenk	Agriculture	Tillamook County Soil and Water Conservation District, Chair
David Gienger	Agriculture	Dairy Owner
Connie Green	NGO	Tillamook Bay Community College, President
Paul Levesque	Tillamook County	Tillamook County
Ken Phillips	Tillamook PUD	Tillamook PUD, President
Judson Randall	Citizen-at-Large	Oceanside Neighborhood Association, President
Joe Rocha	Business	Tillamook County Creamery Association
Guy Sievert	Citizen-at-Large	Neskowin, Oregon
Jon Wehage	Landowner	Stimson Lumber Company
Paul Wyntergreen	City of Tillamook	City of Tillamook

Please note that and Rita Hogan (Landowner) was absent from this meeting.

Audience/Interested Parties:

Doris and David Mast, Roy and Claire Peterson, Eric Peterson, Robert Peterson, Dana and Don Aufdermauer, Katie and Jordan Wolfe, Terry Blanc, Tina Sieler, Kurt and Wendy Mizee, Bart and Terri Mizee, Sandy and Bill Howard, Gus Meyer, Mike and Letha Blair, Brett and Kristi Sherer and Doug and Patti Olson.

Tillamook PUD Project Team:

Ray Sieler (Tillamook PUD), Bob White (Tillamook PUD), Barbara Johnson (Tillamook PUD) and Paul Seilo (CH2M HILL).

Kearns & West Facilitation Team: Deb Nudelman and Annie Kilburg.

MEETING NOTES:

Welcome, Introductions, Agenda and Updates

Deb welcomed the group, asked the CAG members for a round of introductions, walked through the proposed agenda, the meeting materials and their significance to the meeting topics.

Deb thanked the CAG members for their participation in this process, including dedicating their time, listening to each other's perspectives and working in a collaborative manner. This process has demanded them to stand in each other's shoes as well as to consider the community's viewpoint. She thanked them for taking on this task and continually working towards finding common ground with each other and the public.

Deb outlined the agenda topics for this meeting including: to discuss the action item requests from the CAG members to the Project Team based on the past meeting, to discuss the June 9 Open House, to review and discuss the three preferred proposed routes/segments, striving for a final consensus recommendation to the Tillamook PUD Board and to discuss the approach going forward with the CAG recommendation(s). We will discuss what it means to move forward with a recommendation and discuss next steps. She thanked the CAG members who attended the June 9 Open House as it provided an important opportunity to be a part of the public conversation prior to making their recommendation.

Deb asked for other updates from CAG members and there were none.

June 9 TOTL Open House

Deb asked for a show of hands from the audience and CAG members who attended the June 9 TOTL Open House and the majority of individuals present raised their hands. She stated that there was good attendance at the open house and that she observed a wide range of perspectives, spirited conversation and active listening. She mentioned that there were a lot of new faces and attributed that to the letters that were sent to potentially affected landowners. Deb said that there were a couple of topics that were brought up by several people at the open house including: the purpose and need of the transmission line and how the CAG members got from 38 route/segment options to these three preferred proposed routes. However, she noted that the purpose and need were not brought up as frequently at this open house as they were at the March 10 Open House. The public asked the CAG members how they landed on these options and the property owners offered their perspectives on how to avoid impacts.

Deb pointed out a difference from the March 10 TOTL Open House and that people were not adding back in route options. Conversations between attendees went towards how to stay away from landowners as much as possible as well as how to stay as far north as possible.

Bob White, Tillamook PUD, said that he learned new information regarding land uses on several properties and heard some requests for micro-adjustments to minimize impacts to landowners between Hwy 101 and Bayocean Road.

Deb pointed out that all of the public comments submitted at the June 9 Open House were transcribed and compiled into one document. (Note: See *TOTL Open House Public Comment Compilation, Comment Cards and Materials - 06-09-15*). She then requested that the CAG members who attended share their observations.

The CAG members then shared the following observations and summarized what they heard as follows:

- That it was a positive meeting and there was a lot of constructive conversation.
- There was an overall appreciation for so many individuals showing up, staying positive and focusing on a group of helpful questions.
- They appreciated the passion and insight shared.
- There is concern that the purpose and need are still not understood by the public and they encouraged the Tillamook PUD to take a different approach to explain this issue to address citizens' concerns.

One of the CAG members responded to the purpose and need issue. He said that he had previously brought this topic up as an area of concern two meetings ago and did not think that there was a sufficient amount of information available to support the purpose and need. He was then directed to a two-page document explaining the purpose and need, which was distributed at the March 10 Open House. After reviewing the paper, he thought it did a good job in explaining this issue; however, he suggested that the Tillamook PUD distribute the paper more widely. (Note: Please see *TOTL Purpose and Need* here). Another CAG member mentioned that the Headlight Herald published an article that included a good explanation of this issue. Deb explained that she will continue to help the Tillamook PUD explain when and why a transmission line is needed and the challenges that they face in siting the TOTL.

One CAG member reminded the group that the process that they have participated in is not to determine that there is a justified purpose and need of the TOTL, only where it might be located. Deb said that she will assist the Tillamook PUD in sharing that this group helped with how to site the TOTL, not whether or not the purpose and need justify the TOTL.

One CAG member said that a lot of citizens tell him that we do not need power in the Netarts/Oceanside area; however, we are seeing an increase in energy use in the Netarts area and we have to figure out how to meet this need.

Deb said that the Tillamook PUD will continue to reference the TOTL Purpose and Need document and will develop additional materials, such as FAQs (frequently asked questions) on the same issue.

Opportunity for Public Input

Deb asked the audience for public input and requested that the comments be relevant to the June 9 Open House, this meeting's agenda topics or anything else that might be relevant to the final CAG meeting.

Jordan Wolfe introduced himself and said that he is affiliated with the Peterson Farm. He said that he sees a lack of transparency from the Tillamook PUD that comes across to the public as purposeful. He mentioned some of the impacts of this potential transmission line including tree cutting and that power outages are more of a rarity as energy usage is down 10%. He said that the TOTL will affect three major dairies. He mentioned that the need for energy is down and that transmission line siting is not a progressive nor efficient technology. The Tillamook PUD needs to be more forward thinking with their technology and consider alternatives. The citizens in Tillamook understand that Oceanside is a place to get away, not to live. The need to put energy out there seems

to be a waste with a 33% residential rate. Jordan then referenced a letter that Eric Peterson wrote addressing his perspective on the TOTL. (Note: Please see *June 23 Letter – Eric Peterson* here).

Brett Sherer introduced himself and said that he is an engineer at Bonneville Power Administration. He said that there is a big debate on whether or not there is a need for the TOTL. He said that he wants to see statistical background information on why we need the TOTL, not a narrative. He thinks that would be very helpful in understanding this topic. He questioned whether or not there are brownouts and that the Tillamook PUD should publicize this information. He said that there is hesitation to support the TOTL because he does not see it as a real problem. He mentioned that he thinks the CAG has narrowed their options to the most viable routes/segments; however, the statistics to support the TOTL are not available anywhere.

Kurt Mizee introduced himself as representing Tilla Bay Farms and that his property is on Fenk Road. The proposed route/segment of the TOTL crosses a 97 year-old family farm. He said that Statewide Planning Goals 3 and 11 address this issue and indicate that all utility lines should be on existing public or private ROWs (right-of-way). He asked how this group got so far away from using existing ROWs, which is not an acceptable option. He said that at the June 9 Open House; all three preferred proposed routes go through one piece of property. We were not noticed soon enough that this line had potential of going through our property. We have farmed this ground for almost 100 years. Why take high value farmland out of production? The Tillamook PUD should consider undergrounding this line. He referenced OAR 660-025-0000(11). (Note: Please see *Oregon's Statewide Planning Goals & Guidelines, GOAL 11: PUBLIC FACILITIES AND SERVICES* here).

Bart Mizee introduced himself as the third generation of Tilla Bay Farms. He said that he is interested to know whether the Tillamook PUD has received a warm welcome from any landowners that were noticed that the preferred proposed route/segment options might cross their property. We are forced to consider how our family, employees and cattle will continue their farming if this line is built. How can their farm continue to operate and what assurances are there that any future problems will be addressed? He mentioned that he is particularly concerned about stray voltage with their animals. He has no interest in pursuing litigation in the future and wants to know how the Tillamook PUD will work with his family to make sure that issues are addressed and resolved.

Sandy Howard introduced herself and said that they own Sandy's Nursery on Goodspeed Road. She said that all three preferred proposed route/segment options come by them. She mentioned that they are not for or against the TOTL, as they are not sure how it will affect them yet. She said that she has lived in Tillamook for 36 years and has seen a lot of floods in these areas. She said that she is trying to figure out how power and deep flooding go together. If a line falls down, do people get electrocuted? How about the employees with the Tillamook PUD? They have experienced a five-day power outage due to storms and are wondering how this would affect a line in this area.

Deb thanked the audience members for their input and said that she will work with the Tillamook PUD to address the questions and concerns voiced today.

CAG Discussion and Recommendation for TOTL Preferred Proposed Route(s)

Deb transitioned the group to discuss the TOTL preferred proposed routes. She reminded the CAG members that if the TOTL was a straight forward question/answer process, that had no impacts and did not cross farmland, they would not be here. The Tillamook PUD decided on this multi-party process for citizens and landowners to collaboratively work together and recommend a preferred proposed route(s). This final meeting is about optimizing what rises to the top, minimizing impacts

and maximizing benefits. She reminded the CAG that the Tillamook PUD will continue to address landowner concerns to minimize impacts.

Deb said that after we hear the action item report-outs, we will walk through the pros and cons of each of the three remaining preferred proposed routes. We will address questions and determine if one route rises to the top. Is the recommendation fair, balanced and supportable? And, can it be ratified? We are looking for a fair and balanced outcome so that when you leave the room and explain your recommendation, people can understand why this group landed on a specific recommendation. Whatever recommendation that comes out of this group has to go back to the Tillamook PUD Board.

Deb explained that the earliest date the Tillamook PUD Board can hold a special meeting, in coordination with our schedule, is Wednesday, August 12, 2015, at 6:00 pm. This is when Kearns & West along with CAG members will present the recommendations to the Tillamook PUD Board and this meeting will be open to the public.

Ken Phillips, Tillamook PUD, said that the Tillamook PUD Board will consider landowner concerns and permitting and political issues of the preferred proposed route recommendation. He stated that he thinks the Tillamook PUD is a transparent agency, that everyone on the Tillamook PUD Board has integrity and that we have worked very hard to hear the community's perspective on this issue.

Deb thanked Ken for his comments and asked the CAG members to consider volunteering to present their recommendation(s) to the Tillamook PUD Board on August 12. She mentioned that letters will go out to landowners and there will be time allotted for public input during the meeting.

June 9 TOTL Open House Additional Segments

Deb introduced Paul Seilo, CH2M HILL, to walk through two additional segments that were suggested at the June 9 Open House. Paul Seilo used the Google Earth tool to show the two options added to the three preferred proposed routes/segments as follows:

- Option 1a, an adjustment to preferred proposed route Option One
- Option 3a, an adjustment to preferred proposed route Option Three

Preferred Proposed Routes Cost

Bob White referenced the TriAxis report produced at the request of the CAG members, to provide a better idea of what the cost of the TOTL might be. He explained that the cost estimates are determined by the general locations and by foundation types: those that are on the Tillamook valley floor, versus those that are in the Forest Corridor and direct embedded structures versus structures using foundations. Direct embedded structures are less costly than structures with foundations. Where the valley floor soils are wetter they likely will require foundations. In the forest areas the use of direct embedded two or three pole H-frame structures. The report includes information about various types of structures and generalized costing information on a per mile basis. The approximate cost associated with direct embedded structures is $523,000 to $564,000 per mile. The approximate cost associated with foundation structures is $888,000 to $992,000 per mile. These are only construction costs and do not include acquisition costs. (Note: Please see *115-kV Structure Concepts and Associated Order-of-Magnitude Construction Cost Estimates* here).

One CAG member mentioned that no matter which route is recommended from the remaining three options, there will be a problem with the soils. Bob agreed; however, he said that the more north you go, the more wet the soil gets.

Deb asked whether the soil types are different with options one, two or three. Bob said that they will have to perform geotechnical assessments before they know that.

Paul Levesque, Tillamook County, said that the Southern Corridor Project creates 528 acres of new estuary. If the CAG chooses option one, the structures will be sitting in a location where they will be inundated in water twice a day due to the tide. He continued that he received a call from Oregon Department Fish and Wildlife (ODFW) and they are aware of these three preferred proposed routes. He said that they are concerned that a portion of these routes goes through the restoration area. Paul pointed out that options two and three go through a narrow corridor that does not go through the restoration area.

One CAG member responded that he has heard concerns about the TOTL going through the restoration project. He further suggested to the CAG members that they consider the route down 1st Street. He added that the route should stay close in and as short as possible. Deb asked the other CAG members whether or not they would consider the 1st Street route option again.

Discussion of Preferred Proposed Routes

Deb transitioned the group to discuss the pros and cons of the route/segment options that are currently on the table using the following proposed criteria:

- Technically Feasible
- Regulatory/Permitting
- Legal Possibility
- Policy/Politics
- Minimize Impacts
- Maximize

Option 1 and 1a

The CAG members participated in a discussion and made the following comments regarding options 1 and 1a:

- There are significant challenges for constructability.
- The structures along this route would be more difficult to get to for maintenance due to flooding.
- There are significant concerns about the ability to obtain the necessary permits and permissions to site a line here.

One CAG member suggested continuing west on Goodspeed Road and push the line further to the north to reduce the impacts to landowners on the farmland in this area. Paul Levesque reminded the group that all of this ground will essentially become subject to tidal influence. Bob told the group that due to the much longer water crossing, the structures associated with the crossings would have to be very tall and have substantial foundations.

Paul Seilo said that the permitting through this area would have to go through the Army Corp of Engineers (the Corp) and the wetland impacts would have to be considered. Of the options that are

left on the table, options 1 and 1a cross the most amount of wetland and cross the rivers at the widest point. The Corp will want us to cross where the rivers are narrower. We will have to present them with the other options that we considered and why we choose the option with the most tidal influence that crosses rivers at the widest point. Option 1 and 1a cross where rivers are 800 feet wide. Options 3 and 3a are closer to 300 feet wide.

Deb then showed the group route N1, which was previously taken off the table for consideration due to some of these issues. If we put N1 back on the table, it is very similar to routes 1 and 1a.

One CAG member asked the group why they would choose a route that we know will be flooded with tide water twice a day. Another CAG member asked Bob whether or not the Tillamook PUD can build transmission structures here. Bob said that even though it can be done, he does not know whether these routes can be sited. He also said that it will be very expensive to build structures in this area and maintain them.

One CAG member said that out of cost, permitting and legal issues, that this route will be fairly difficult to permit and incredibly costly. It seems that these options should be taken off the table due to these considerations alone.

Another CAG member asked the group to consider where impacts should be maximized, minimized and to discuss the legal piece. We should not recommend a route that is not legally allowed. He also posed the question where the cost piece fits in with the impacts consideration. How much should we consider cost while considering a recommendation?

Option 2

Deb asked the CAG members to discuss options 2, 3 and 3a. Bob said that he was told by an affected landowner at the June 9 Open House, that they would prefer options 3 and 3a to option 2 because options 3 and 3a maximize the use of existing ROW.

Option 3 and 3a

Other CAG members said that options 3 and 3a are good compromises. They avoid some landowner impacts, while staying in dryer soil.

Option 1b

One CAG member suggested an additional segment be added north of route option 1. He said that if we are going to go north, why not go further in order to completely avoid landowners. The CAG members and the Project Team agreed to call this segment option 1b. One CAG member said that even though we would avoid some landowners with this new segment, it may affect additional landowners along Goodspeed and Bayocean Roads that we do not currently know about. We do not know that this could be permitted.

Deb reminded the CAG members that if they cannot avoid landowners, they should aim to minimize impacts. We do not want to leave one set of challenges to create a new set of challenges.

Ken Phillips said that he has tried to put himself in the shoes of every potentially affected landowner on this project. He shared that the Tillamook PUD cannot underground the entire TOTL nor does

he believe the Tillamook PUD Board of Directors would endorse route 1b from a costs and benefit standpoint. He suggested a route further south of 1, 1a and 1b.

All Route/Segment Options Discussion

One CAG member said that most of the routes, if not all, are technically feasible. That the cost is somewhere in the ballpark of $8,000,000 for the total project and that navigating the politics of this line is what the CAG has focused on. We are trying to help the Tillamook PUD by making a recommendation while representing the community. We need some answers on the regulatory and legal pieces to move the process forward at this point.

Paul Seilo said that option 1, 1a and 1b would definitely be harder to permit because there is a higher value of wetlands around those options and we will have to provide the Corp with an alternatives analysis with the other proposed routes that they considered. He said that the Corp will not favor 1, 1a or 1b and that he thinks options 3 and 3a are better alternatives due to the smallest quantity of high value wetlands and the water body crossings are less impactful.

One CAG member asked where the legal piece fits in and another CAG member responded that transmission lines on farmlands is an allowed use. Paul Seilo agreed and said that you are not splitting parcels; it is an easement on the land. The underlying landowner still remains the same.

One CAG member asked what the estimated cost difference would be between the three options and Bob said that the costs will go up with the routes that have longer river crossings.

One CAG member said that there will be mitigation no matter which route we choose to recommend.

One CAG member asked about improvements to land in exchange for lines coming across farmland. He specifically asked whether the Tillamook PUD would build roads to access the poles on the farmland and/or if they would provide more modern farm equipment to accommodate the land use. Bob said that they will avoid building separate serviceable roads on the valley floor and want to make use of existing roads. We may consider improving roads if necessary for construction activities after talking to landowners about what works best. He also said that he could not address the purchase of more modern equipment; historically the PUD has not done this. The Tillamook PUD will have future conversations with landowners on how to minimize impacts.

Paul Wyntergreen said that the CAG has put a lot of work into this process and based on what he has heard, he thinks that option 3a is the most likely option. He requested that the CAG members all comment on this option as their recommendation.

One audience member, Eric Peterson, asked if he could make a comment. Deb asked the CAG members if this was okay and they all agreed that Eric could proceed. He said that he has been talking to David Gienger and knows that there is a certain amount of sediment on his land that has helped gain elevation and develop more stable ground. Paul Levesque responded that even if bringing in sediment can help increase the elevation of the land, this area will still be subject to tidal inundation due to the restoration project. It could take years or decades for elevation to become sufficient enough to support transmission line structures. Another CAG member said that something of that nature could take a few years or it could take fifty years, depending on weather and other environmental factor.

Deb reminded the group that they should be considering a recommendation through multiple lenses and referenced the proposed criteria list.

Route Recommendation Decision

Deb said that based on Paul Wyntergreen's earlier proposal that she was going to go around the table and ask each CAG member to offer their perspective on whether or not they could support option 3a. The CAG members commented as follows:

- One CAG member did not support option 3a and instead supports option 1b in an effort to avoid landowners.
- Two CAG members abstained from providing their opinion due to conflicts with other positions they hold.
- The remaining members in attendance said that they could support option 3a as their recommendation to the Tillamook PUD, with continued efforts to address landowner impacts and concerns along this route.

Deb thanked everyone for their willingness to provide impromptu feedback and congratulated them on arriving on a recommendation to present to the Tillamook PUD Board. She said that the Tillamook PUD Board will be informed that the CAG could support option 3a, with continued landowner impact efforts. She said that the recommendation will also encourage the Tillamook PUD Board to look at northern routes and even though it does not seem possible, that the CAG wants them to think about option 1b to avoid landowner impacts. One CAG member asked that the Tillamook PUD Board also look at the 1st Street option and Tom Connaughton said he could support Front Street as long as it was 100% underground.

Ken Phillips thanked the CAG and audience members for their due diligence and hard work in this process. He said that he knows this is not a perfect situation; however, he hopes that everyone is able to make it to the Tillamook PUD Board meeting in August.

Deb asked for volunteers to speak at the Tillamook PUD Board presentation. Judson Randall, Dick Crossley and Paul Levesque offered to present on the CAG's recommendation and perspective.

<u>Approach Going Forward, Next Step Tasks and Final Summary</u>

Deb transitioned the group to the next steps and requested that each CAG member provide a closing remark, an observation or something that they want to share. The CAG members responded as follows:

- A few CAG members said that they hope their recommendation is something that can move forward and that the community can live with.
- Several CAG members said that this was an interesting, rewarding and educational process.
- Several CAG members appreciated the opportunity to sit at the table and have a voice in this process.
- Several CAG members were glad to make positive connections with new individuals in their community.
- Several CAG members commented on the remarkability of the design of this process and where they got in a short six months.

Deb thanked the CAG members for their hard work; this process was a huge task to take on. She hopes that they leave this room proud of their work and the progress they made.

Deb thanked the audience members for their public input, the CAG members for their attendance and making it to the finish line in this process. This has been a lot of hard work and the CAG has contributed a great deal of time to get to where they are today. She reminded the group that the Tillamook PUD Special Board Meeting is on Wednesday, August 12, 2015 at 6:00 pm at the Tillamook PUD, Carl Rawe Meeting Room, located at 1115 Pacific Avenue in Tillamook, OR. The draft meeting summary from today will be sent to the CAG for review, and after it is finalized, it will be posted to the Tillamook PUD website.

Deb thanked everyone for their participation and efforts; the meeting was adjourned at 8:37 pm.

Oregon
Kate Brown, Governor

Oregon Watershed Enhancement Board
775 Summer Street NE, Suite 360
Salem, OR 97301-1290
(503) 986-0178
FAX (503) 986-0199
www.oregon.gov/OWEB

August 18, 2016

KC Fagen [sent via email]
Engineering Manager
Tillamook PUD
PO Box 433
Tillamook, OR 97141

Dear KC:

I appreciated meeting with you and others on August 9, 2016 to discuss Tillamook PUD's process of site selection for its Tillamook-Oceanside Transmission Line project. Our conversation was helpful in understanding the PUD's need for additional information from the Oregon Watershed Enhancement Board (OWEB) regarding its interest in Tillamook County's Southern Flow Corridor (SFC) property.

The purpose of this letter is to confirm OWEB's interest in the SFC property and provide additional comments on the PUD's route alternatives.

As we discussed when we met, OWEB holds a conservation easement on the SFC property. The purpose of the easement is to protect the conservation values of the SFC property over time and ensure that the property is restored to tidal wetlands. The SFC property is also the subject of a federal notice, signed by OWEB and Tillamook County. The federal notice requires use of the property for tidal wetland restoration.

Consistent with the purpose of the conservation easement and federal notice, OWEB cannot approve the construction or placement of any transmission line infrastructure or appurtenance on the SFC property.

Further, OWEB cannot allow any transmission line to aerially traverse the SFC property, without infrastructure on the surface of the property, if such line would hinder wetland vegetation growth, or otherwise impact the conservation values of the property such as causing adverse impacts to animals that use or fly over the SFC property.

Tillamook Bay supports approximately 25 percent of the northern- and central-coast wintering waterfowl population in Oregon. Recent literature[1] on North American avian mortalities due to transmission lines indicates that waterfowl are among birds most vulnerable to transmission line collisions, with transmission lines estimated to kill many birds per year.

[1] Rioux, S., J.-P. L. Savard, and A. A. Gerick. 2013. Avian mortalities due to transmission line collisions: a review of current estimates and field methods with an emphasis on applications to the Canadian electric network. Avian Conservation and Ecology 8(2): 7.

Transmission lines with long spans, such as Routes 1E and 1F depicted in the materials you provided to me via email on August 12, 2016, are particularly hazardous to waterfowl and other birds. Risks to migrating birds would be further increased by the routes' generally east-west orientation and the tall structures that are proposed, together with Tillamook Bay's frequent low-visibility conditions. Accordingly, OWEB cannot approve Routes 1E or 1F.

As indicated in my letter to Bob White dated October 30, 2015, OWEB is willing to consider Route 1D, because the route entails a relatively short span across the SFC property and would not require any infrastructure or appurtenances on the property. OWEB's consideration of this route would be in consultation with the U.S. Fish and Wildlife Service, the agency that required the federal notice described above. Any OWEB approval of this route would require the PUD to take all reasonable steps to minimize impacts to the conservation values of the SFC property, including but not necessarily limited to making the line visible to birds in the vicinity of the SFC property and monitoring and managing the line over time to minimize bird collisions. Further, OWEB would require its involvement in reviewing and approving the utility easement that would be granted to the PUD by Tillamook County to allow the transmission line to pass over the property. OWEB would also require the PUD to comply with any requirements of the U.S. Fish and Wildlife Service, and would not issue any approval to the PUD without the Service's concurrence.

I hope this information helps in Tillamook PUD's further assessment of alternatives for siting the Tillamook-Oceanside Transmission Line.

Sincerely,

Miriam Hulst
Acquisitions Coordinator

c. Terry Blanc, Tillamook PUD
Barbara Johnson, Tillamook PUD
Rachel Hagerty, Tillamook County
Heather Hollis, U.S. Fish and Wildlife Service

Oregon
Kate Brown, Governor

Oregon Watershed Enhancement Board
775 Summer St NE Ste 360
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(503) 986-0178
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www.oregon.gov/OWEB

October 30, 2015

Bob White
Power Services Manager
Tillamook PUD
PO Box 433
Tillamook, OR 97141

Dear Bob:

Thank you for informing the Oregon Watershed Enhancement Board (OWEB) of the Tillamook People's Utility District's plans to construct a power line in the vicinity of Tillamook County's Southern Flow Corridor Project, which is depicted on the attached map, Map 1, prepared by the County's project contractor, Northwest Hydraulic Consultants.

OWEB's mission is to help protect and restore healthy watersheds and natural habitats that support thriving communities and strong economies. OWEB makes land acquisition grants to local partners, such as Tillamook County, to purchase ecologically significant lands from willing sellers for the benefit of watersheds and habitat for native fish and wildlife. OWEB provided funds for the County's purchase of the property depicted in pale green on Map 1, and plans to provide funds in support of the County's acquisition of additional properties, depicted in bright green on the same map. The OWEB Board conditioned the pending funds on, among several things, the County's commitment to restore both the prior-purchase and pending-purchase properties to fully functioning tidal wetlands. In exchange for past and pending grant funds from OWEB, the County will grant OWEB a conservation easement on the properties.

The purpose of an OWEB conservation easement is to protect the conservation values of a property over time including, in the case of the properties described above, facilitating the restoration of tidal wetlands. The restoration will entail removing roads, buildings, dikes, and other infrastructure that is not consistent with functioning tidal wetlands. Accordingly, power line infrastructure in the wetlands and power line appurtenances such as roads would not be consistent with the intent of the OWEB grant or the purpose of the conservation easement. This includes a power line built on the PUD's proposed Routes 1B and 1C, a depiction of which you provided on a map, attached as Map 2.

A power line depicted by you as Route 1D on Map 2 and described by you as requiring no infrastructure other than aerial power lines in the conservation easement area and requiring no ground infrastructure or access, could possibly be consistent with the purpose of the conservation easement. Any final determination by OWEB would include but not be limited to confirmation that the power line will not hinder wetland vegetation (e.g., tree) growth after the restoration project. Further, OWEB would require involvement in reviewing and approving the utility easement that would be granted to the PUD

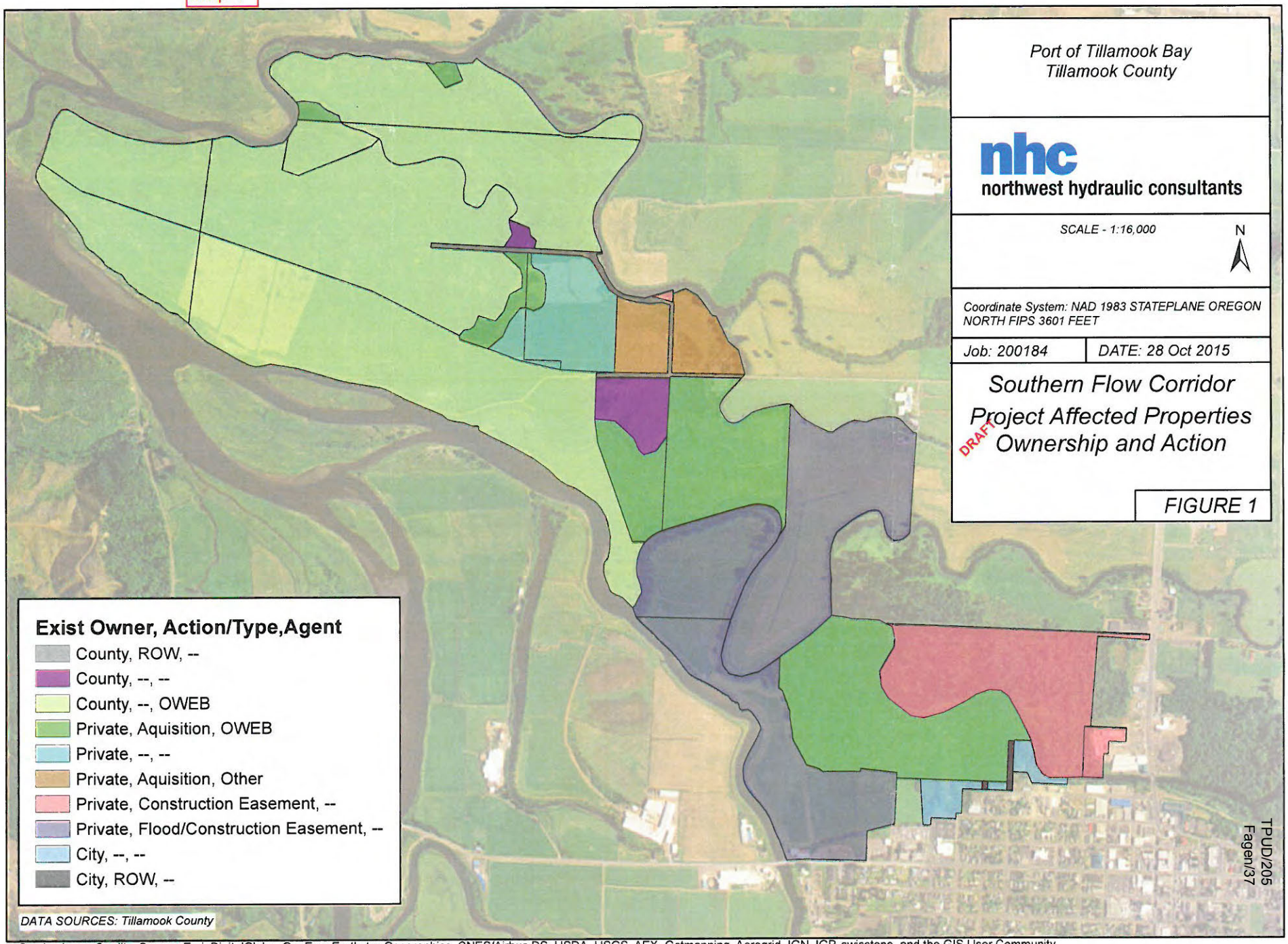
by the County to allow the power lines to pass over the property. The U.S. Fish and Wildlife Service, which is OWEB's partner in funding the County's acquisitions and restoration work, might also opt to review the utility easement.

I hope this information helps in the PUD's assessment of alternatives for siting the power line. Please do not hesitate to let me know if I can be of additional assistance.

Sincerely,

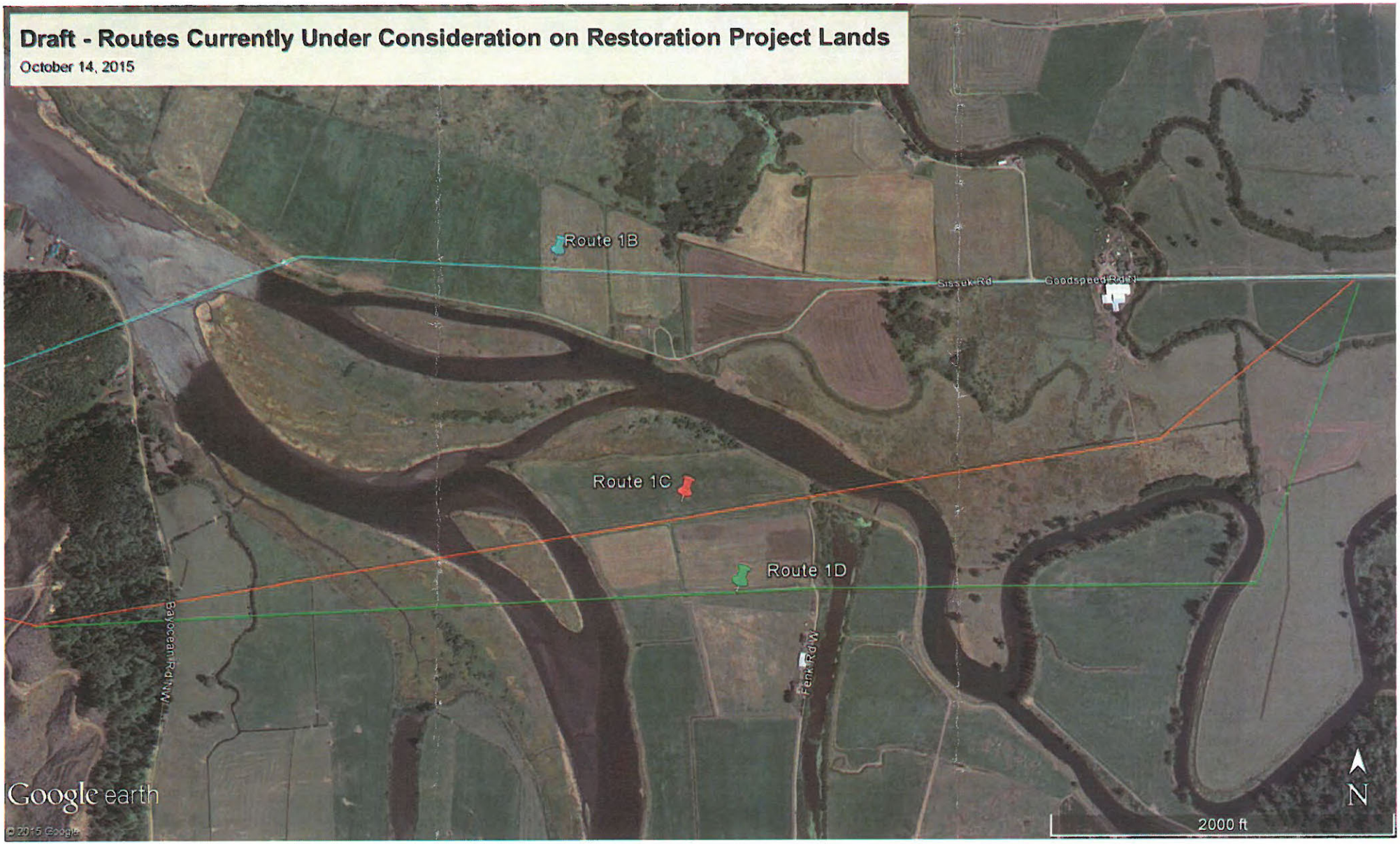
Miriam Hulst
Acquisitions Coordinator

Map 1



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Map 2. Provided to OWEB by Bob White



TPUD/205
Fagen/38

Appendix C – Board Workshop October 13, 2016 Presentation

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

CALL TO ORDER & INTRODUCTIONS

INTRODUCTIONS

Project Team

- Tillamook PUD:
  - KC Fagen, Engineering Manager
  - Barbara Johnson, Public Relations Manager
  - Terry Blanc, Utility Asset Supervisor
- Sam Imperati, ICM Resolutions

AGENDA

- Project Mission and Background
- Purpose and Need Overview
- Public Involvement: Route Selection
- Current Route Options
- Decision Tables & Polling
- Public Comments
- Next Steps

PROJECT MISSION & BACKGROUND

PROJECT MISSION: Tillamook PUD is committed to providing all customers with safe and reliable power at the best value to all customers.

BACKGROUND:

- Need first identified over 50 years ago
- Very early route (1990s) put on hold when project need diminished
- PUD work plans (2005 and 2007) detailed project as a priority to address reliability and capacity
- PUD proposed to build a new overhead 115 kilovolt (kV) transmission line to connect the existing BPA substation in Tillamook to a new substation to be built near Oceanside
- First formal PUD proposed route unsuccessful (2013) – unable to permit through City

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

PURPOSE AND NEED OVERVIEW

PURPOSE & NEED OVERVIEW
TILLAMOOK OCEANSIDE TRANSMISSION LINE

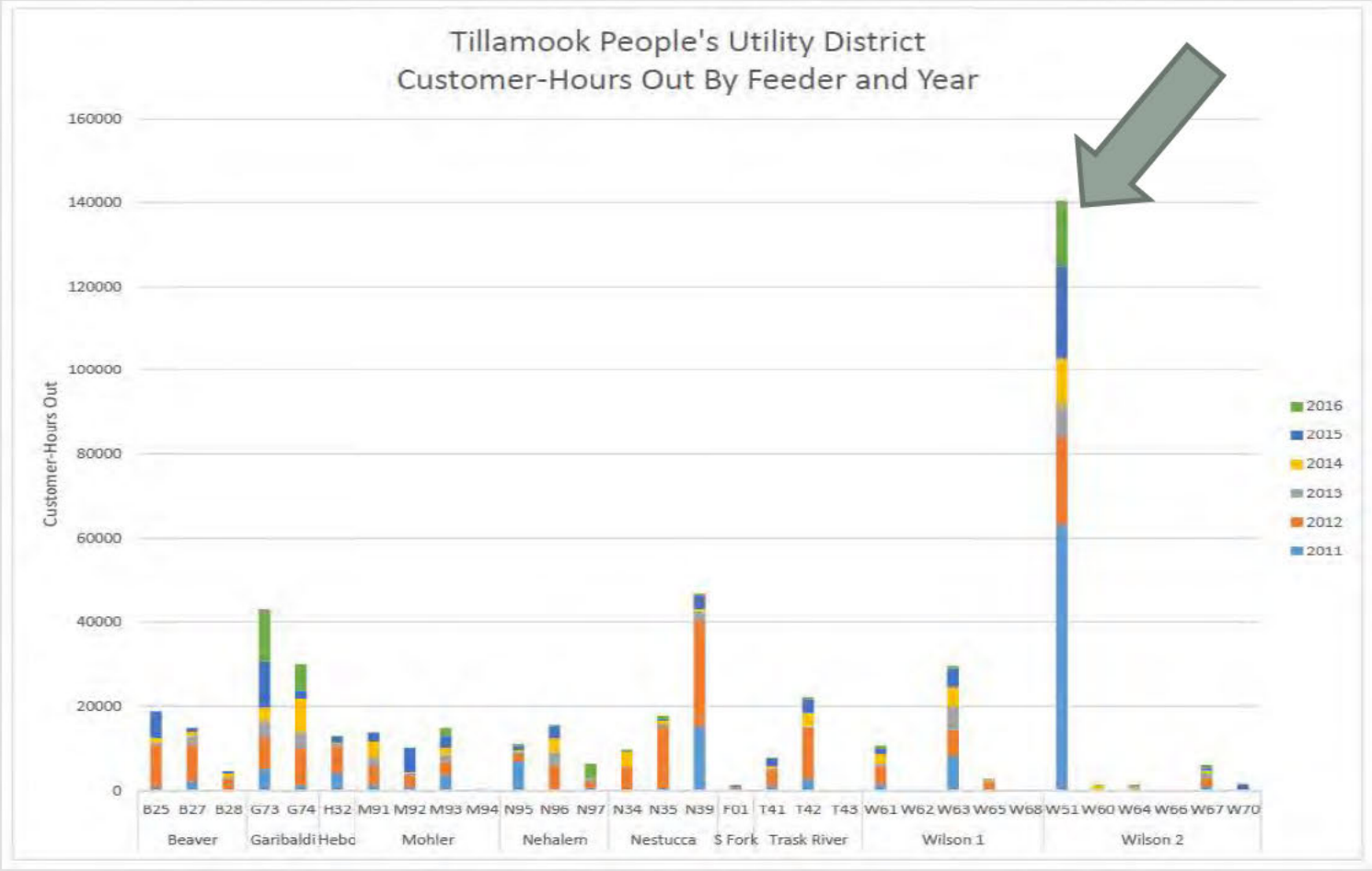
I. Reliability
- Poor reliability for Feeder W51 serving Netarts and Oceanside

II. Operations and Maintenance
- Lack of redundant power sources for Netarts and Oceanside
- Hinders maintenance and operations by having to interrupt power to 1,750 customers

III. Capacity
- Insufficient capacity in the valley floor to serve load for an N-1 contingency: Wilson, Garibaldi, and Trask substations. (N-1, normal less one, means removing the largest single line or equipment)
- Oceanside & Netarts represents 1/5 of the peak load in the central valley: 11.5 MVA of 60 MVA ("capacity")
- Loads are growing

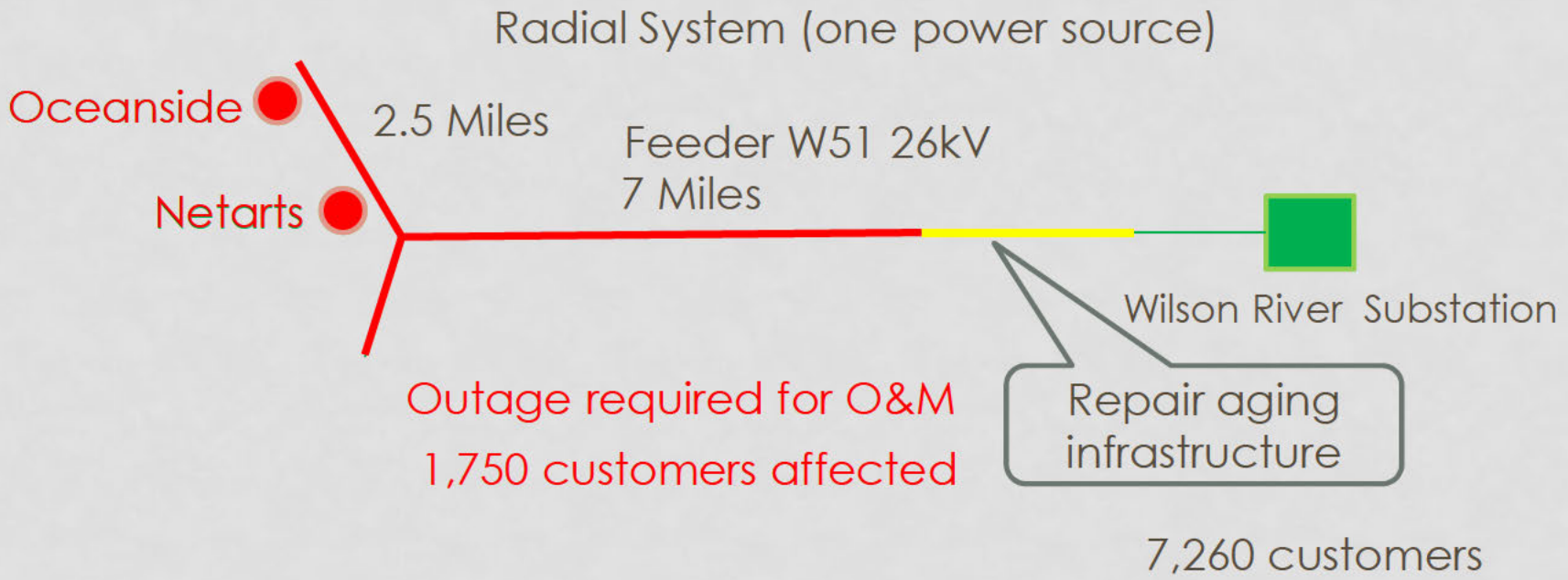
RELIABILITY: CUSTOMER HOURS OUT BY YEAR

- Feeder W51 is 2.8 times less reliable than other feeders



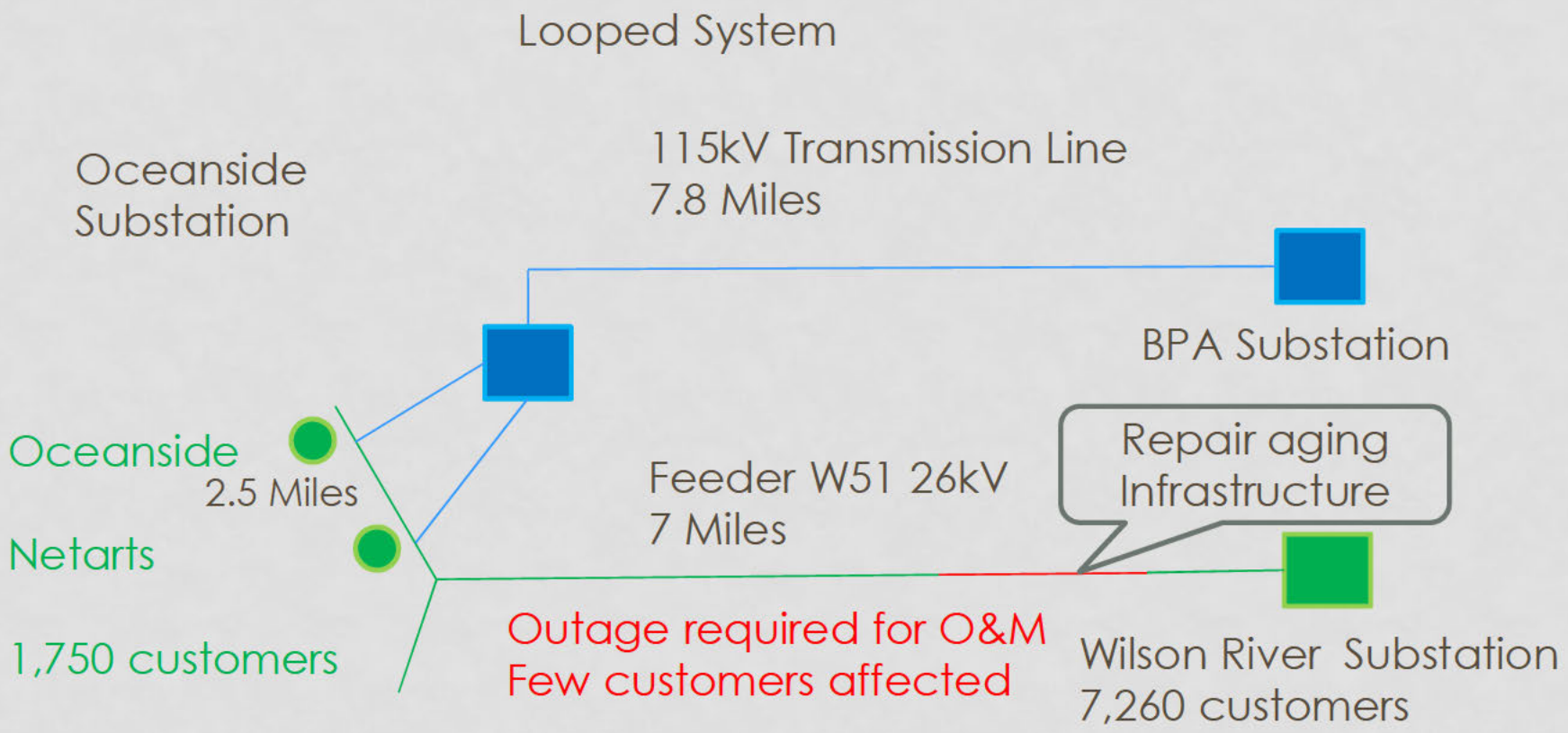
REPAIR/ REPLACE AGING INFRASTRUCTURE

- To perform maintenance, 1,750 customers are interrupted because a second power source is not available



OPERATION AND MAINTENANCE
AGING INFRASTRUCTURE

- A looped system would allow sections of line to be taken out of service without disruption to all customers



CAPACITY
HISTORICAL LOAD DATA

Historical Data Shows:

- From 2000 through 2015, the system peak growth rate was 1.8% annualized.
- The energy purchased between 2000 and 2016 shows an annualized system growth rate of 1.1%.
- During the same period, the annualized growth rate for new customers has been 0.8%.
- At Wilson T1, the annualized system peak growth rate since 2006 has been 0.2%, and max capacity during switching has been exceeded twice.
- At Wilson T2, the growth rate has been 1.2% and has exceeded industry standard planning guidelines six times.
- Finally, Wilson (1 and 2) annualized growth rate has been 0.9%.

As a result, the Central Tillamook Valley is at the maximum capacity today, when the largest equipment out of service.

CAPACITY
ADDITIONAL CAPACITY NEEDED

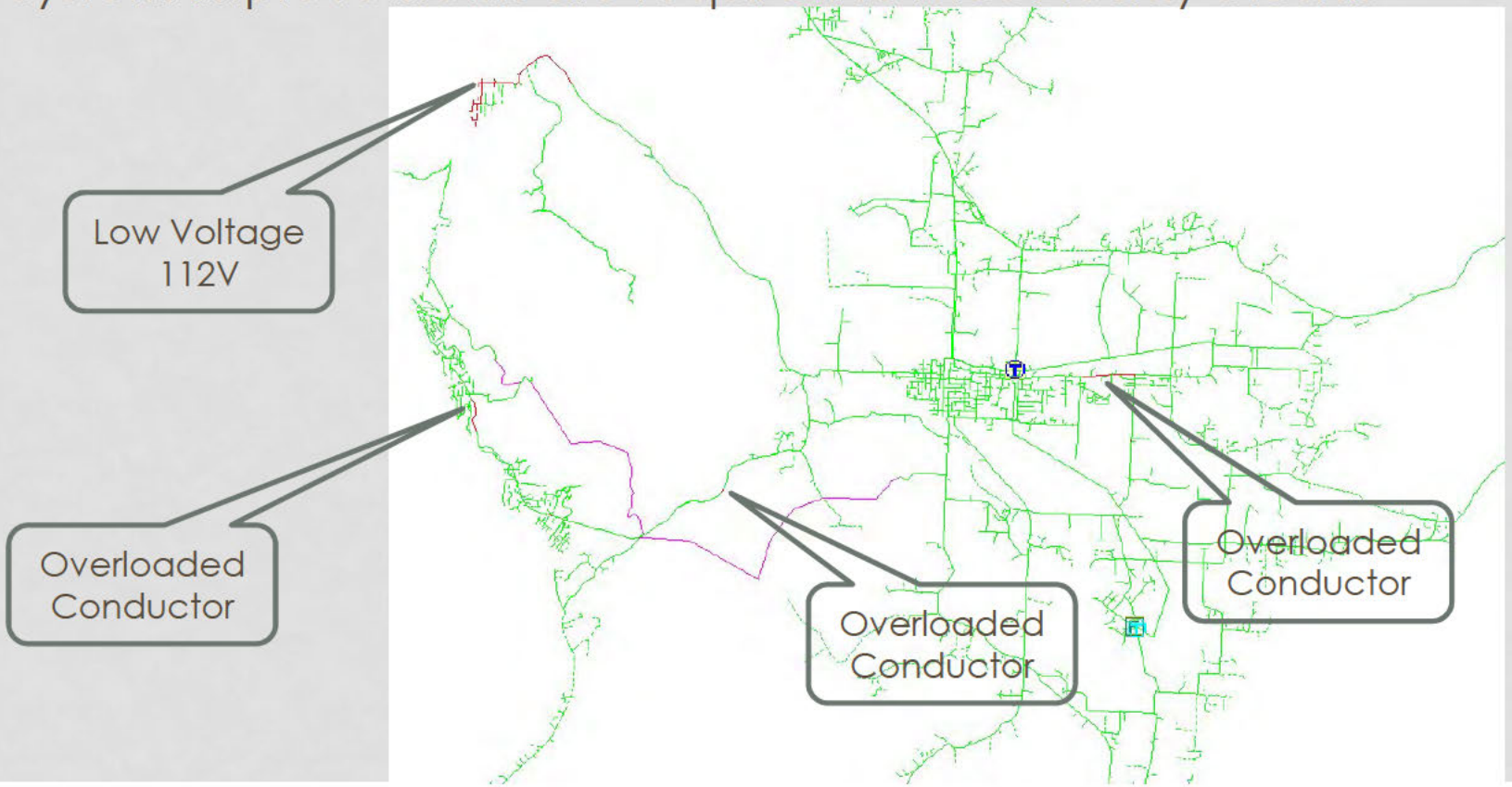
- Results of Power Flow Simulation Model
- Loss of Transformer T2 at Wilson River Sub – Normal less one condition (N-1 = Largest Component Out of Service)
  - 2016 Loads

Substation (year built)	Load (MVA)	Capacity (MVA)	Loading (%)
Garibaldi (1994)	22.7	25.0	91%
Wilson T1 (1971)	33.2	33.3	100%
Wilson T2 (2002)	0.0	0.0	
Trask (1996)	35.3	36.9	96%
Totals	94.1	95.2	96%

  - Transferred 4 MVA to South Fork and Mohler substations to reduce loads on Garibaldi and Wilson T1
  - There are areas that have poor voltage and overloaded conductors

CAPACITY
SYSTEM IMPROVEMENTS REQUIRED

- Today's system would result in areas with below acceptable voltage limits – less than 114 volts and lines exceeding their capacity
- System improvements are required to meet today's loads



OPTIONS CONSIDERED

Option 1

- Do nothing

Option 2

- Improve system to provide redundant 26kV feeders to Netarts and Oceanside
- Strengthen tie points between Wilson and Trask substations
- Perform improvements to resolve voltage and loading issues

Option 3

- Same improvements as Option 2
- Replace Wilson T1 with equivalent size of Wilson T2 (44 MVA)

Option 4

- Construct the Tillamook to Oceanside transmission line and a 33 MVA substation

SUMMARY OF OPTIONS

	Option 1	Option 2	Option 3	Option 4
Cost (Million)	$0.8	$3.8 - $4.2	$5.5 – $6.0	$9-$10.5
Capacity Addition	0 MVA	0 MVA	12 MVA	33 MVA
$/MVA	0	0	0.5	0.3
Reliability	None	Good	Good	Excellent
Longevity	0 years	2 years	13 years	33 years

CONCLUSION: The Tillamook to Oceanside transmission line project provides the lowest cost per unit of capacity (MVA) and has the life expectancy of 33 years (2.8 times the non-transmission line option).

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

QUESTIONS & ANSWERS

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

PUBLIC INVOLVEMENT: ROUTE SELECTION

CITIZEN ADVISORY GROUP (2015)

- Citizen Advisory Group (CAG), formed to assist Tillamook PUD in transmission line route selection, through multi-stakeholder, collaborative, public process.

  www.tpud.org/news-community/projects

- CAG Representatives:

  - Local government (2)
    - City of Tillamook
    - Tillamook County
  - Landowner (3)
  - Agriculture (2)
  - Business (2)
  - Non-governmental agency (1)
  - Citizens-at-large (3)
  - PUD Board Member (non-voting) (1)

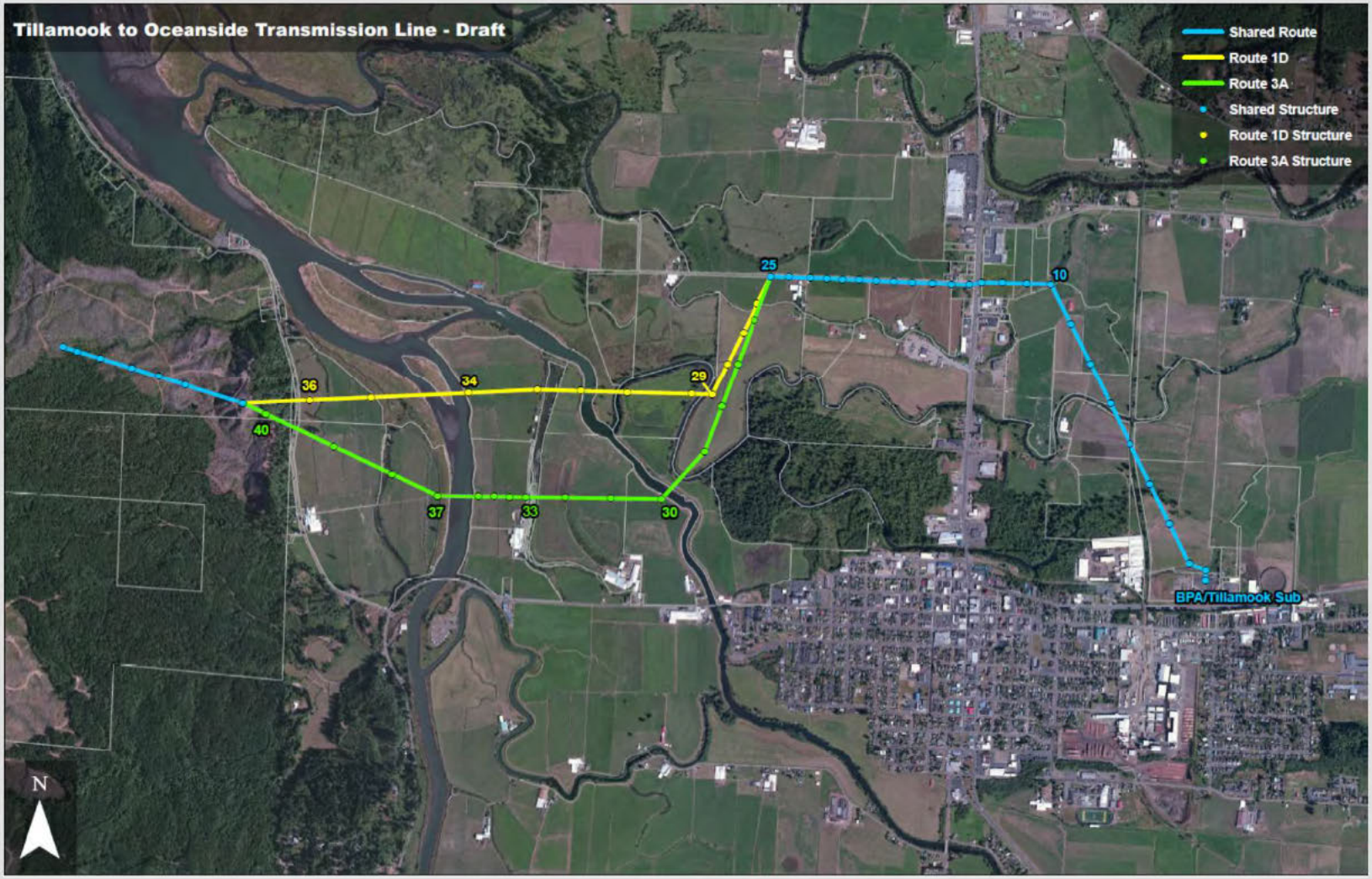
  Number of CAG Members = 14

ROUTES CAG REVIEWED

CITIZEN ADVISORY GROUP CONTINUED

- Summary of CAG work (January – August 2015)
  - 8 public CAG meetings
  - 2 public open house meetings
  - Field Trip
  - 1 PUD Board Workshop
- The majority of the group said they could support proposed route 3A, but recommended the PUD continue to explore a more northern route.
- PUD staff then developed northern route 1D, and subsequently, northern routes through the Southern Flow Corridor.

RESULTS OF CAG PROCESS



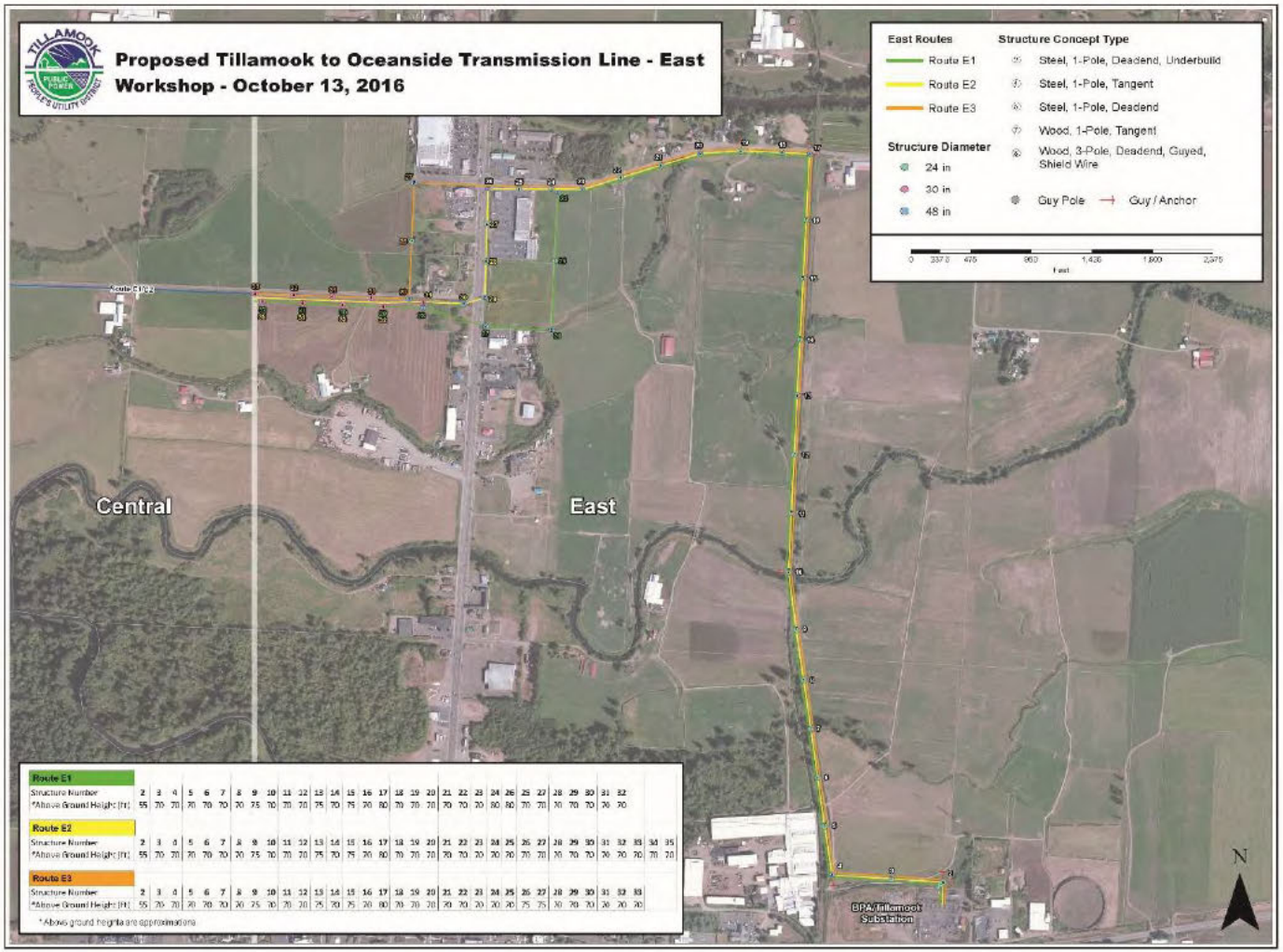
RECENT EVENTS

- PUD staff met with potentially impacted landowners (April – May 2016)
- Routes 3A and 1D presented at May 25, 2016, Tillamook PUD Public Workshop
- PUD staff meetings with Tillamook County and Oregon Watershed Enhancement Board (August 2016)
- PUD staff meetings with potentially impacted landowners (August – September 2016)
- PUD staff responded to feedback received with updated route alternatives (October 2016)

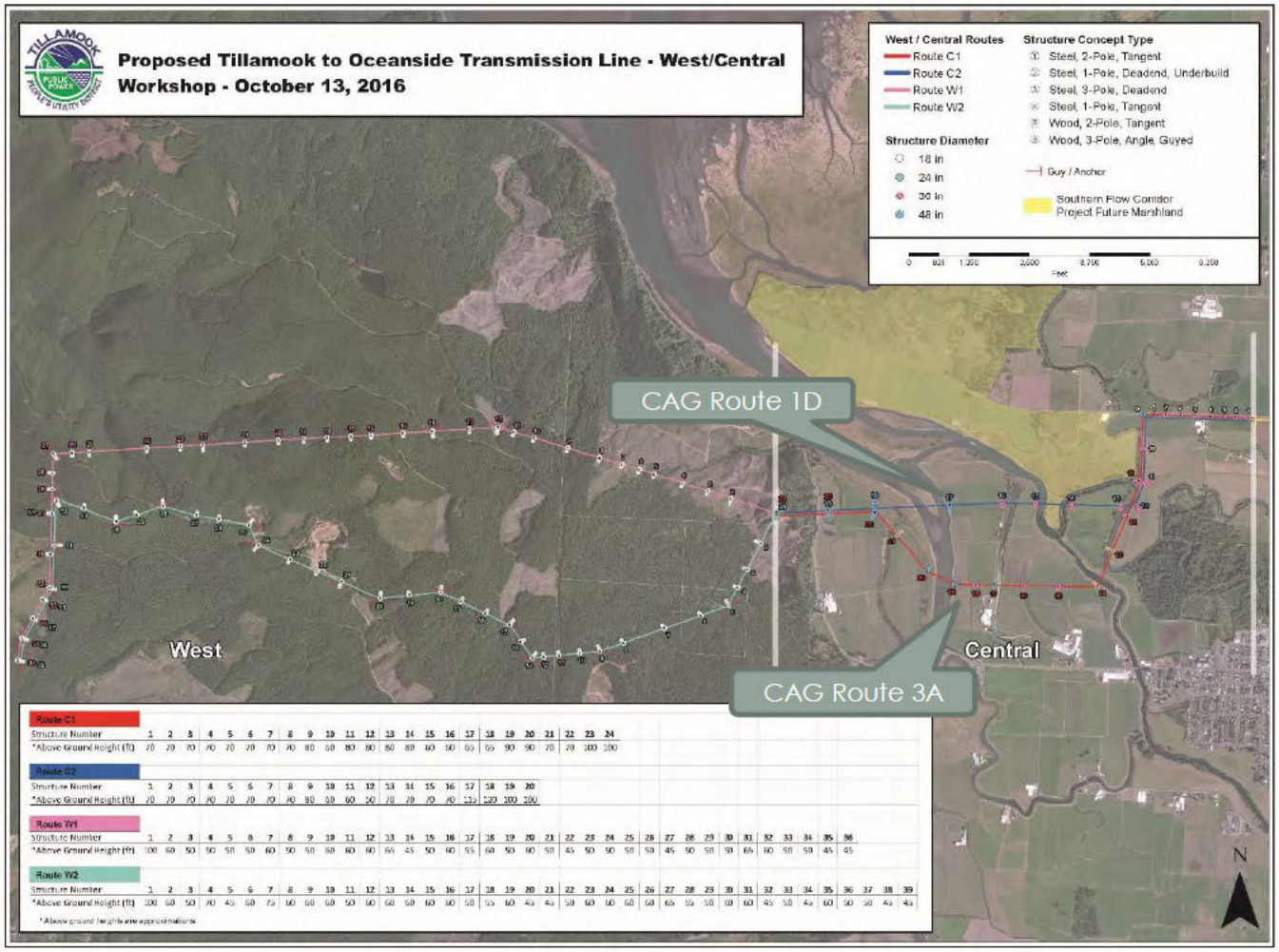
TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

CURRENT ROUTE OPTIONS

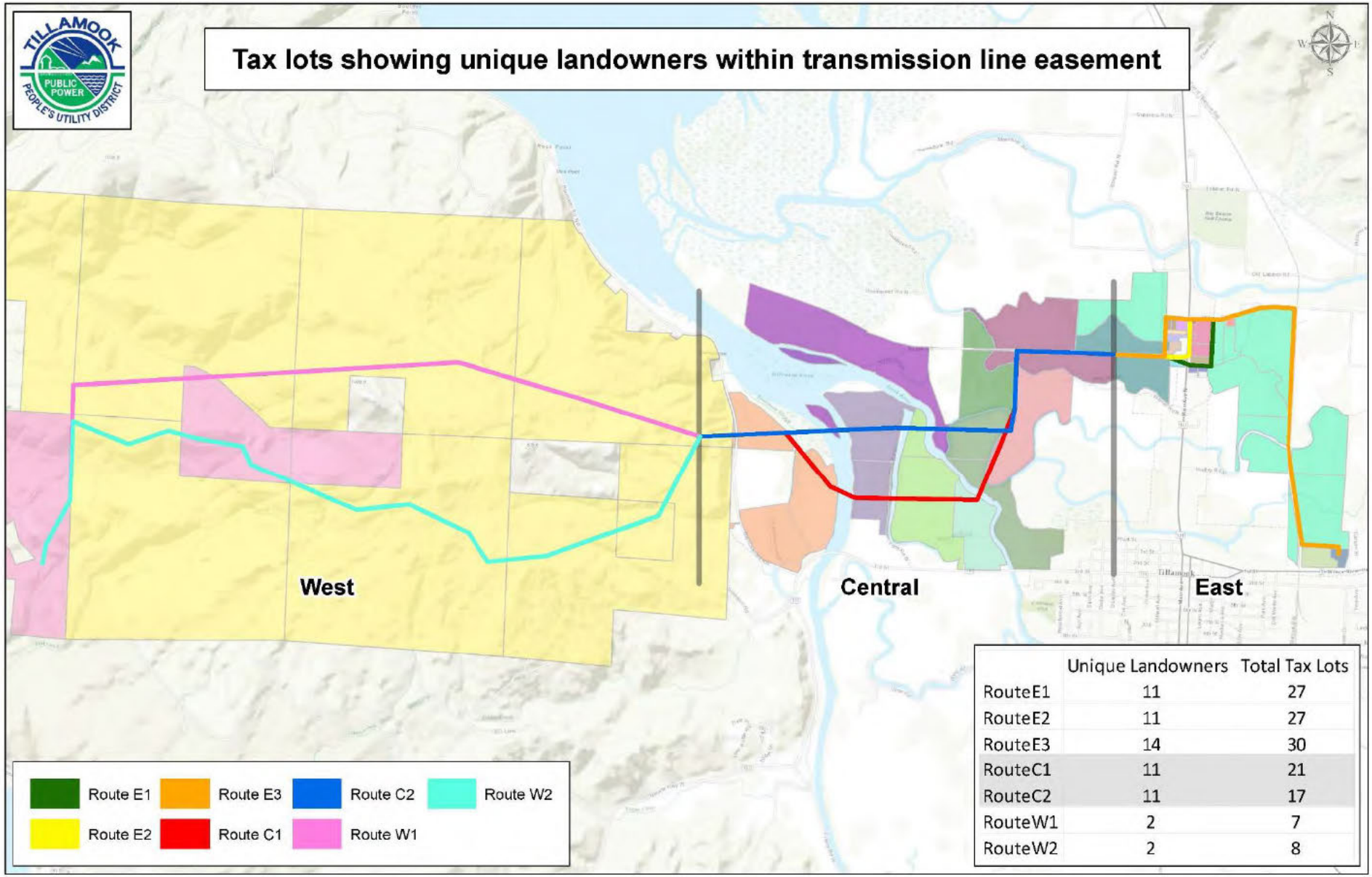
CURRENT ROUTE OPTIONS



CURRENT ROUTE OPTIONS

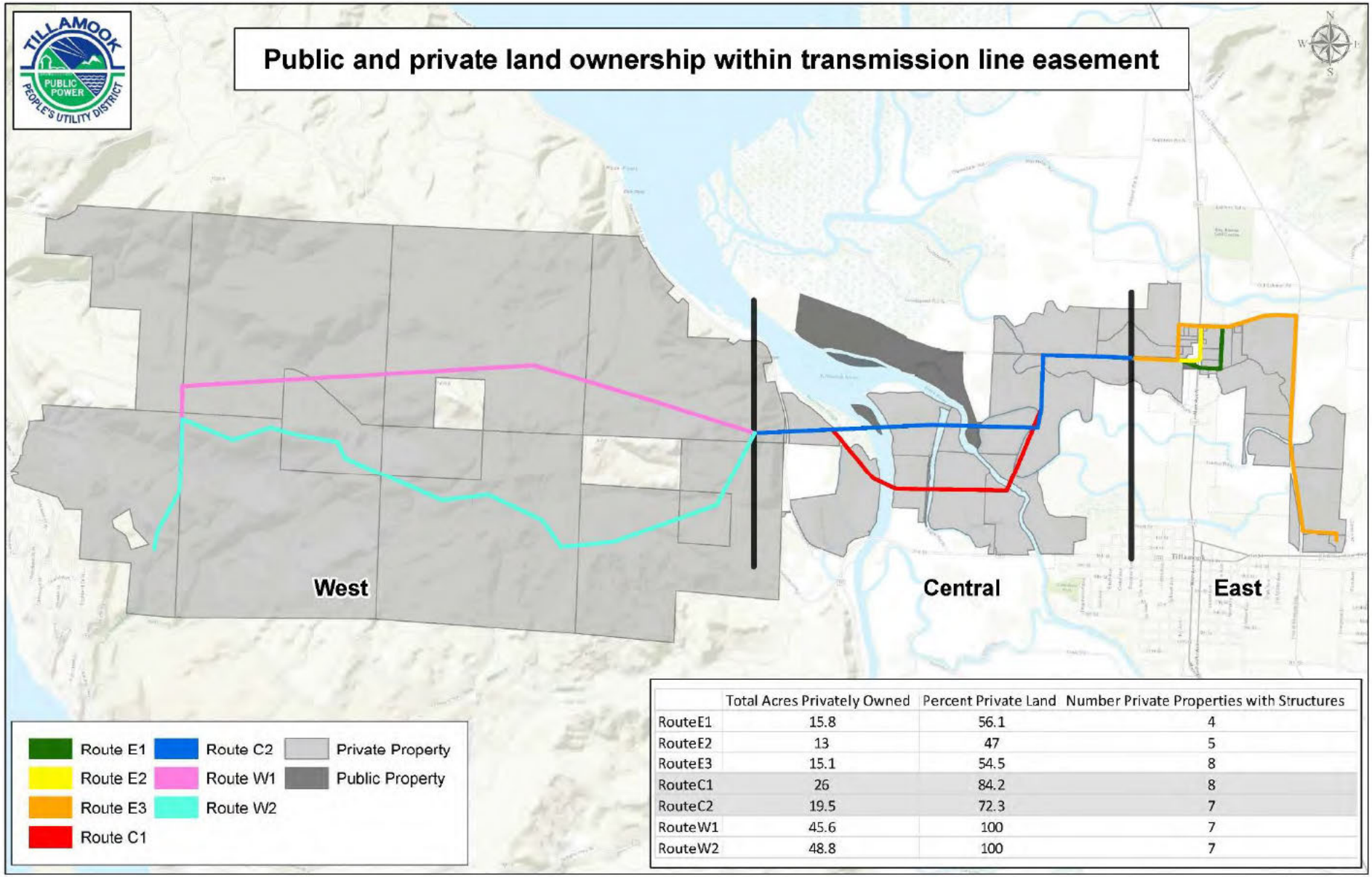


Tax lots showing unique landowners within transmission line easement

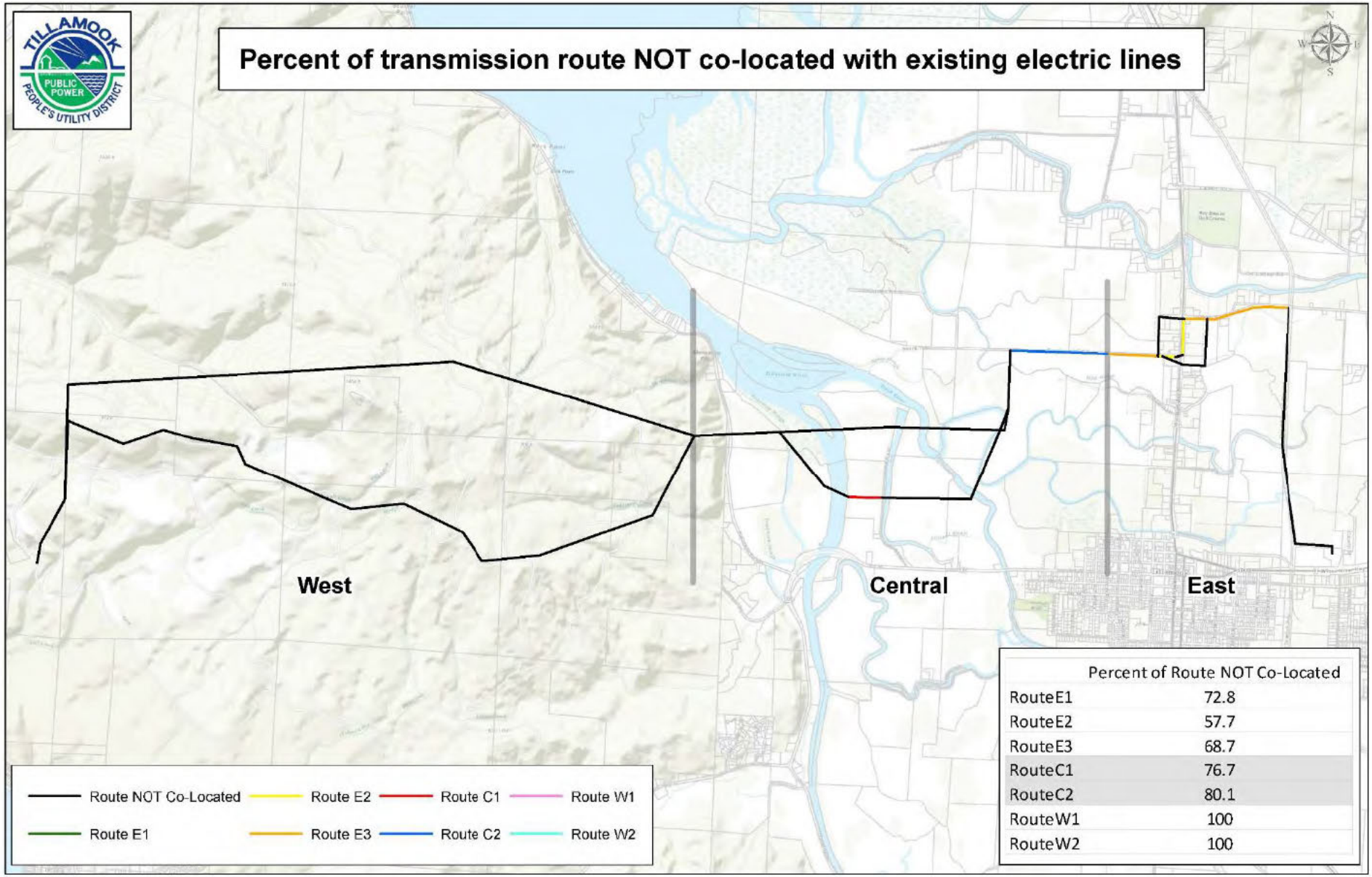


	Unique Landowners	Total Tax Lots
RouteE1	11	27
RouteE2	11	27
RouteE3	14	30
RouteC1	11	21
RouteC2	11	17
RouteW1	2	7
RouteW2	2	8

Public and private land ownership within transmission line easement

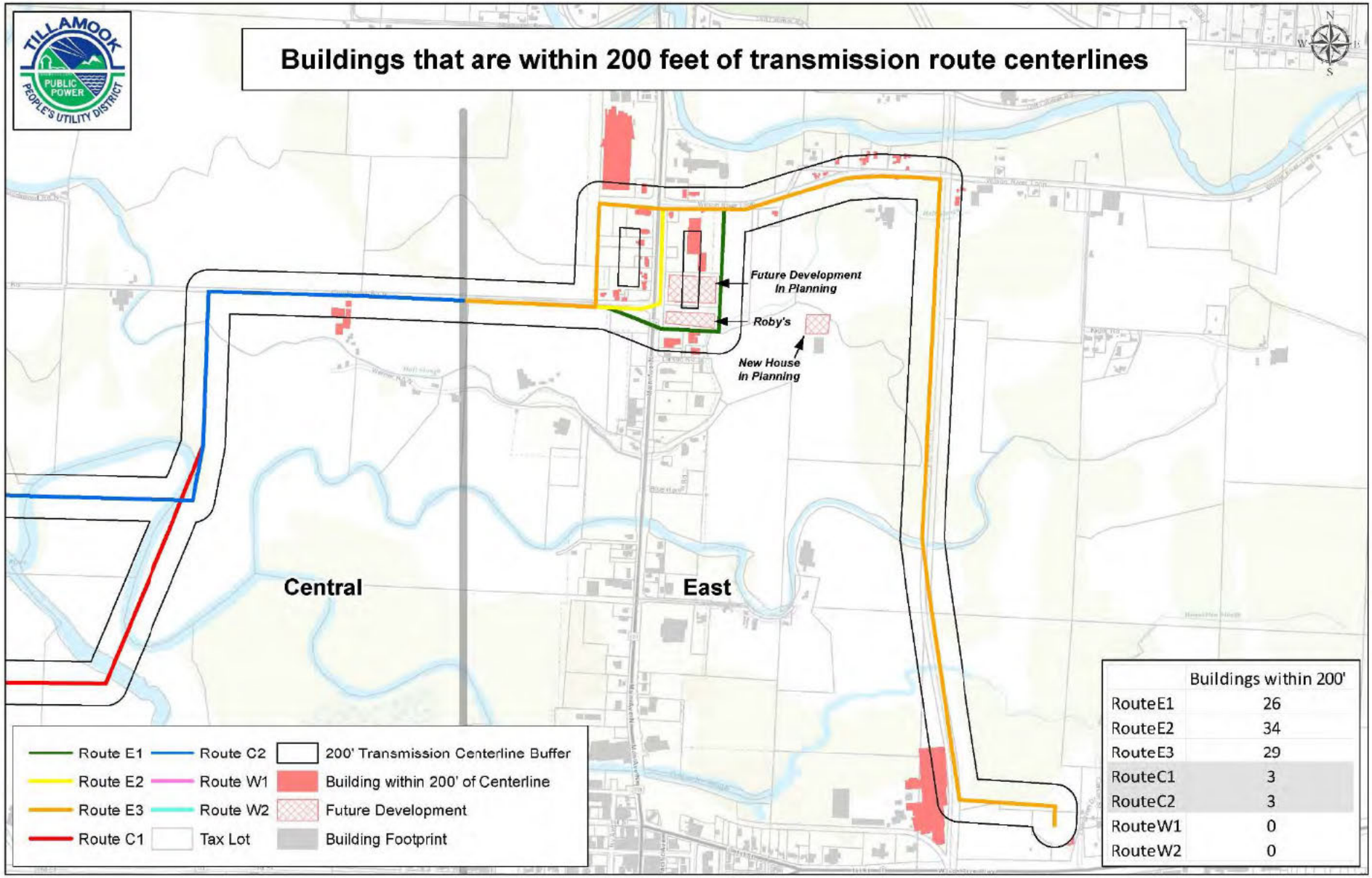


	Total Acres Privately Owned	Percent Private Land	Number Private Properties with Structures
RouteE1	15.8	56.1	4
RouteE2	13	47	5
RouteE3	15.1	54.5	8
RouteC1	26	84.2	8
RouteC2	19.5	72.3	7
RouteW1	45.6	100	7
RouteW2	48.8	100	7



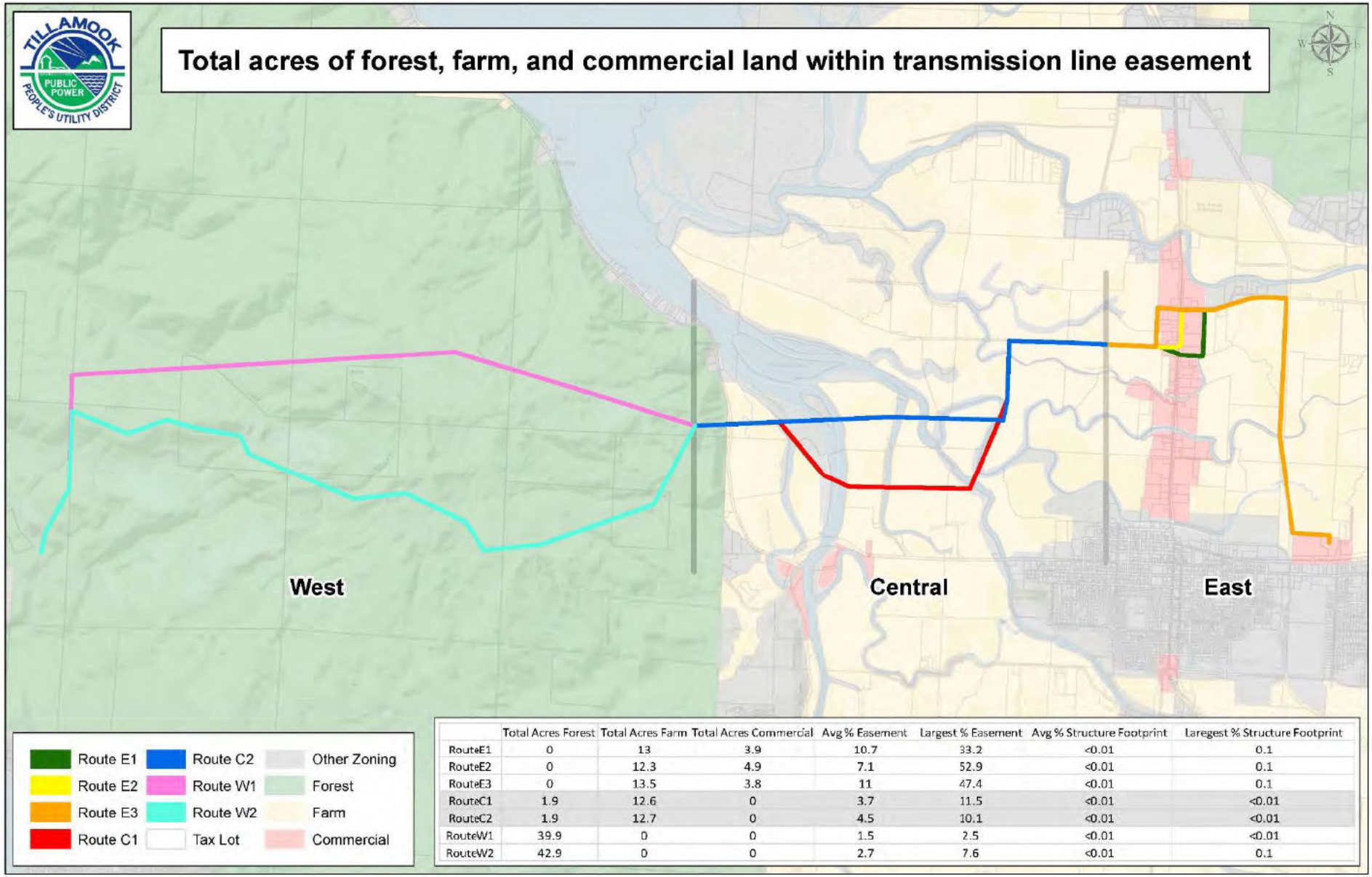
	Percent of Route NOT Co-Located
RouteE1	72.8
RouteE2	57.7
RouteE3	68.7
RouteC1	76.7
RouteC2	80.1
RouteW1	100
RouteW2	100

Buildings that are within 200 feet of transmission route centerlines



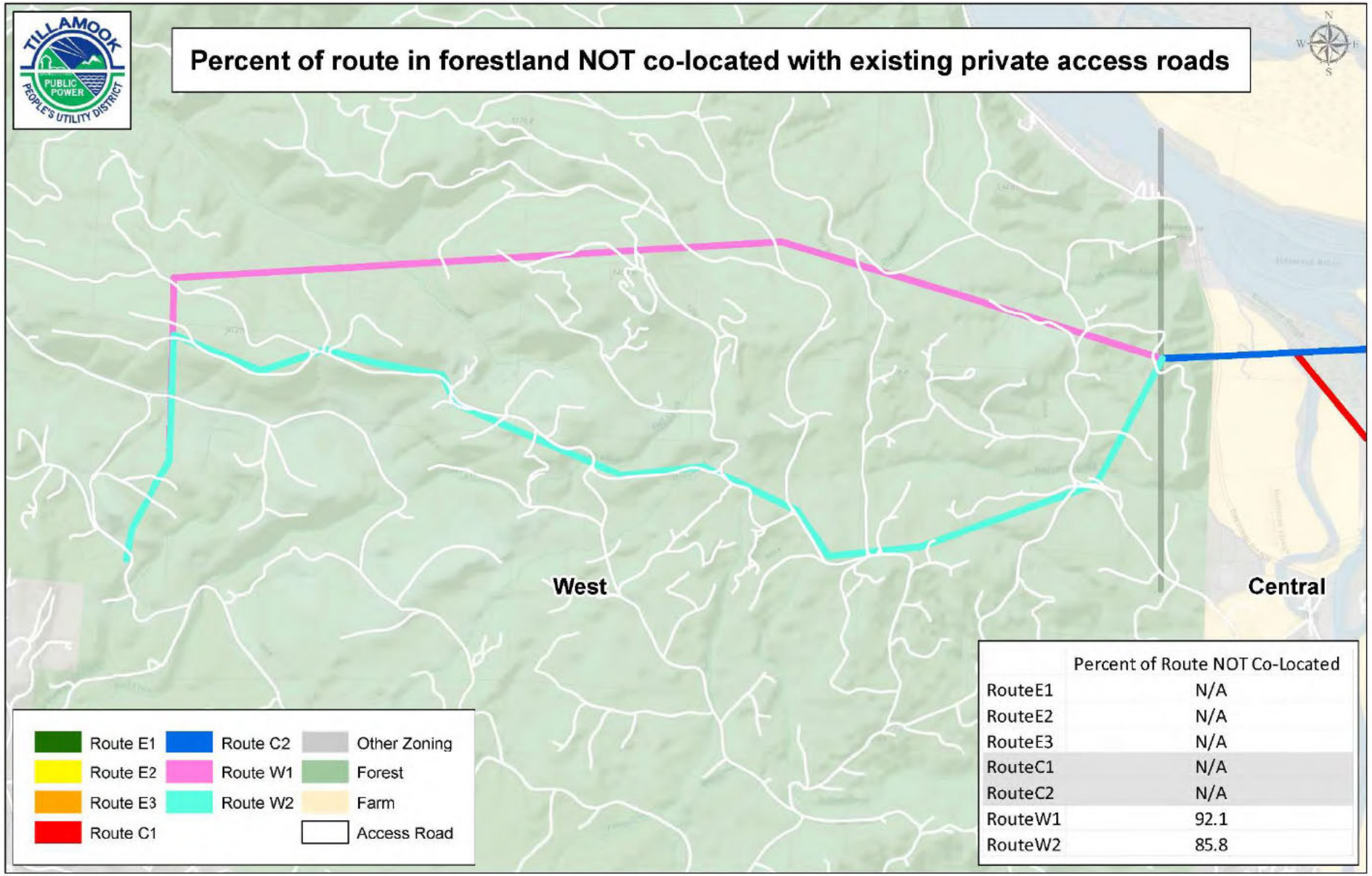
	Buildings within 200'
RouteE1	26
RouteE2	34
RouteE3	29
RouteC1	3
RouteC2	3
RouteW1	0
RouteW2	0

Total acres of forest, farm, and commercial land within transmission line easement



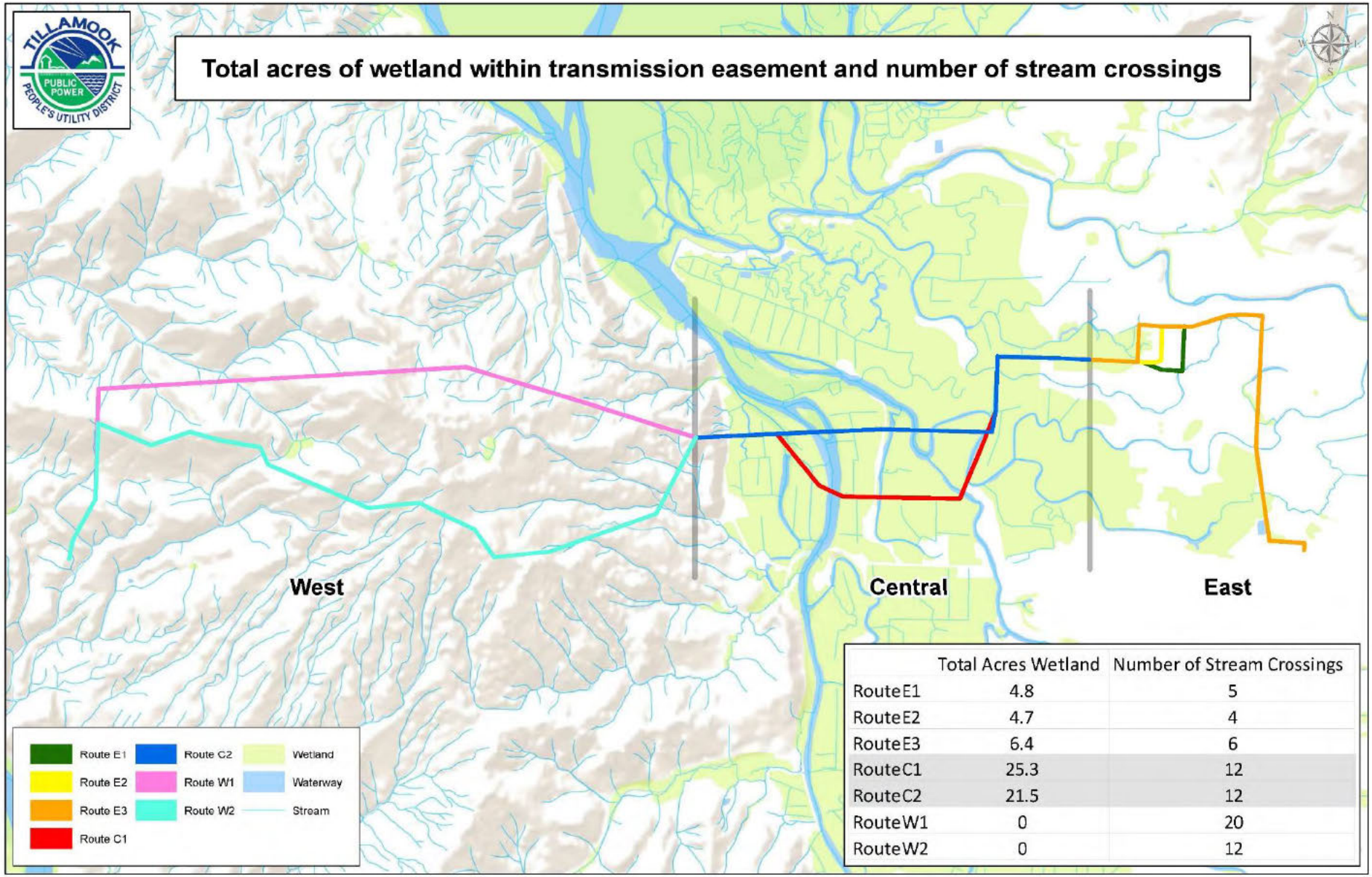
	Total Acres Forest	Total Acres Farm	Total Acres Commercial	Avg % Easement	Largest % Easement	Avg % Structure Footprint	Laregest % Structure Footprint
RouteE1	0	13	3.9	10.7	33.2	<0.01	0.1
RouteE2	0	12.3	4.9	7.1	52.9	<0.01	0.1
RouteE3	0	13.5	3.8	11	47.4	<0.01	0.1
RouteC1	1.9	12.6	0	3.7	11.5	<0.01	<0.01
RouteC2	1.9	12.7	0	4.5	10.1	<0.01	<0.01
RouteW1	39.9	0	0	1.5	2.5	<0.01	<0.01
RouteW2	42.9	0	0	2.7	7.6	<0.01	0.1

Percent of route in forestland NOT co-located with existing private access roads



	Percent of Route NOT Co-Located
RouteE1	N/A
RouteE2	N/A
RouteE3	N/A
RouteC1	N/A
RouteC2	N/A
RouteW1	92.1
RouteW2	85.8

Total acres of wetland within transmission easement and number of stream crossings



	Total Acres Wetland	Number of Stream Crossings
RouteE1	4.8	5
RouteE2	4.7	4
RouteE3	6.4	6
RouteC1	25.3	12
RouteC2	21.5	12
RouteW1	0	20
RouteW2	0	12

ANALYSIS OF CURRENT ROUTES

Data not represented in maps

- Reliability (B)
  - All route have essentially the same reliability – very high
- PUD Transmission Line Costs (E)
  - Summarized in the Table (Estimates)
    - Low end $5.1 M
    - High end $6.2 M
- Community Economics (Benefits/Impacts) (F)
  - Will be driven by "polling" results.

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

QUESTIONS & ANSWERS

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

DECISION TABLES & POLLING

MAKING GROUP DECISIONS

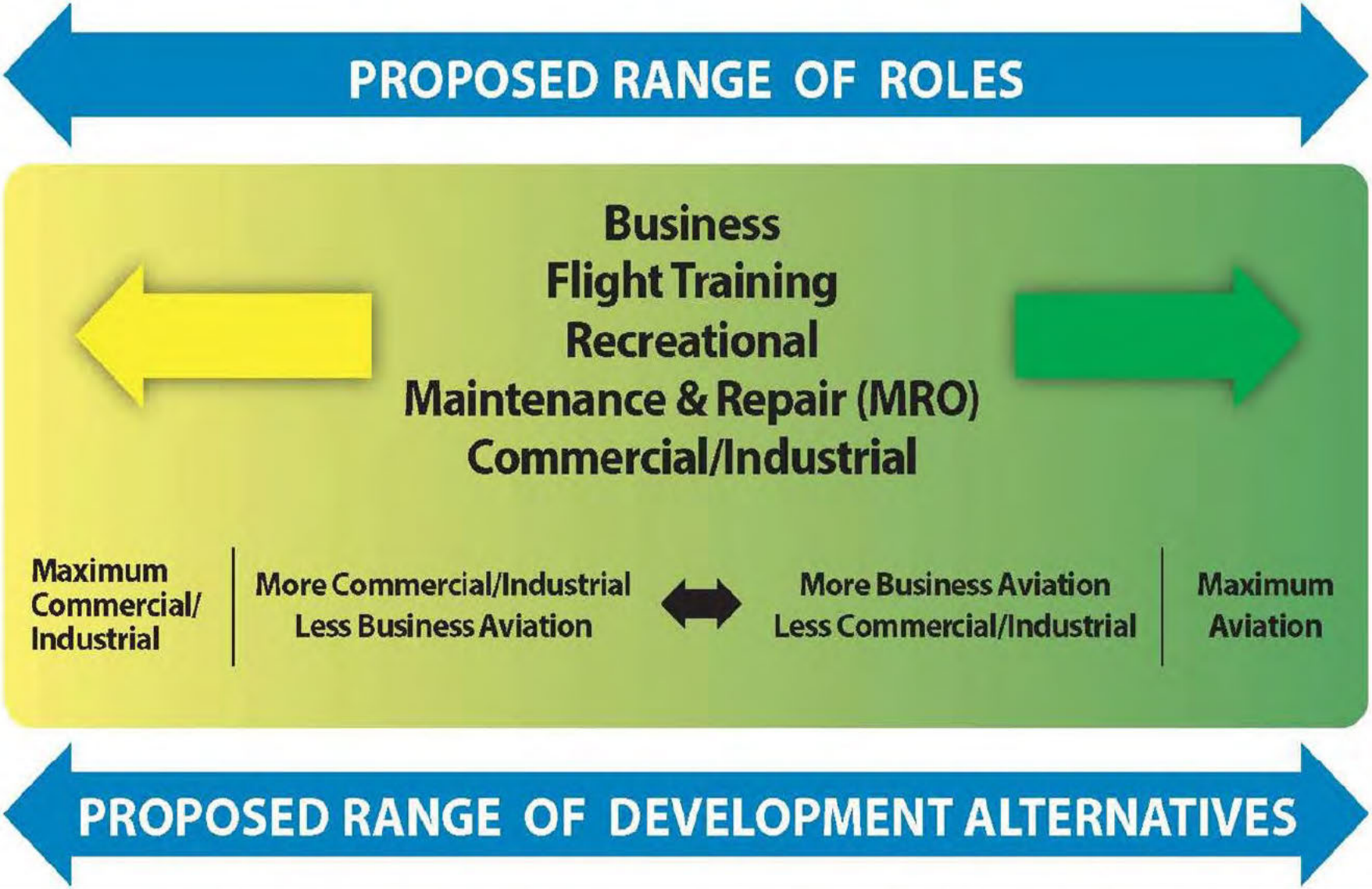
A. All information is subject to questions about validity.
B. Many think science is conducted wholly in the realm of testable knowledge.
C. Subjective knowledge plays a large role and should be surfaced.
D. Disputes are rarely caused by technical information, *per se*. Most often, they are about differing values/goals.
E. Group decisions are best made with clear alternatives and balanced evaluation criteria.
F. The "cards up" process should consider various perspectives and be an exploration – not a debate.

DECISION TABLE: AN EFFECTIVE TOOL

A. Provides external memory
B. Compares alternatives systematically
C. Focuses on facts
D. Quantifies subjective factors
E. Analyzes alternatives by evaluation criteria
F. Allows for weighting of criteria and ranking of alternatives
G. Thought process and analysis documented
H. Reasons for agreement and disagreement understood

EXAMPLE:

EXAMPLE TROUTDALE AIRPORT :



EXAMPLE: TROUTDALE AIRPORT
BASIC TABLE

Evaluation Criteria

Alternatives

	Alignment with forecasts	Community economic benefits	Community planning compatibility	Environmental impacts	Financial impacts	Fit with local airport system	Legal feasibility
A: Maximum commercial / industrial							
B: More commercial / industrial; less business aviation							
C: More business aviation; less commercial / industrial							
D: Maximum aviation							

EXAMPLE: TROUTDALE AIRPORT
WEIGHTING EVALUATION CRITERIA

The Troutdale Airport Decision - Step 1

There are three steps in the process. The first step (located below) requires you to weight each of the categories that impact the decision relative to each other.

Get started below, and be sure to ask your facilitator if you have any questions.

Please enter your name

Step 1: Category Weighting

Please rate the categories based on their relative importance to you. You can assign the same weight to multiple categories.

Weightings are calculated using your ratings divided by the total number of points you assign.

All participants' weights are averaged to determine the final group weighting. This ensures every participant has equal influence.

A rating of 1 means "Not Important," and a rating of 10 means "Important."

	1	2	3	4	5	6	7	8	9	10
Alignment With Forecast										
Community Economic Benefit										
Community Planning Compatibility										
Environmental Impact										
Fit With Local Airport System										
Legal Feasibility										
Port Financial Impact										

EXAMPLE: TROUTDALE AIRPORT
SCORING ALTERNATIVES BASED UPON EVALUATION CRITERIA

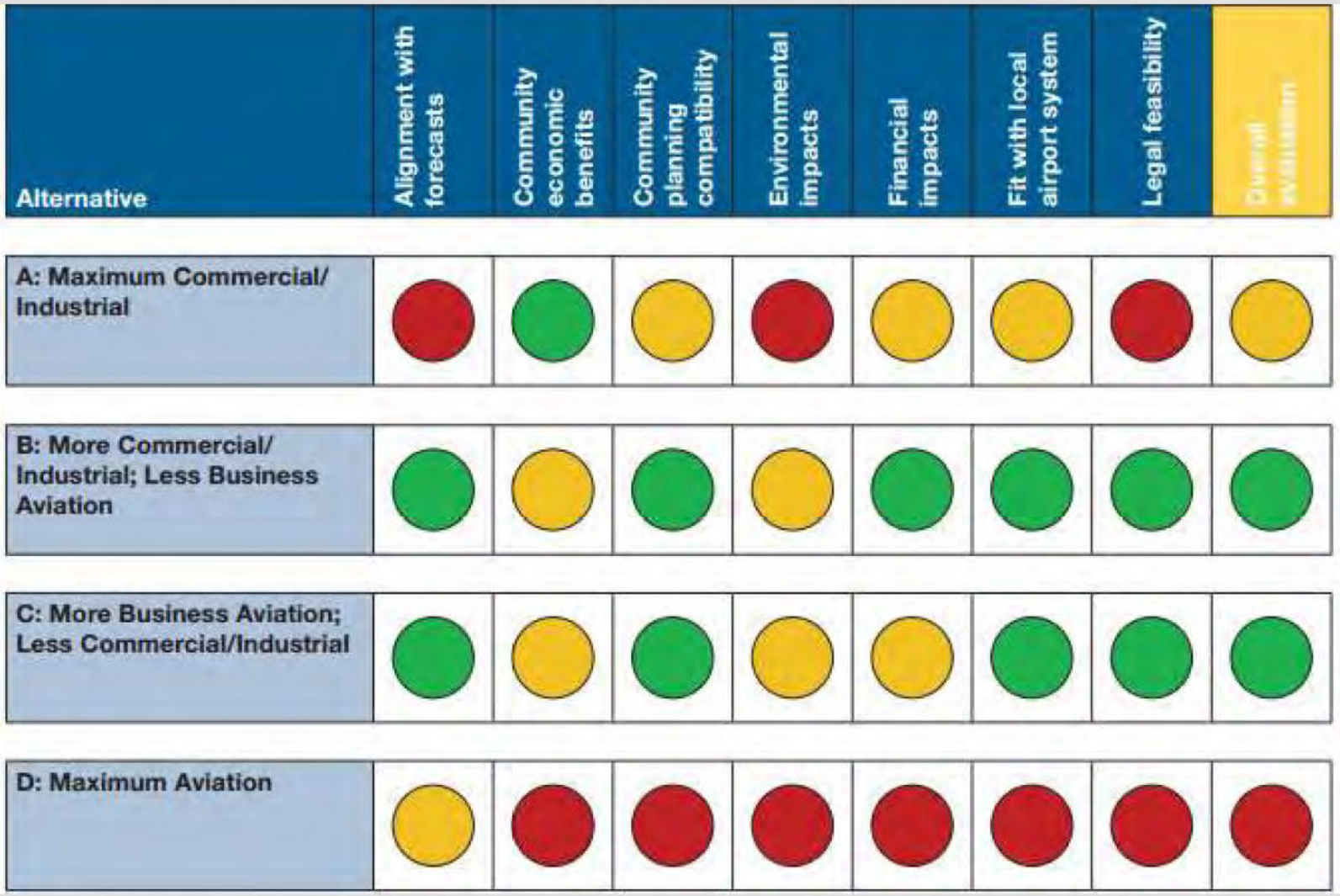
Assign a color to each alternative that describes how well the alternative aligns with each evaluation category, compared to other alternatives.

Very favorable / well-aligned

Neutral / neither favorable nor unfavorable

Not favorable / not well-aligned

EXAMPLE: TROUTDALE AIRPORT
RESULTS



Tillamook to Oceanside Transmission Line Project: Decision Table

Evaluator Information:

Name: _____ Date: _____ Select one: ☐ Member of the public ☐ Property Owner Property Address: _____

Step 1: Weighting Evaluation Criteria

Evaluation Categories	Social		Land Use / Environmental		Economic	
Evaluation Factors	A) Property Effects and Visual Impacts	B) Reliability	C) Impacts to Farm / Forest / Commercial	D) Environmental Impacts	E) Tillamook PUD Costs	F) Community Economics (Benefits / Impacts)
Sample Measures	1) Number of unique land owners 2) Number of tax lots 3) Total acreage of privately-owned land within easement 4) Percentage of easement on privately-owned land 5) Number of private properties that have a transmission structure on it 6) Percentage of route NOT co-located with existing electric lines 7) Number of buildings within 200' of transmission centerline 8) Quantity of transmission structures: (number of 1-pole, 2-pole, 3-pole) 9) Average pole height	Considerations: Frequency and duration of potential outages, cost to get back online, difficulty of getting back online, (e.g. accessibility, number of wetlands, water crossings, soils, need for special equipment), etc.	1) Total acres of forestland within easement 2) Total acres of farmland within easement 3) Total acres of commercial land within easement 4) Average percentage of easement on property 5) Largest percentage of easement on property 6) Average percentage of structure footprint on property 7) Largest percentage of structure footprint on property 8) Percentage of route in forestland NOT co-located with existing private access roads	1) Total acres of wetland within easement 2) Total number of streams that cross transmission line	1) Construction costs (Infrastructure, roads, etc.) 2) Operation & maintenance 3) Time to Construct	Considerations: Job creation, business revenue, property values, construction disruption, site development options, etc.
Extremely Important	10	10	10	10	10	10
Very Important	9	9	9	9	9	9
	8	8	8	8	8	8
Important	7	7	7	7	7	7
	6	6	6	6	6	6
Moderately Important	5	5	5	5	5	5
	4	4	4	4	4	4
Slightly Important	3	3	3	3	3	3
	2	2	2	2	2	2
Not at all Important	1	1	1	1	1	1

Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.

Step 2: Scoring Alternatives based on Evaluation Factors

Rating Instructions: Circle one color (Green, Yellow, Red) in each rating cell to specify how well each alternative satisfies each evaluation factor. 6 = "Well-aligned" 5 = "Neutral" 1 = "Poorly-aligned"
Leaving any cell blank will result in a vote of 5 = "Neutral".

Measures Guidance	Fewer unique property owners, smaller private acreage, lower Percentage private land, fewer number of private properties with structures, and lower Percentage of route NOT co-located with existing lines is better											Lower frequency and duration of outages, cost, and difficulty to get back on line is better.		Fewer acres and lesser impact on practices is better.									Fewer acres of wetland and fewer number of stream crossings is better.			Lower costs of construction, operation & maintenance, and less time to construct is better.				Subjective valuation of the above considerations: Net between positive and negative factors.	
Evaluation Factors and Sample Measures	1) Unique land owners (#)	2) Number of tax lots	3) Privately-owned land within easement (acres)	4) Easement on privately-owned land (%)	5) Private properties with transmission structures (#)	6) Percentage of route NOT co-located with existing electric lines	7) Buildings within 200' of transmission centerline (#)	8) Transmission structures (# 1-pole, 2-pole, 3-pole)	9) Average pole height (ft.)	VOTE: Property Effects & Visual Impacts	Overall Reliability	VOTE: Reliability	1) Forestland within easement (acres)	2) Farmland within easement (acres)	3) Commercial land within easement (acres)	4) Average easement on property (%)	5) Largest easement on property (%)	6) Average structure footprint on property (%)	7) Largest structure footprint on property (%)	8) Percentage of route co-located with existing priv. Rds	VOTE: Impacts to Farm / Forest / Commercial	1) Wetland within easement (acres)	2) Streams that cross transmission line (#)	VOTE: Environmental Impacts	1) Estimated Construction Costs (thousands of $)	2) Estimated Construction (thousands of $)	3) Time to Construct (months)	VOTE: Tillamook PUD Costs	Your Notes:	VOTE: Community Economics (Benefits / Impacts)
East Section	Route E1	11	27	16.8	56.1%	4	72.8%	26	31 (20,0,1)	71'	~99%+		0	13	3.9	10.7%	33.2%	<0.01%	0.1%	N/A		4.8	5		1,200	6.5	3.5			
	Route E2	11	27	13	47.0%	5	57.7%	34	34 (33,0,1)	70'	~99%+		0	12.3	4.9	7.1%	52.9%	<0.01%	0.1%	N/A		4.7	4		1,500	7.5	4			
	Route E3	14	36	15.1	54.5%	8	68.7%	29	32 (31,0,1)	71'	~99%+		0	13.5	3.8	11.0%	47.4%	<0.01%	0.1%	N/A		5.4	6		1,400	7.0	3			
Central Section	Route C1	11	21	26	84.2%	8	76.7%	3	24 (12,5,7)	75'	~99%+		1.9	12.6	0	3.7%	11.5%	<0.01%	<0.01%	N/A		25.3	12		2,000	14.5	8			
	Route C2	11	17	19.6	72.3%	7	80.1%	3	20 (9,5,5)	76'	~99%+		1.9	12.7	0	4.5%	10.1%	<0.01%	<0.01%	N/A		21.5	12		2,600	13.0	5			
West Section	Route W1	2	7	45.6	100%	7	100%	0	36 (0,27,9)	54'	~99%+		39.9	0	0	1.5%	2.5%	<0.01%	<0.01%	92.1%		0	20		1,400	7.0	5			
	Route W2	2	8	48.8	100%	7	100%	0	39 (0,21,18)	57'	~99%+		42.9	0	0	2.7%	7.6%	<0.01%	0.1%	85.8%		0	12		1,900	9.5	5			

Evaluation Categories	Social	
Evaluation Factors	A) Property Effects and Visual Impacts	B) Reliability
Sample Measures	1) Number of unique land owners 2) Number of tax lots 3) Total acreage of privately-owned land within easement 4) Percentage of easement on privately-owned land 5) Number of private properties that have a transmission structure on it 6) Percentage of route NOT co-located with existing electric lines 7) Number of buildings within 200' of transmission centerline 8) Quantity of transmission structures (number of 1-pole, 2-pole, 3-pole) 9) Average pole height	Considerations: Frequency and duration of potential outages, cost to get back online, difficulty of getting back online, (e.g. accessibility, number of wetlands, water crossings, soils, need for special equipment), etc.
Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.		
Extremely Important	10	10
Very Important	9	9
	8	8
Important	7	7
	6	6
Moderately Important	5	5
	4	4
Slightly Important	3	3
	2	2
Not at all Important	1	1

Evaluation Categories	Land Use / Environmental	
Evaluation Factors	**C) Impacts to Farm / Forest / Commercial**	**D) Environmental Impacts**
Sample Measures	1) Total acres of forestland within easement 2) Total acres of farmland within easement 3) Total acres of commercial land within easement 4) Average percentage of easement on property 5) Largest percentage of easement on property 6) Average percentage of structure footprint on property 7) Largest percentage of structure footprint on property 8) Percentage of route in forestland NOT co-located with existing private access roads	1) Total acres of wetland within easement 2) Total number of streams that cross transmission line
	Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.	
Extremely Important	**10**	**10**
Very Important	**9**	**9**
	8	**8**
Important	**7**	**7**
	6	**6**
Moderately Important	**5**	**5**
	4	**4**
Slightly Important	**3**	**3**
	2	**2**
Not at all Important	**1**	**1**

Evaluation Categories	Economic	
Evaluation Factors	E) Tillamook PUD Costs	F) Community Economics (Benefits / Impacts)
Sample Measures	1) Construction costs (Infrastructure, roads, etc.) 2) Operation & maintenance 3) Time to Construct	Considerations: Job creation, business revenue, property values, construction disruption, site development options, etc.
	Rating Instructions: Circle one number in each column to rate the importance of the evaluation factor.	
Extremely Important	10	10
Very Important	9	9
	8	8
Important	7	7
	6	6
Moderately Important	5	5
	4	4
Slightly Important	3	3
	2	2
Not at all Important	1	1

Step 2: Scoring Alternatives based on Evaluation Factors

Iternative satisfies each evaluation factor. 5 = "Well-aligned" 3 = "Neutral 1 = "Poorly-aligned"

Measures Guidance	Fewer unique property owners, smaller private acreage, lower Percentage private land, fewer number of private properties with structures, and lower Percentage of route NOT co-located with existing lines is better.										Lower frequency and duration of outages, cost, and difficulty to get back on line is better.	
Evaluation Factors and Sample Measures		1) Unique land owners (#)	2) Number of tax lots	3) Privately-owned land within easement (acres)	4) Easement on privately-owned land (%)	5) Private properties with transmission structures (#)	6) % of route NOT co-located with existing electric lines	7) Buildings within 200' of transmission centerline (#)	8) Transmission structures (# 1-pole, 2-pole, 3-pole)	9) Average pole height (ft.)		VOTE: Property Effects & Visual Impacts	Overall Reliability:
East Section	Route E1	11	27	15.8	56.1%	4	72.8%	26	31 (30,0,1)	71'		5 3 1	~99%+
	Route E2	11	27	13	47.0%	5	57.7%	34	34 (33,0,1)	70'		5 3 1	~99%+
	Route E3	14	30	15.1	54.5%	8	68.7%	29	32 (31,0,1)	71'		5 3 1	~99%+
Central Section	Route C1	11	21	26	84.2%	8	76.7%	3	24 (12,5,7)	75'		5 3 1	~99%+
	Route C2	11	17	19.5	72.3%	7	80.1%	3	20 (9,6,5)	76'		5 3 1	~99%+
West Section	Route W1	2	7	45.6	100%	7	100%	0	36 (0,27,9)	54'		5 3 1	~99%+
	Route W2	2	8	48.8	100%	7	100%	0	39 (0,21,18)	57'		5 3 1	~99%+

Step 2: Scoring Alternatives based on Evaluation Factors

Iternative satisfies each evaluation factor. 5 = "Well-aligned" 3 = "Neutral 1 = "Poorly-aligned"

Measures Guidance	Fewer acres and lesser impact on practices is better.									Fewer acres of wetland and fewer number of stream crossings is better.		
Evaluation Factors and Sample Measures		1) Forestland within easement (acres)	2) Farmland within easement (acres)	3) Commercial land within easement (acres)	4) Average easement on property (%)	5) Largest easement on property (%)	6) Average structure footprint on property (%)	7) Largest structure footprint property (%)	8) % forestland route NOT co-located with existing pvt. Rds.	VOTE: Impacts to Farm / Forest / Commercial	1) Wetland within easement (acres)	2) Streams that cross transmission line (#)
East Section		0	13	3.9	10.7%	33.2%	< 0.01%	0.1%	N/A	5 3 1	4.8	5
		0	12.3	4.9	7.1%	52.9%	< 0.01%	0.1%	N/A	5 3 1	4.7	4
		0	13.5	3.8	11.0%	47.4%	< 0.01%	0.1%	N/A	5 3 1	6.4	6
Central Section		1.9	12.6	0	3.7%	11.5%	< 0.01%	< 0.01%	N/A	5 3 1	25.3	12
		1.9	12.7	0	4.5%	10.1%	< 0.01%	< 0.01%	N/A	5 3 1	21.5	12
West Section		39.9	0	0	1.5%	2.5%	< 0.01%	< 0.01%	92.1%	5 3 1	0	20
		42.9	0	0	2.7%	7.6%	< 0.01%	0.1%	85.8%	5 3 1	0	12

Step 2: Scoring Alternatives based on Evaluation Factors

Iternative satisfies each evaluation factor. 5 = "Well-aligned" 3 = "Neutral 1 = "Poorly-aligned"

Measures Guidance	Lower costs of construction, operation & maintenance, and less time to construct is better.				Subjective valuation of the above considerations: Net between positive and negative factors.		
Evaluation Factors and Sample Measures	1) Estimated Construction costs (thousands of $)	2) Estimated Annual O & M (thousands of $)	3) Time to Construct (months)	VOTE: Tillamook PUD Costs	Your Notes:	VOTE: Community Economics (Benefits / Impacts)	
East Section		1,300	6.5	3.5	5 3 1		5 3 1
		1,500	7.5	4	5 3 1		5 3 1
		1,400	7.0	3	5 3 1		5 3 1
Central Section		2,900	14.5	6	5 3 1		5 3 1
		2,600	13.0	5	5 3 1		5 3 1
West Section		1,400	7.0	5	5 3 1		5 3 1
		1,900	9.5	5	5 3 1		5 3 1

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

QUESTIONS & ANSWERS

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

PUBLIC COMMENTS

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

NEXT STEPS

NEXT STEPS

- 10/17/2016 – TBCC Property Owner-Focused Public Workshop and Poll
- 10/25/2016 – PUD Public-Focused Public Workshop and Poll
- 11/15/2016 - Staff Recommendation to Board at Regular Board Meeting
- 12/13/2016 – Board Adopts Route Option at Regular Board Meeting
- Projected Timeline from Route Selection:
  - Permitting: Year 1
  - Construction: Years 2 and 3
  - Energization: Upon completion

TILLAMOOK TO OCEANSIDE TRANSMISSION LINE PROJECT OCTOBER 13, 2016 BOARD WORKSHOP

MEETING CONCLUSION: THANK YOU!

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 206

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

PARCEL OWNERSHIP MAP

October 6, 2017

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- TILLAMOOK PUD
- U S A

N

0 75
Feet

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Map 01 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09300000600
Owner: USA
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- PORT OF TILLAMOOK BAY RAILROAD
- TILLAMOOK PUD
- U S A

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Feet

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Map 02 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09300000701
Owner: TILLAMOOK PUD
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- PORT OF TILLAMOOK BAY RAILROAD
- TILLAMOOK PUD
- U S A

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Map 03 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09300000900
Owner: HOGAN, DAVID and RITA
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- PORT OF TILLAMOOK BAY RAILROAD
- TILLAMOOK PUD
- U S A

N

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Feet

Map 04 of 43
Project Parcel Owner Mapbook
Tax Lot: rail3
Owner: PORT OF TILLAMOOK BAY RAILROAD
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- PORT OF TILLAMOOK BAY RAILROAD

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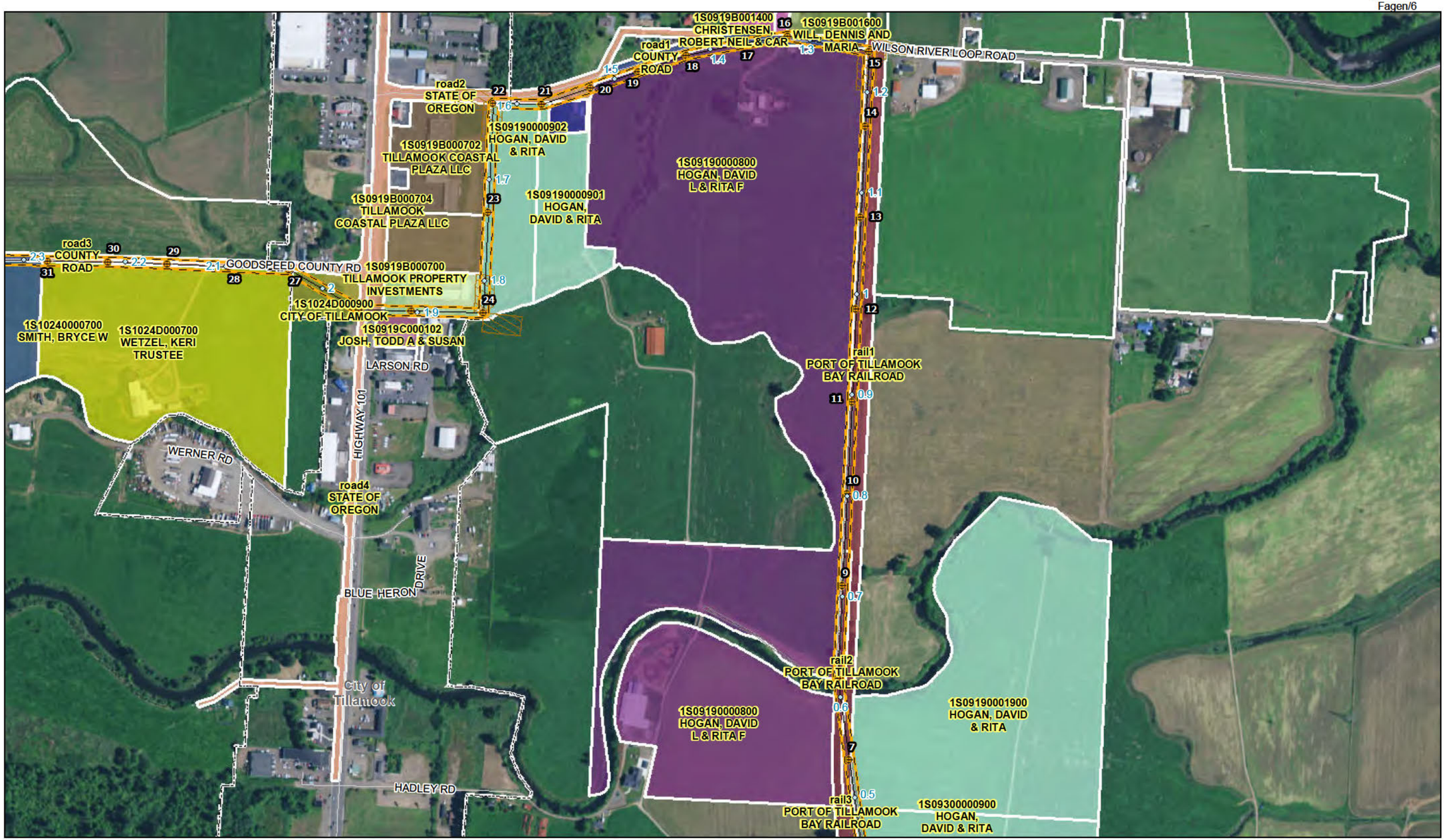
Map 05 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09190001900
Owner: HOGAN, DAVID and RITA
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- BELEN, TOBIN
- CHRISTENSEN, ROBERT NEIL & CAR
- CITY OF TILLAMOOK
- COUNTY ROAD
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- JOSH, TODD A & SUSAN
- PORT OF TILLAMOOK BAY RAILROAD
- SMITH, BRYCE W
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS
- WETZEL, KERI TRUSTEE
- WILL, DENNIS AND MARIA

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Map 06 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09190000800
Owner: HOGAN, DAVID L and RITA F
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- PORT OF TILLAMOOK BAY RAILROAD

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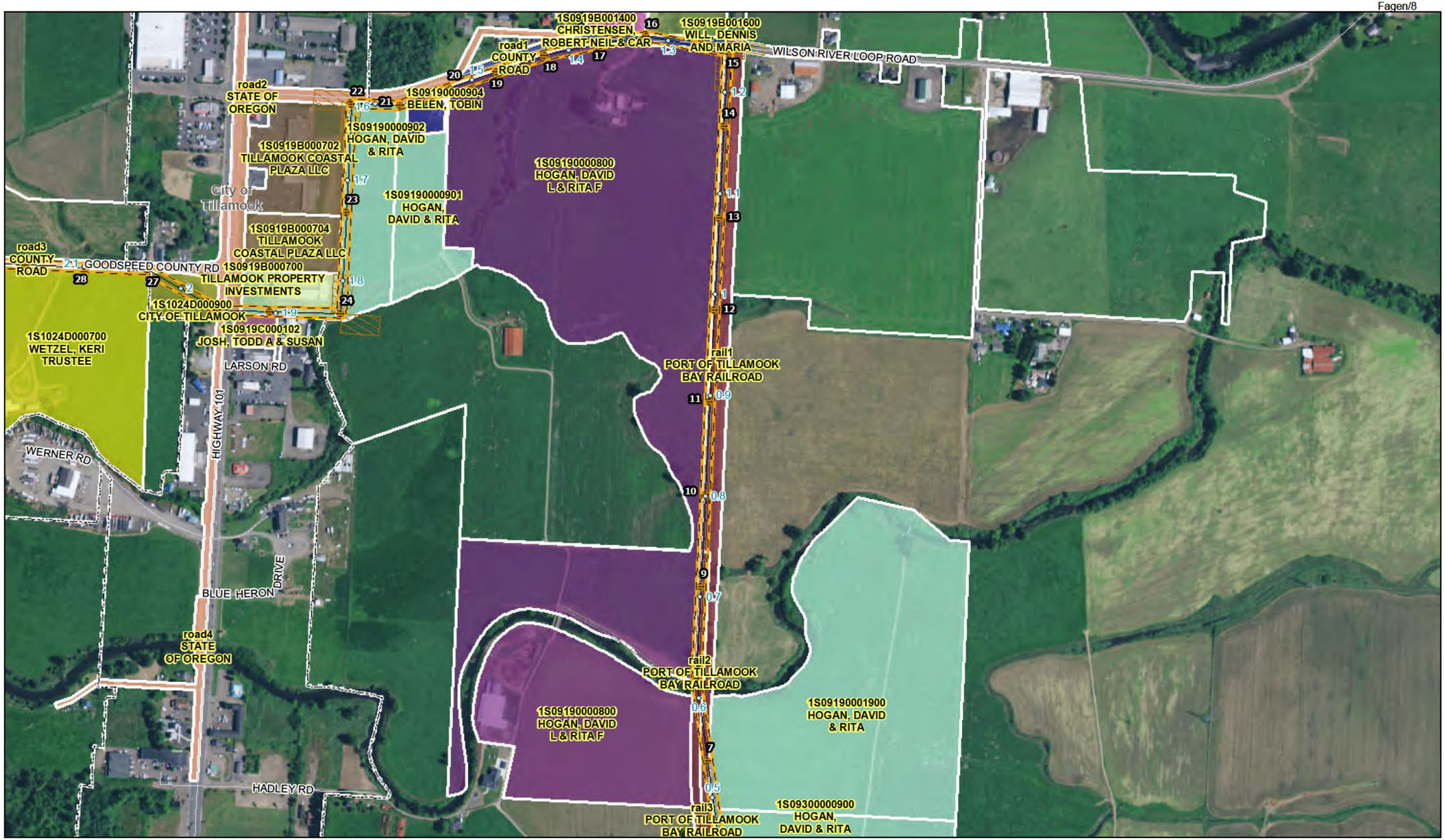
Map 07 of 43
Project Parcel Owner Mapbook
Tax Lot: rail2
Owner: PORT OF TILLAMOOK BAY RAILROAD
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- BELEN, TOBIN
- CHRISTENSEN, ROBERT NEIL & CAR
- CITY OF TILLAMOOK
- COUNTY ROAD
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- JOSH, TODD A & SUSAN
- PORT OF TILLAMOOK BAY RAILROAD
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS
- WETZEL, KERI TRUSTEE
- WILL, DENNIS AND MARIA

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Feet

Map 08 of 43
Project Parcel Owner Mapbook
Tax Lot: rail1
Owner: PORT OF TILLAMOOK BAY RAILROAD
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- BELEN, TOBIN
- CHRISTENSEN, ROBERT NEIL & CAR
- COUNTY ROAD
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- PORT OF TILLAMOOK BAY RAILROAD
- STATE OF OREGON
- WILL, DENNIS AND MARIA

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Map 09 of 43
Project Parcel Owner Mapbook
Tax Lot: road1
Owner: COUNTY ROAD
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CHRISTENSEN, ROBERT NEIL & CAR
- COUNTY ROAD
- HOGAN, DAVID L & RITA F
- PORT OF TILLAMOOK BAY RAILROAD
- WILL, DENNIS AND MARIA

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Map 10 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S0919B001600
Owner: WILL, DENNIS AND MARIA
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CHRISTENSEN, ROBERT NEIL & CAR
- COUNTY ROAD
- STATE OF OREGON
- WILL, DENNIS AND MARIA

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Map 11 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S0919B001500
Owner: CHRISTENSEN, ROBERT NEIL and CAR
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CHRISTENSEN, ROBERT NEIL & CAR
- COUNTY ROAD
- STATE OF OREGON
- WILL, DENNIS AND MARIA

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Feet

Map 12 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S0919B001400
Owner: CHRISTENSEN, ROBERT NEIL and CAR
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- BELEN, TOBIN
- CHRISTENSEN, ROBERT NEIL & CAR
- CITY OF TILLAMOOK
- COUNTY ROAD
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- JOSH, TODD A & SUSAN
- PORT OF TILLAMOOK BAY RAILROAD
- SMITH, BRYCE W
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS
- WETZEL, KERI TRUSTEE
- WILL, DENNIS AND MARIA

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Map 13 of 43
Project Parcel Owner Mapbook
Tax Lot: road2
Owner: STATE OF OREGON
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- BELEN, TOBIN
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- STATE OF OREGON

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Map 14 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09190000904
Owner: BELEN, TOBIN
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- BELEN, TOBIN
- CITY OF TILLAMOOK
- COUNTY ROAD
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- JOSH, TODD A & SUSAN
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS

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Map 15 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09190000901
Owner: HOGAN, DAVID and RITA
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- BELEN, TOBIN
- CITY OF TILLAMOOK
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- JOSH, TODD A & SUSAN
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS

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Map 16 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S09190000902
Owner: HOGAN, DAVID and RITA
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC

N

0 75
Feet

Map 17 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S0919B000702
Owner: TILLAMOOK COASTAL PLAZA LLC
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- HOGAN, DAVID & RITA
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS

N

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Feet

Map 18 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S0919B000704
Owner: TILLAMOOK COASTAL PLAZA LLC
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CITY OF TILLAMOOK
- HOGAN, DAVID & RITA
- JOSH, TODD A & SUSAN
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS

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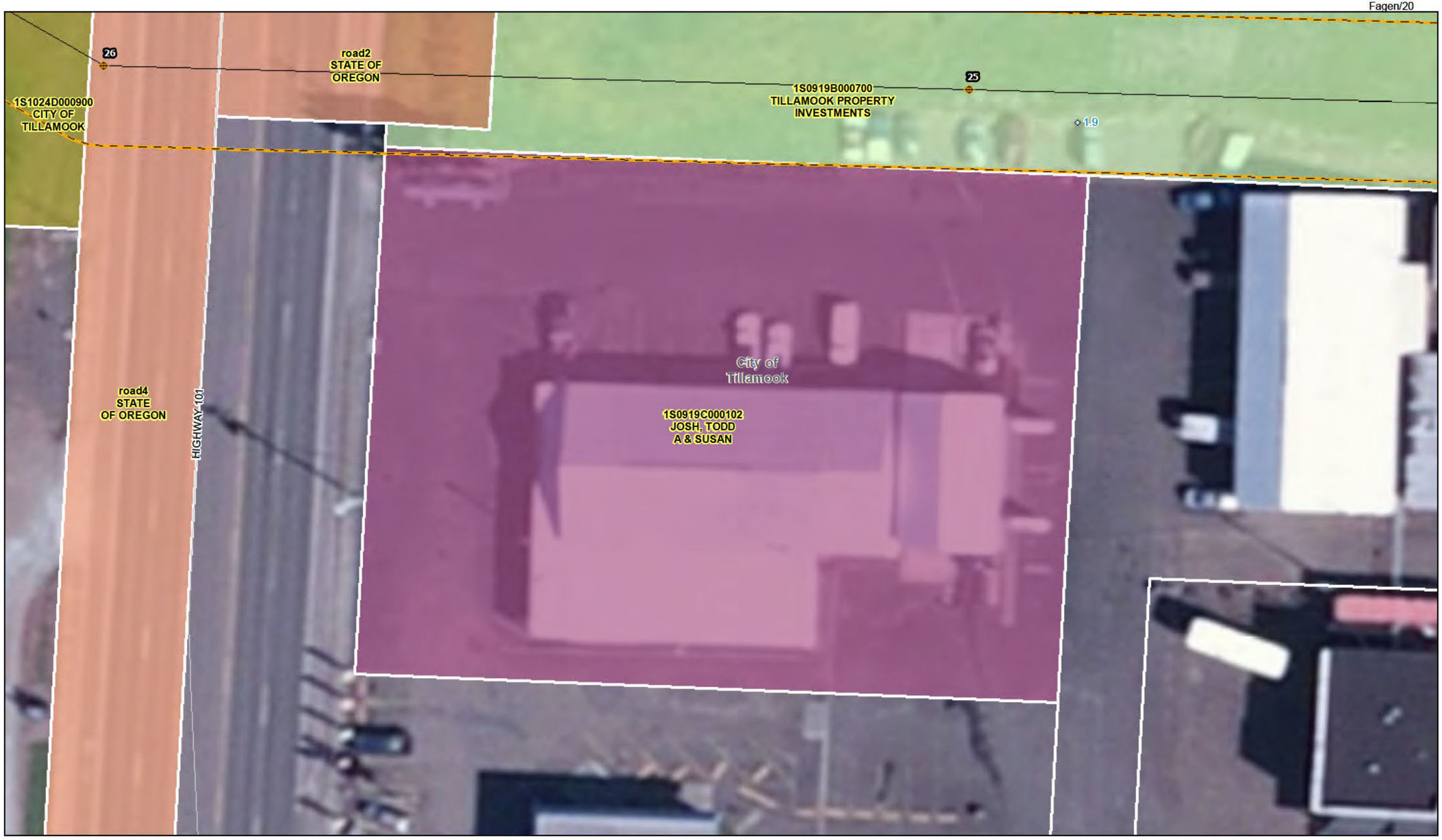
Map 19 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S0919B000700
Owner: TILLAMOOK PROPERTY INVESTMENTS
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CITY OF TILLAMOOK
- JOSH, TODD A & SUSAN
- STATE OF OREGON
- TILLAMOOK PROPERTY INVESTMENTS

N

0 30
Feet

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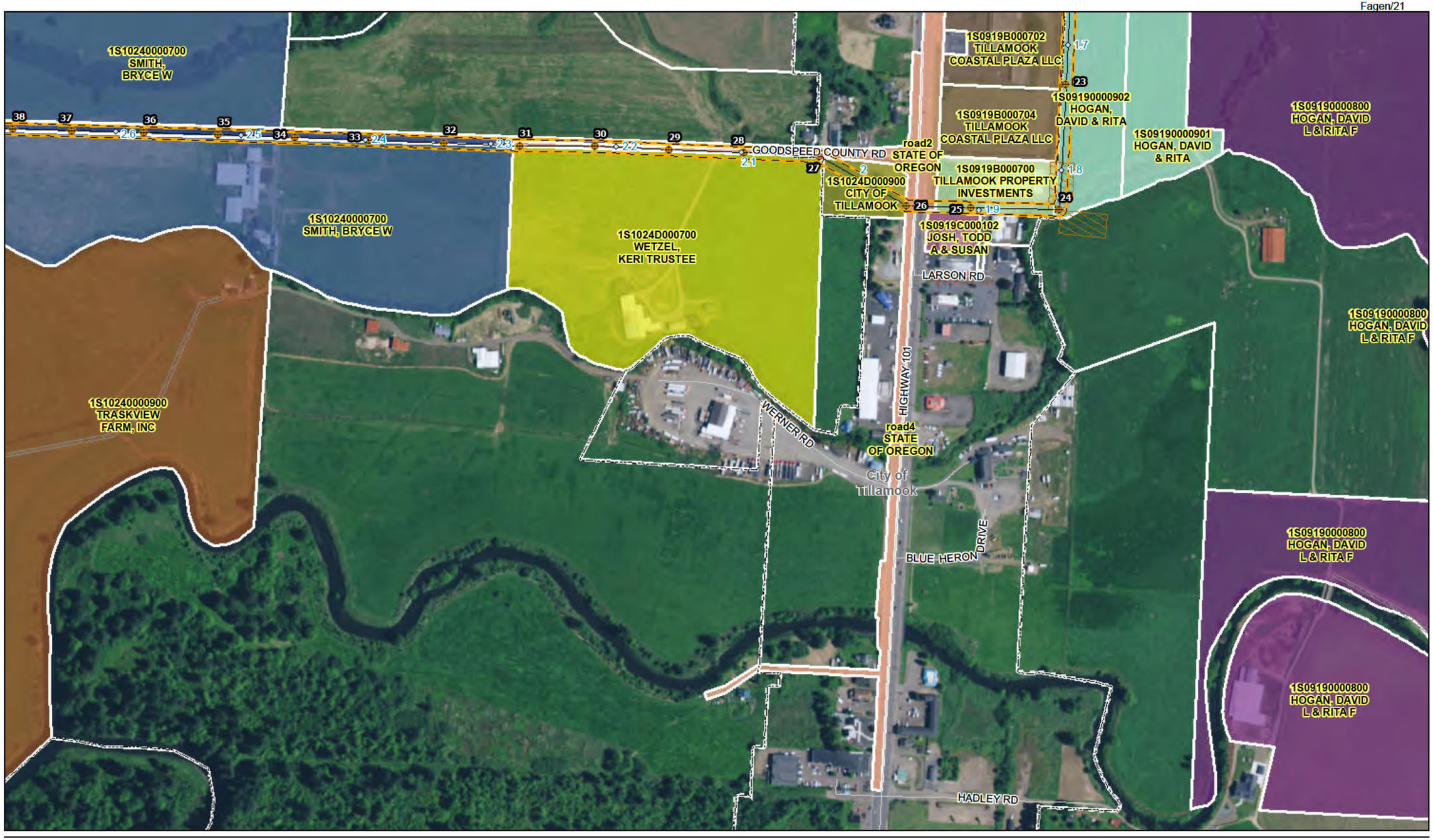
Map 20 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S0919C000102
Owner: JOSH, TODD A and SUSAN
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CITY OF TILLAMOOK
- COUNTY ROAD
- HOGAN, DAVID & RITA
- HOGAN, DAVID L & RITA F
- JOSH, TODD A & SUSAN
- SMITH, BRYCE W
- STATE OF OREGON
- TILLAMOOK COASTAL PLAZA LLC
- TILLAMOOK PROPERTY INVESTMENTS
- TRASKVIEW FARM, INC
- WETZEL, KERI TRUSTEE

N

0 390
Feet

Map 21 of 43
Project Parcel Owner Mapbook
Tax Lot: road4
Owner: STATE OF OREGON
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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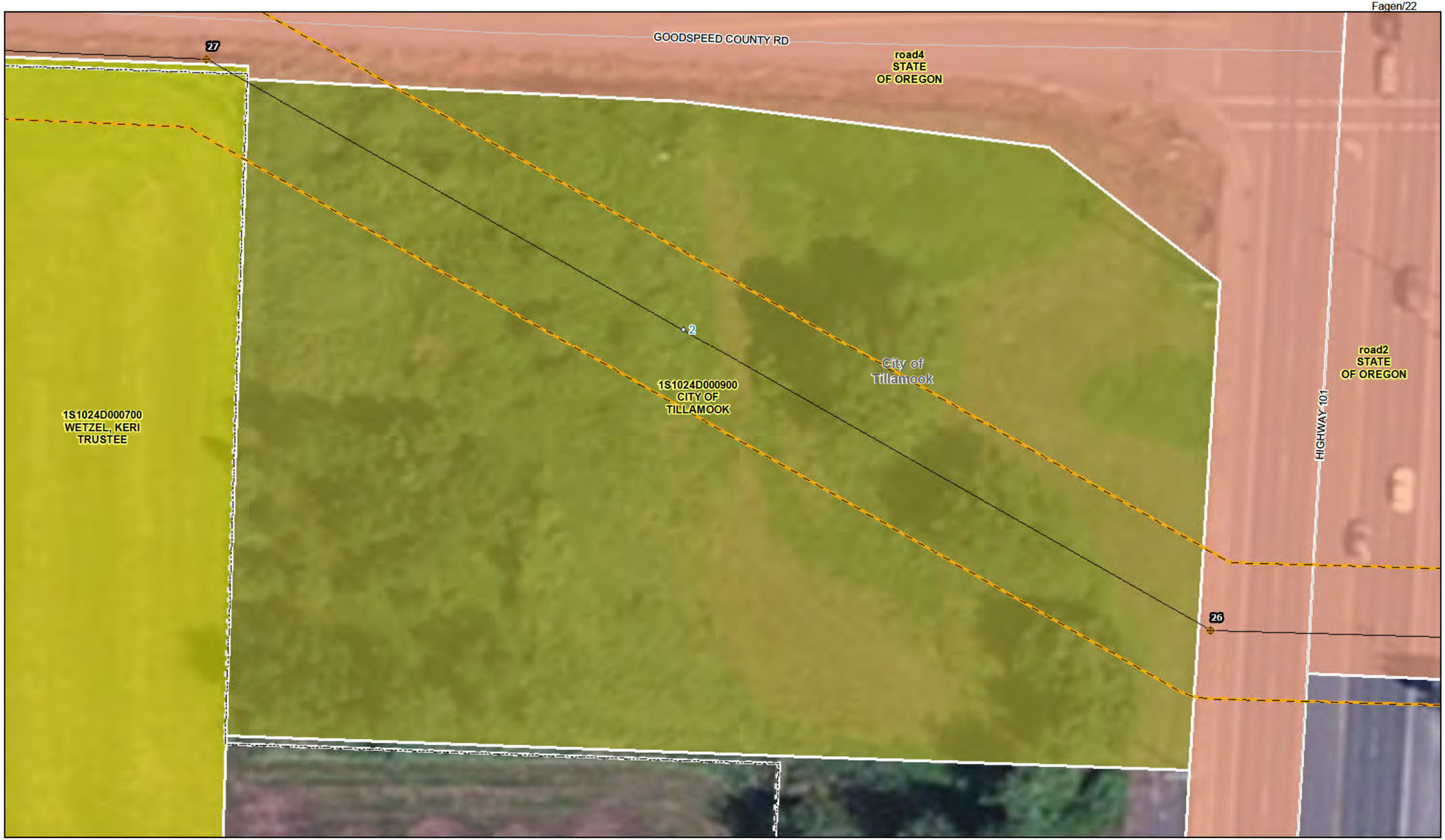

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CITY OF TILLAMOOK
- STATE OF OREGON
- WETZEL, KERI TRUSTEE

N

0 30
Feet

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Map 22 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S1024D000900
Owner: CITY OF TILLAMOOK
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- CITY OF TILLAMOOK
- COUNTY ROAD
- JOSH, TODD A & SUSAN
- SMITH, BRYCE W
- STATE OF OREGON
- TILLAMOOK PROPERTY INVESTMENTS
- WETZEL, KERI TRUSTEE

N

0 140
Feet

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Map 23 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S1024D000700
Owner: WETZEL, KERI TRUSTEE
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- AUFDERMAUER, BARBARA L TRUSTEE
- CITY OF TILLAMOOK
- COUNTY ROAD
- SMITH, BRYCE W
- STATE OF OREGON
- TILLAMOOK COUNTY
- TRASKVIEW FARM, INC
- WETZEL, KERI TRUSTEE

N

0 340
Feet

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Map 24 of 43
Project Parcel Owner Mapbook
Tax Lot: road3
Owner: COUNTY ROAD
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- COUNTY ROAD
- SMITH, BRYCE W
- STATE OF OREGON
- TILLAMOOK COUNTY
- TRASKVIEW FARM, INC
- WETZEL, KERI TRUSTEE

N

0 310
Feet

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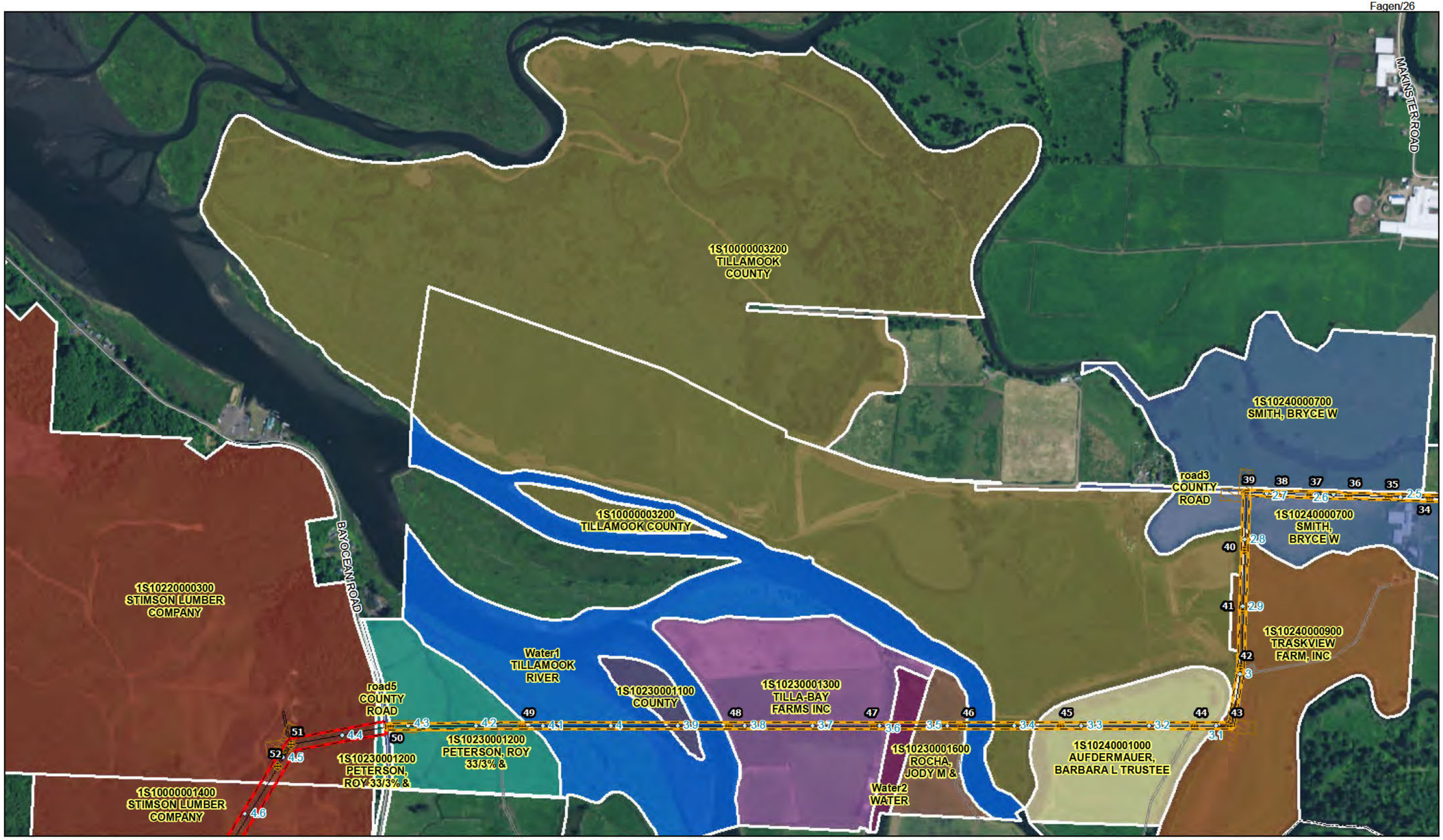
Map 25 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10240000700
Owner: SMITH, BRYCE W
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- AUFDERMAUER, BARBARA L TRUSTEE
- COUNTY
- COUNTY ROAD
- PETERSON, ROY 33/3% &
- ROCHA, JODY M &
- SMITH, BRYCE W
- STIMSON LUMBER COMPANY
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER
- TRASKVIEW FARM, INC
- WATER

N

0 740
Feet

Map 26 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10000003200
Owner: TILLAMOOK COUNTY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- AUFDERMAUER, BARBARA L TRUSTEE
- COUNTY ROAD
- ROCHA, JODY M &
- SMITH, BRYCE W
- STATE OF OREGON
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER
- TRASKVIEW FARM, INC
- WATER
- WETZEL, KERI TRUSTEE

N

0 410
Feet

Map 27 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10240000900
Owner: TRASKVIEW FARM, INC
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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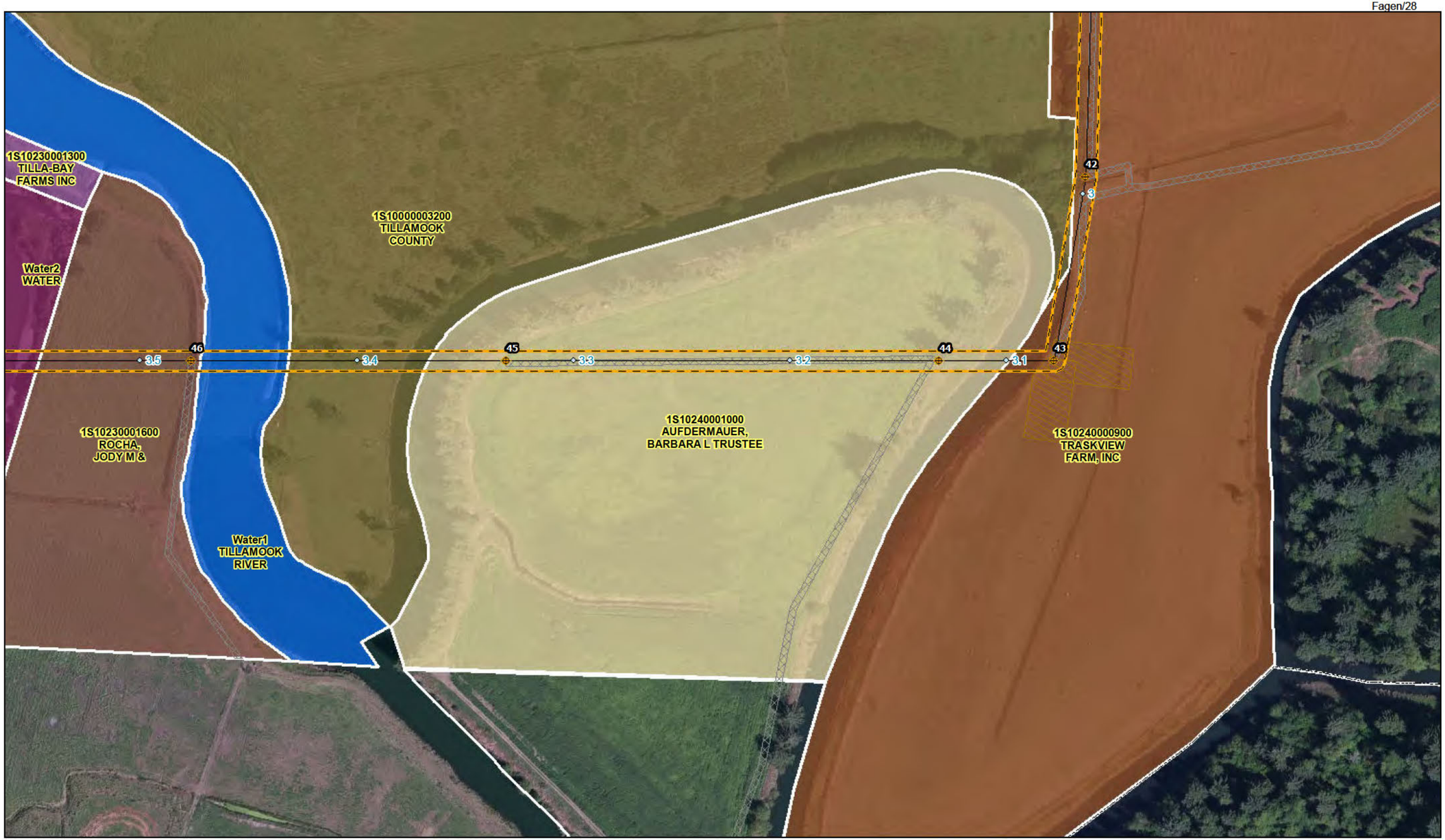

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- AUFDERMAUER, BARBARA L TRUSTEE
- ROCHA, JODY M &
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER
- TRASKVIEW FARM, INC
- WATER

N

0 240
Feet

Map 28 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10240001000
Owner: AUFDERMAUER, BARBARA L TRUSTEE
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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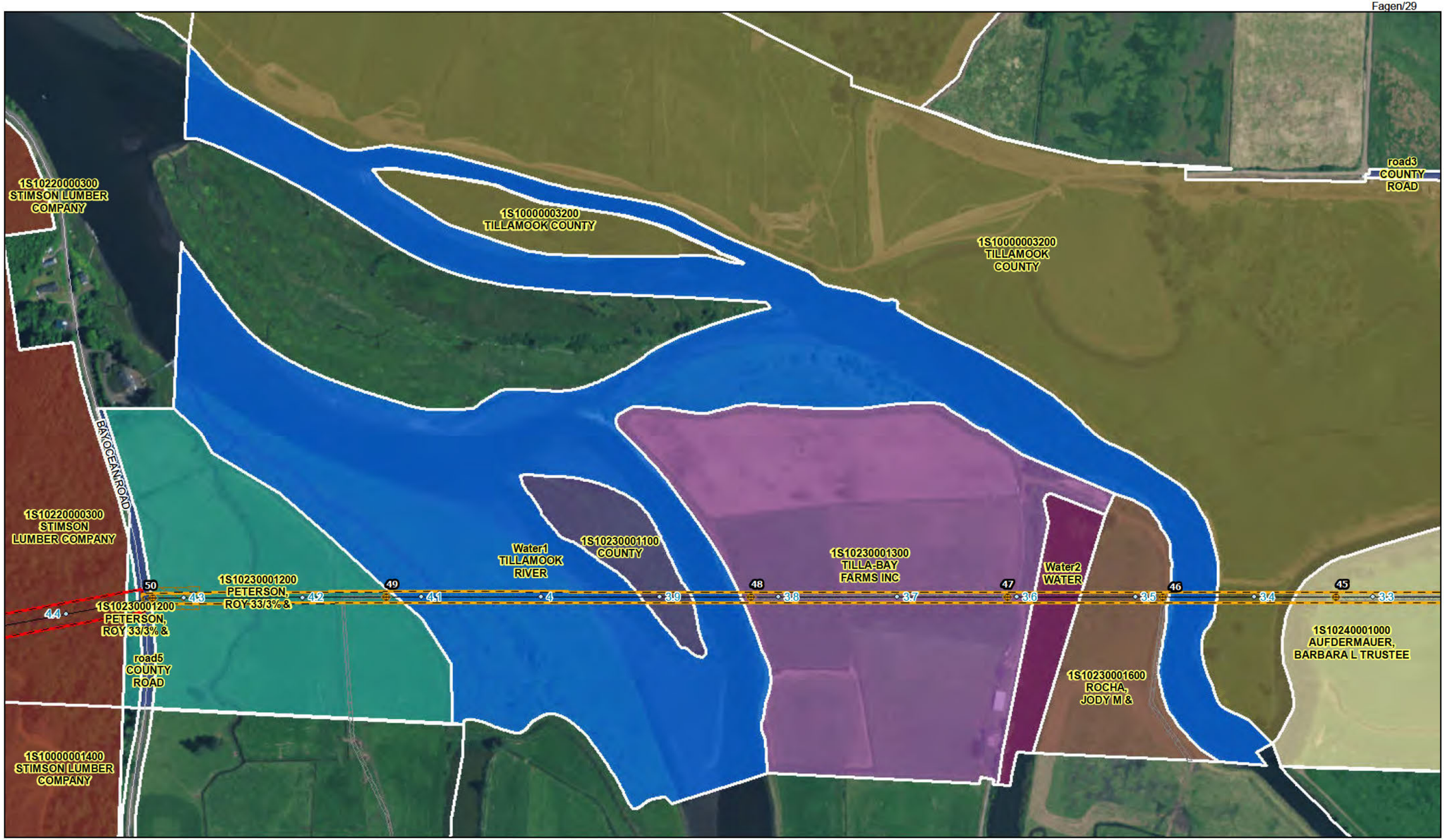

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- AUFDERMAUER, BARBARA L TRUSTEE
- COUNTY
- COUNTY ROAD
- PETERSON, ROY 33/3% &
- ROCHA, JODY M &
- STIMSON LUMBER COMPANY
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER
- WATER

N

0 420
Feet

Map 29 of 43
Project Parcel Owner Mapbook
Tax Lot: Water1
Owner: TILLAMOOK RIVER
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- AUFDERMAUER, BARBARA L TRUSTEE
- ROCHA, JODY M &
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER
- WATER

N

0 150
Feet

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Map 30 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10230001600
Owner: ROCHA, JODY M
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- AUFDERMAUER, BARBARA L TRUSTEE
- ROCHA, JODY M &
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER
- WATER

N

0 160
Feet

Map 31 of 43
Project Parcel Owner Mapbook
Tax Lot: Water2
Owner: WATER
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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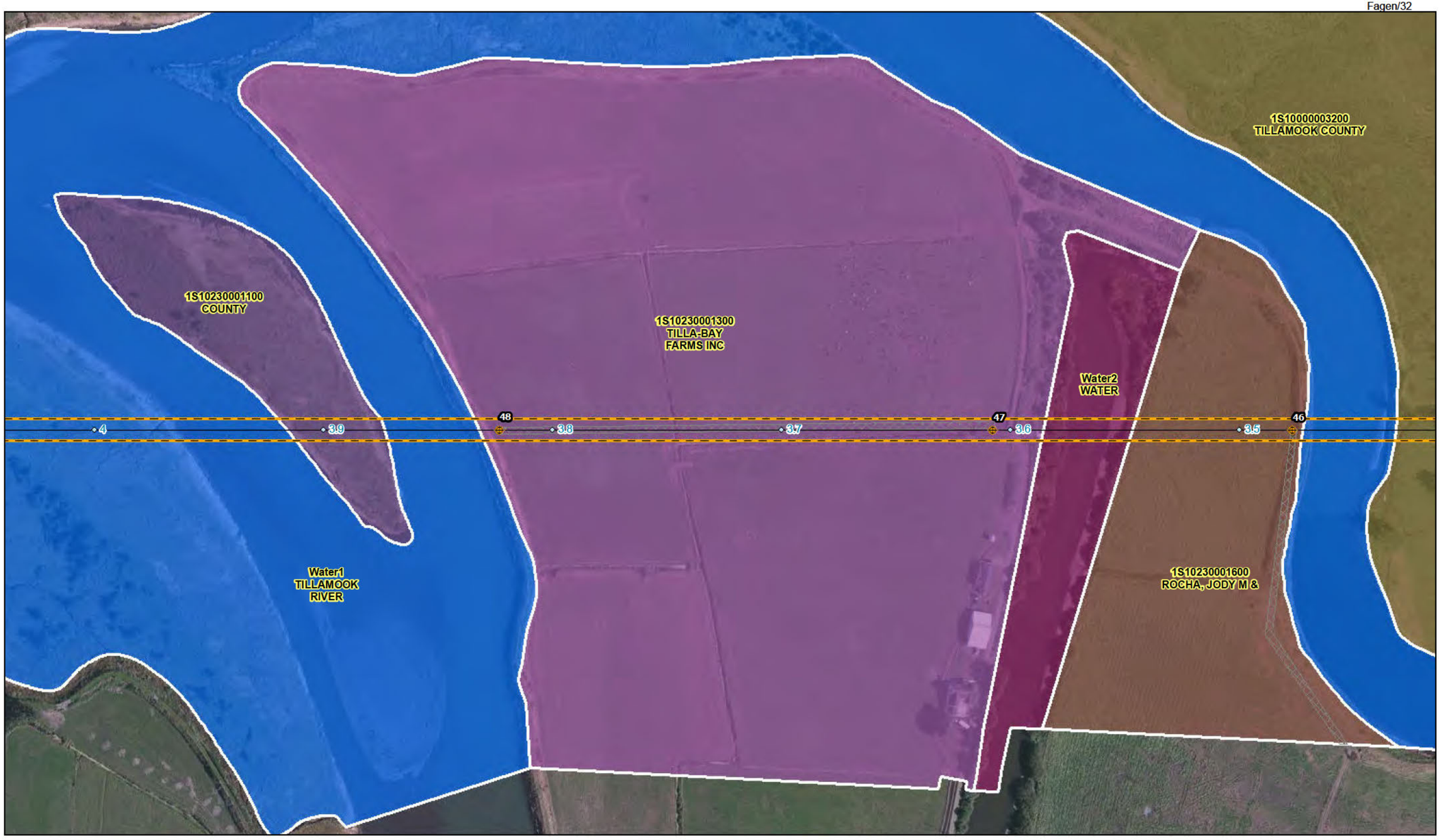

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- COUNTY
- ROCHA, JODY M &
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER
- WATER

N

0 210
Feet

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Map 32 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10230001300
Owner: TILLA-BAY FARMS INC
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- COUNTY
- PETERSON, ROY 33/3% &
- TILLA-BAY FARMS INC
- TILLAMOOK RIVER

N

0 100
Feet

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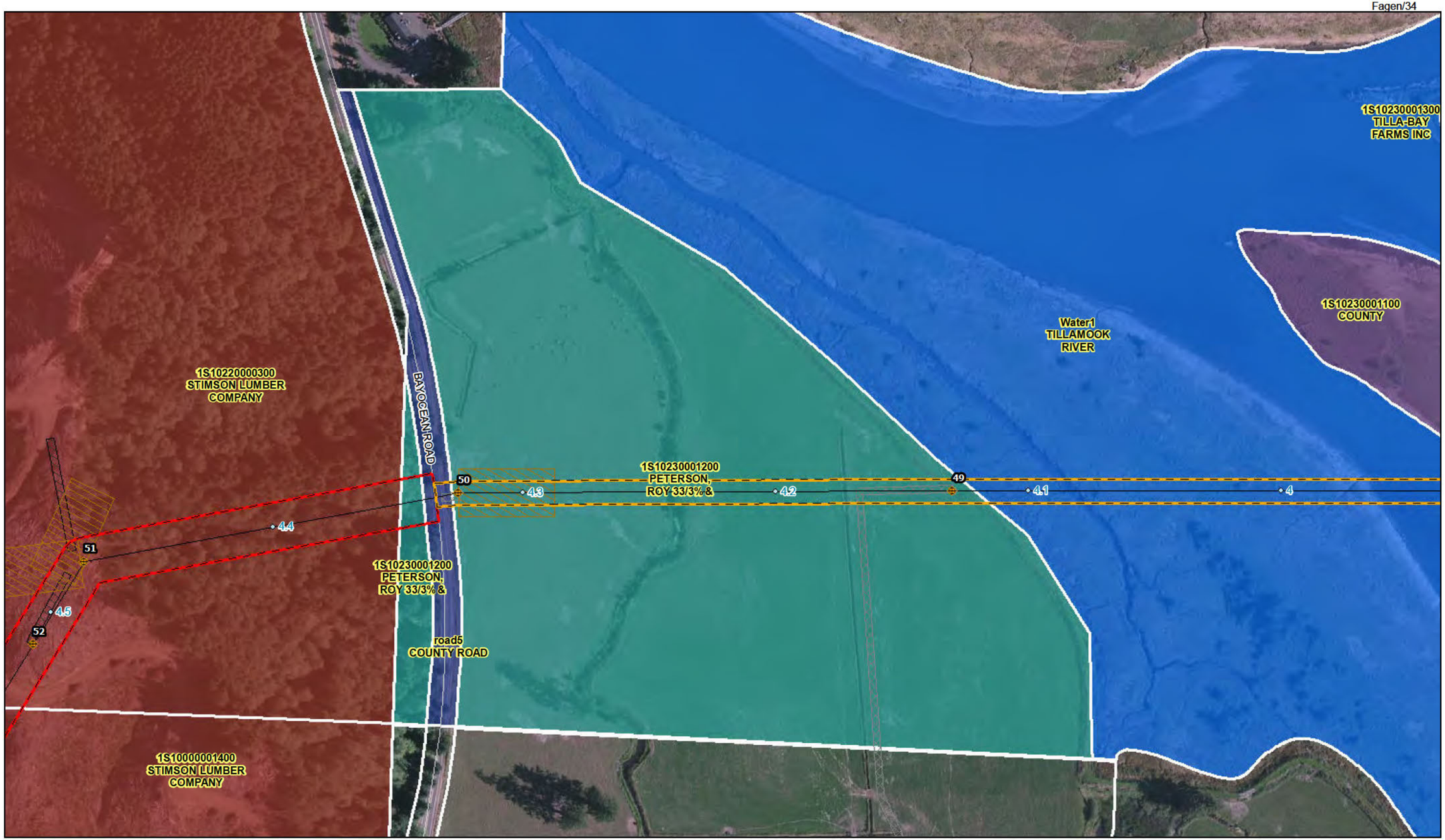
Map 33 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10230001100
Owner: TILLAMOOK COUNTY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- COUNTY
- COUNTY ROAD
- PETERSON, ROY 33/3% &
- STIMSON LUMBER COMPANY
- TILLA-BAY FARMS INC
- TILLAMOOK RIVER

N

0 190
Feet

Map 34 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10230001200
Owner: PETERSON, ROY 33/3%
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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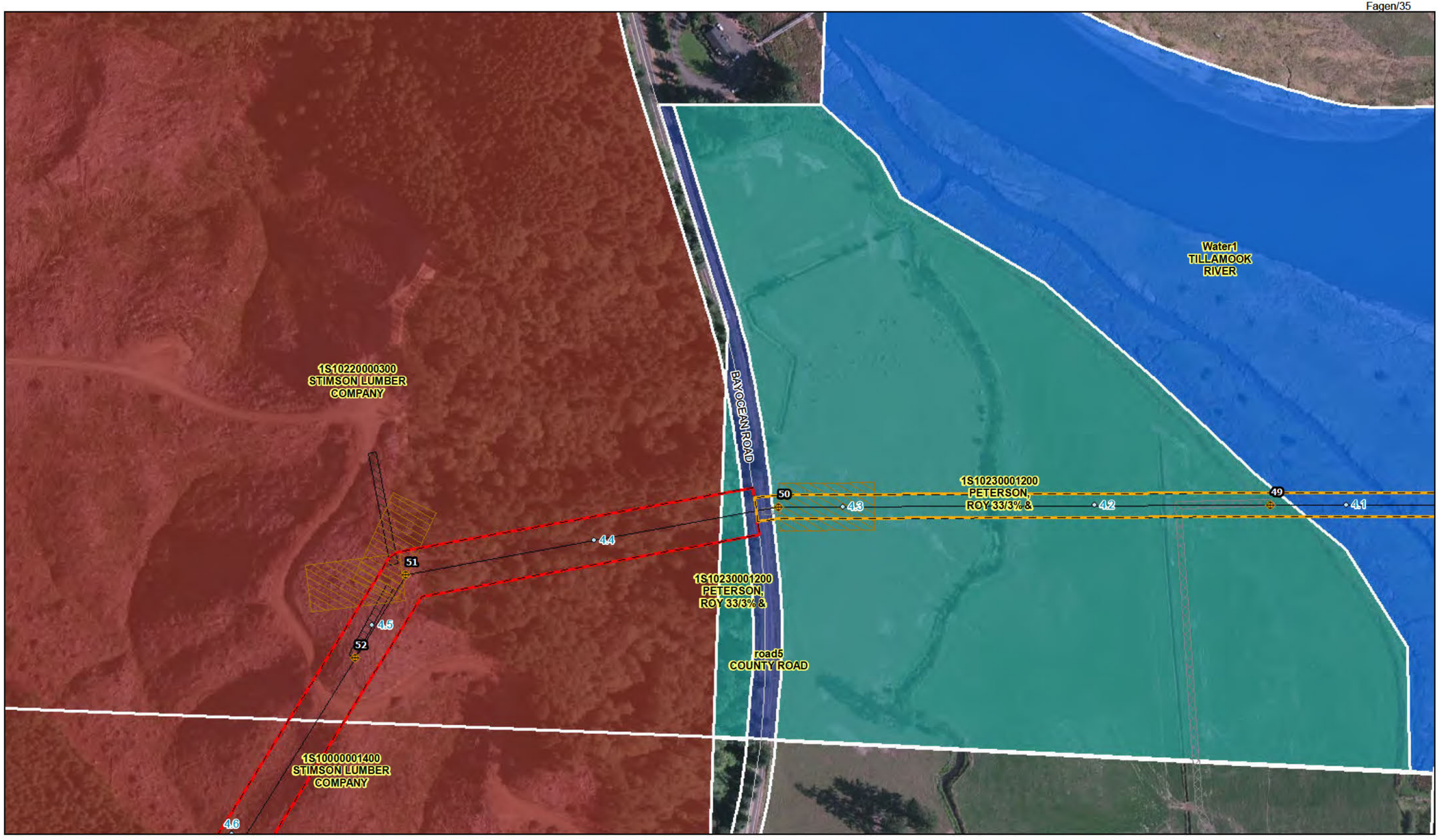

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- COUNTY ROAD
- PETERSON, ROY 33/3% &
- STIMSON LUMBER COMPANY
- TILLAMOOK RIVER

N

0 190
Feet

Map 35 of 43
Project Parcel Owner Mapbook
Tax Lot: road5
Owner: TILLAMOOK COUNTY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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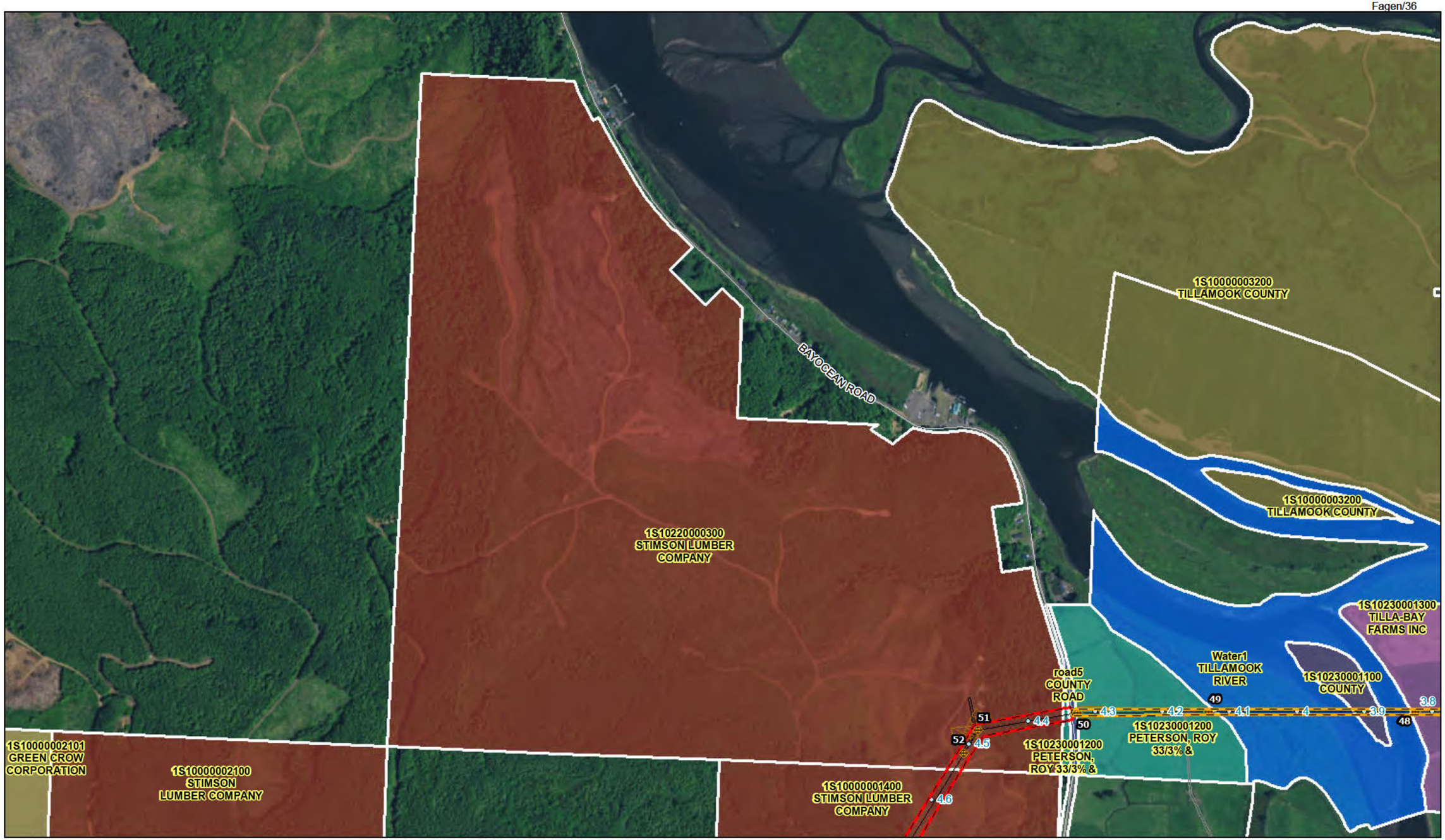


LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

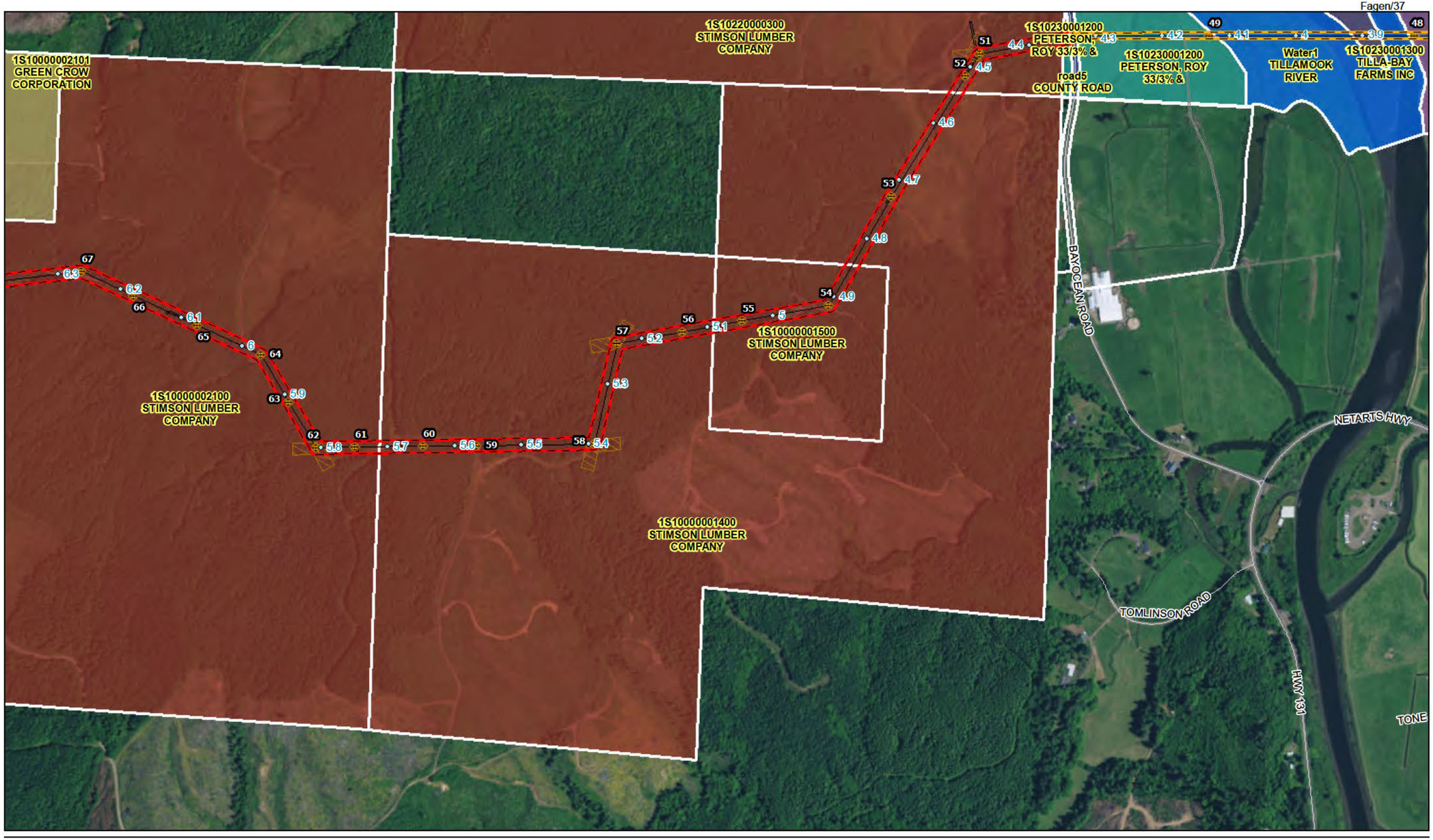
Tax Lot Owner

- COUNTY
- COUNTY ROAD
- GREEN CROW CORPORATION
- PETERSON, ROY 33/3% &
- STIMSON LUMBER COMPANY
- TILLA-BAY FARMS INC
- TILLAMOOK COUNTY
- TILLAMOOK RIVER

N

0 740
Feet

Map 36 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10220000300
Owner: STIMSON LUMBER COMPANY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- COUNTY
- COUNTY ROAD
- GREEN CROW CORPORATION
- PETERSON, ROY 33/3% &
- STIMSON LUMBER COMPANY
- TILLA-BAY FARMS INC
- TILLAMOOK RIVER

N

0 740
Feet

Map 37 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10000001400
Owner: STIMSON LUMBER COMPANY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- STIMSON LUMBER COMPANY

N

0 200
Feet

Map 38 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10000001500
Owner: STIMSON LUMBER COMPANY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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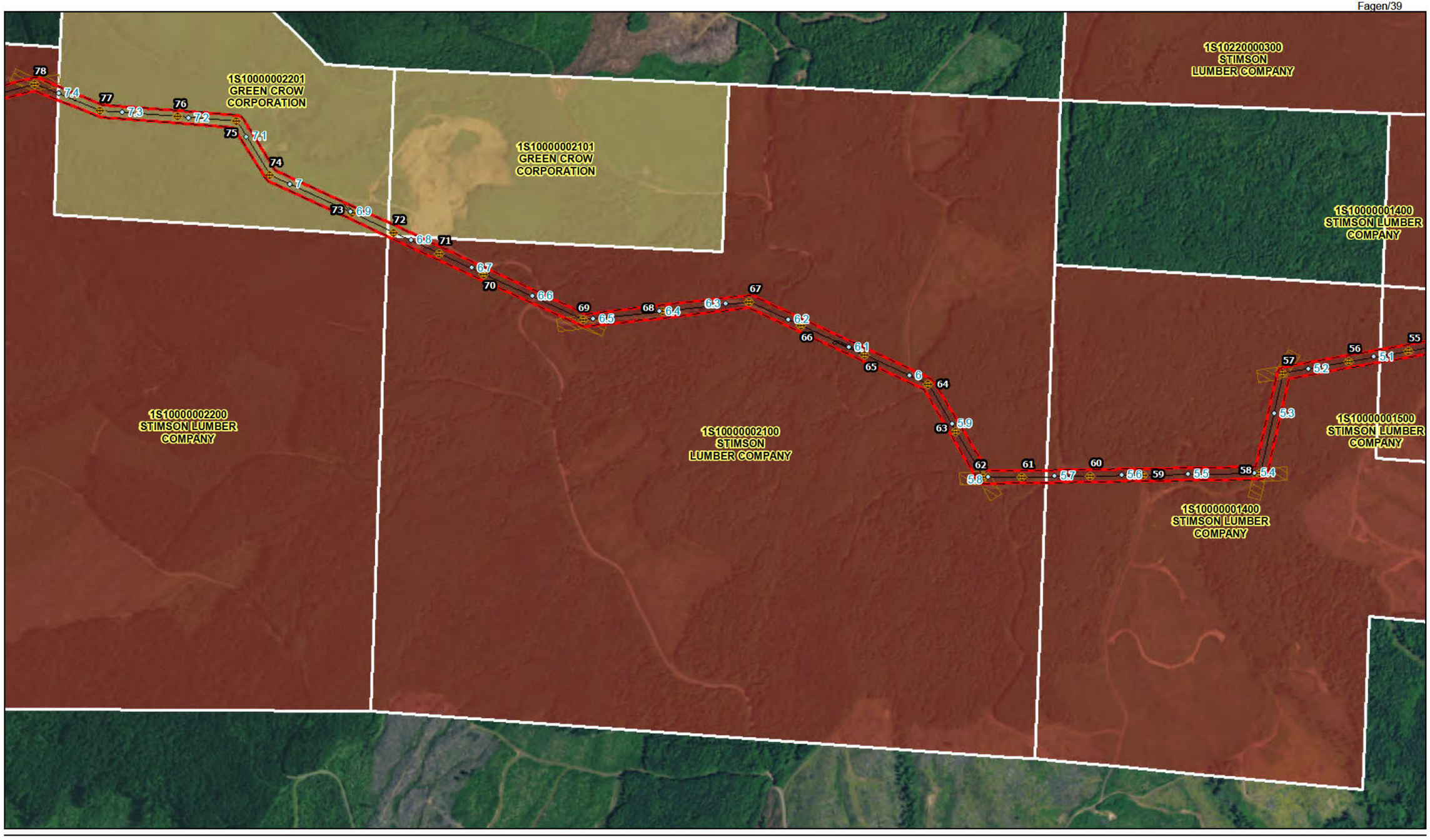

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- GREEN CROW CORPORATION
- STIMSON LUMBER COMPANY

N

0 740
Feet

Map 39 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10000002100
Owner: STIMSON LUMBER COMPANY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

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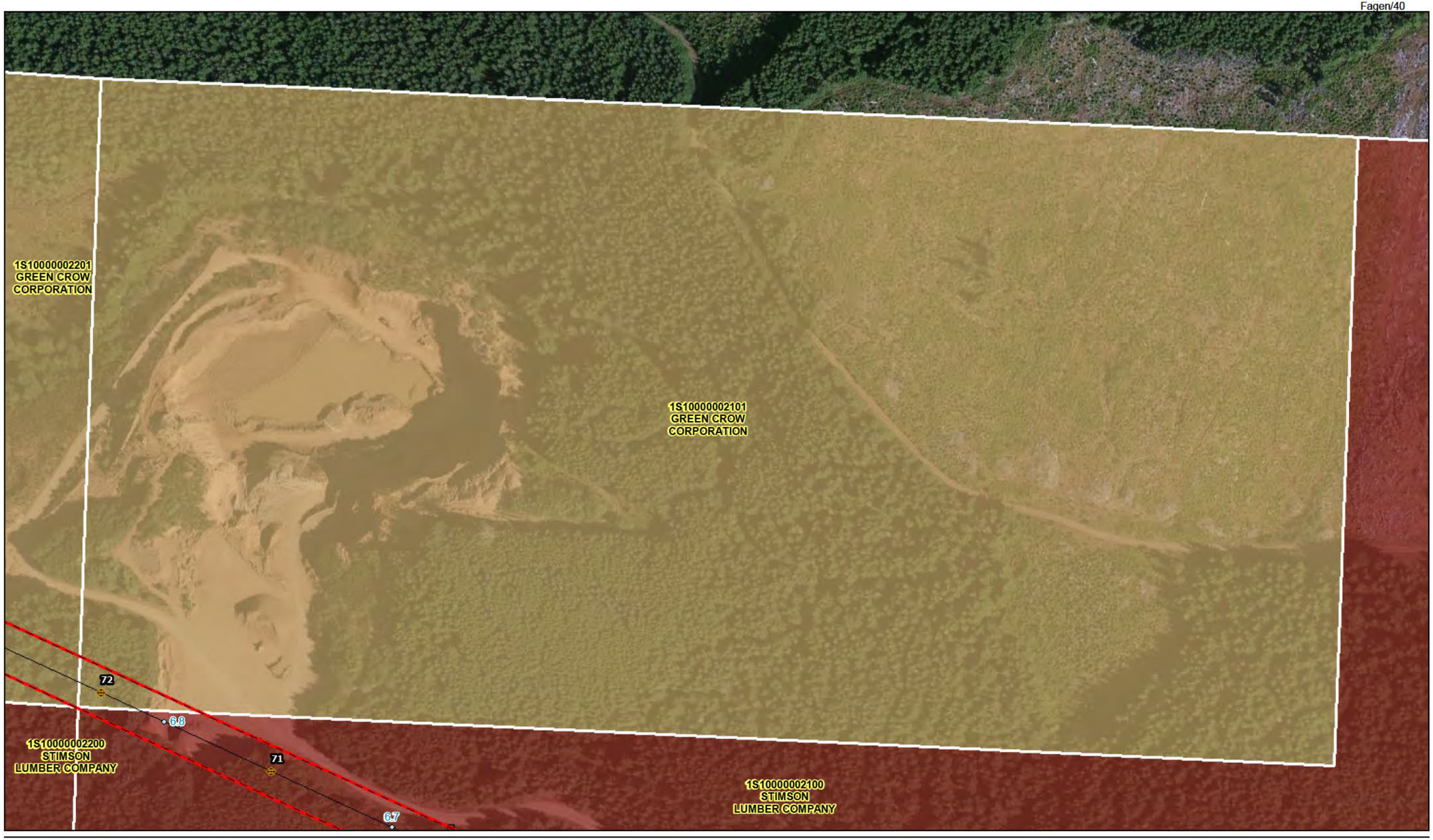

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- GREEN CROW CORPORATION
- STIMSON LUMBER COMPANY

N

0 200
Feet

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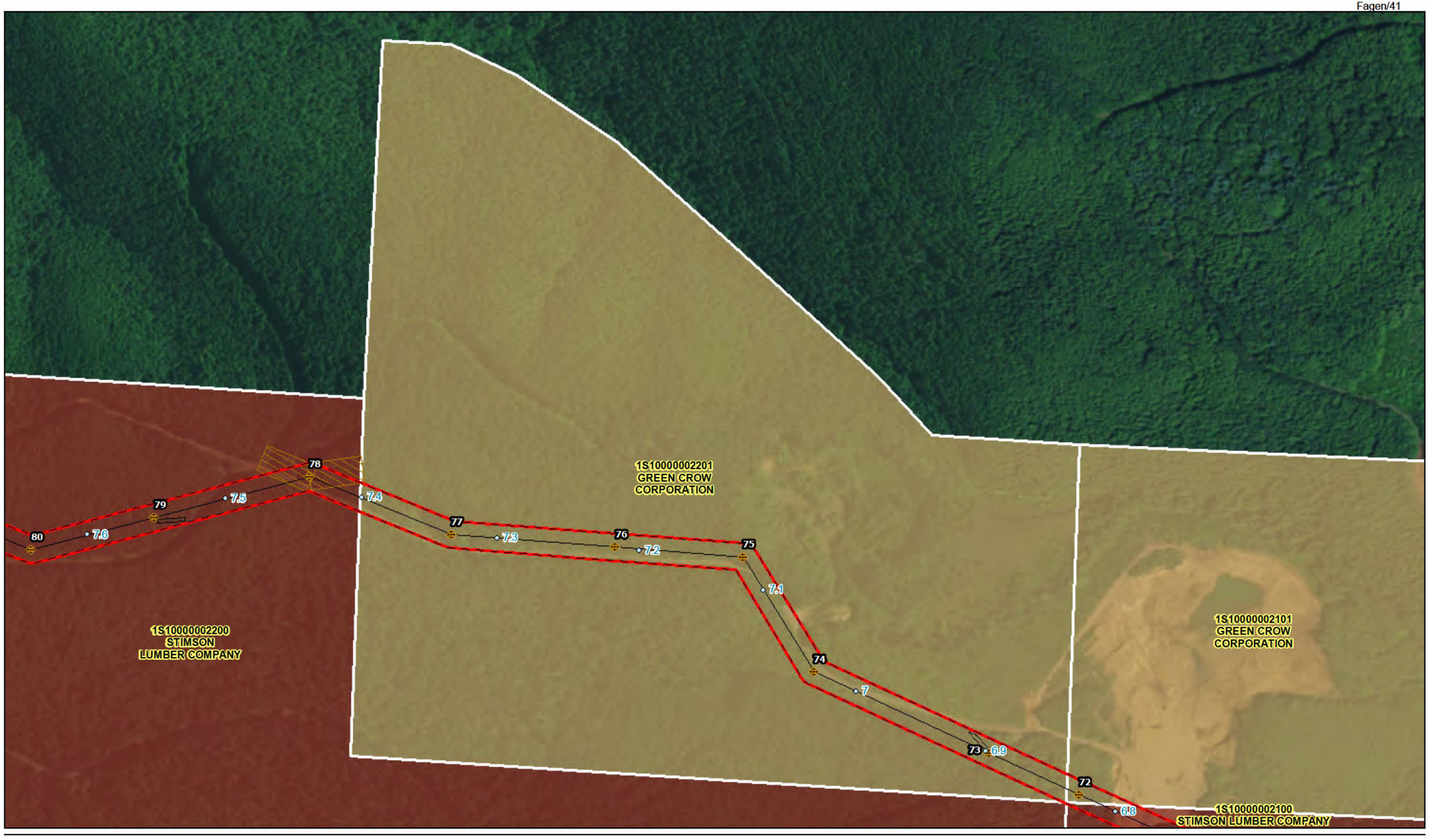
Map 40 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10000002101
Owner: GREEN CROW CORPORATION
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- GREEN CROW CORPORATION
- STIMSON LUMBER COMPANY

N

0 340
Feet

BAOTSP01 C:\PROJ\TILLAMOOKPUD\412210\GIS\MAPFILES\2017\MISC\PROJECT_PARCEL_MAPBOOK_090717.MXD CARCHER 9/7/2017 7:23:08 PM

Map 41 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10000002201
Owner: GREEN CROW CORPORATION
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

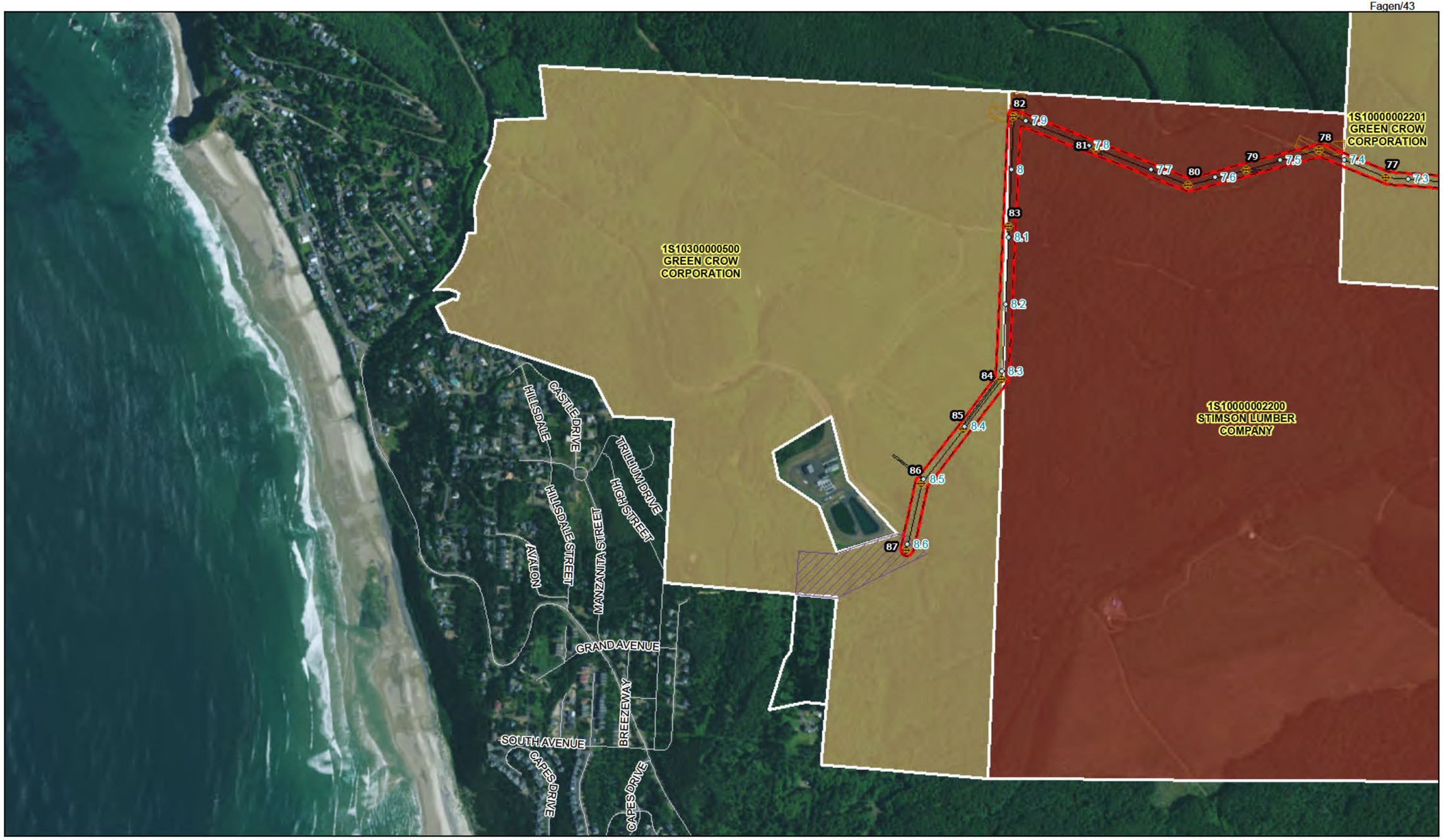
- GREEN CROW CORPORATION
- STIMSON LUMBER COMPANY

N

0 740
Feet

BAOTSP01 C:\PROJ\TILLAMOOKPUD\412210\GIS\MAPFILES\2017\MISC\PROJECT_PARCEL_MAPBOOK_090717.MXD CARCHER 9/7/2017 7:23:08 PM

Map 42 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10000002200
Owner: STIMSON LUMBER COMPANY
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD



LEGEND

- Preferred Transmission Route
- Proposed 100-foot-wide Easement
- Proposed 50-foot-wide Easement
- Preliminary Substation Location
- Support Stucture
- Permanent Access Road
- Temporary Access Road
- Pulling/Tensioning Area
- Tillamook City Limit
- Tillamook Urban Growth Boundary
- County Tax Lot
- Mile Post

Tax Lot Owner

- GREEN CROW CORPORATION
- STIMSON LUMBER COMPANY

N

0 740
Feet

Map 43 of 43
Project Parcel Owner Mapbook
Tax Lot: 1S10300000500
Owner: GREEN CROW CORPORATION
Tillamook-Oceanside
115-kilovolt Transmission Line Project
Tillamook PUD

BAOTSP01 C:\PROJ\TILLAMOOKPUD\412210\GIS\MAPFILES\2017\MISC\PROJECT_PARCEL_MAPBOOK_090717.MXD CARCHER 9/7/2017 7:23:08 PM

Landowner List: Tax Lots Crossed by the Tillamook-Oceanside 115-kilovolt Transmission Line Project in Tillamook County
(Tax lots listed beginning at the existing Tillamook Substation and ending at the proposed Oceanside Substation)

Tax Lot No.	Owner Name	Mailing Address	City/County	State	Zip Code	Project Footprint Type [(1) Permanent, (2) Temporary Construction]	Project Footprint Description [(1) Permanent Easement, Permanent Access Road, Proposed Oceanside Substation; (2) Temporary Access Road, Pulling and Tensioning Area]
1S09300000600	BPA	703 BROADWAY #SUITE 100	VANCOUVER	WA	98660	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road; (2) Pulling and Tensioning Area
1S09300000701	TILLAMOOK PUD					(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road; (2) Pulling and Tensioning Area
1S09300000900	HOGAN, DAVID & RITA	2614 FIRST ST	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road, Pulling and Tensioning Area
1S09190001900	HOGAN, DAVID & RITA	2614 FIRST ST	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road
1S09190000800	HOGAN, DAVID & RITA	2614 FIRST ST	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road, Pulling and Tensioning Area
1S0919B001600	WILL, DENNIS AND MARIA	1975 WILSON RIVER LOOP RD	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S0919B001500	CHRISTENSEN, ROBERT & CAROL	2035 WILSON RIVER LP	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S0919B001400	CHRISTENSEN, ROBERT & CAROL	2035 WILSON RIVER LP	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S09190000904	BELEN, TOBIN	PO BOX 401	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S09190000901	HOGAN, DAVID & RITA	2614 1ST ST	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S09190000902	HOGAN, DAVID & RITA	2614 1ST ST	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road, Pulling and Tensioning Area
1S0919B000702	TILLAMOOK COASTAL PLAZA LLC	PO BOX 635	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Pulling and Tensioning Area
1S0919B000704	TILLAMOOK COASTAL PLAZA LLC	PO BOX 635	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S0919B000700	TILLAMOOK PROPERTY INVESTMENTS	1901 MAIN AVE	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Pulling and Tensioning Area
1S0919C000101	JOSI, TODD A & SUSAN	4855 BOQUIST RD	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S0919C000102	JOSI, TODD A & SUSAN	4855 BOQUIST RD	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S1024D000900	CITY OF TILLAMOOK	210 LAUREL AVE	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S1024D000700	ALLEN, CHAD	2805 OLD LATIMER RD N	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S10240000700	SMITH, BRYCE W	PO BOX 3082	BAY CITY	OR	97107-3082	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Pulling and Tensioning Area
1S10000003200	TILLAMOOK COUNTY	201 LAUREL AVENUE	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S10240000900	TRASKVIEW FARM, INC	6350 BEELER RD	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road, Pulling and Tensioning Area
1S10240001000	AUFDERMAUER, BARBARA L TRUSTEE	1845 WILSON RIVER LOOP RD	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road
1S10230001600	ROCHA, JODY M &	510 3RD ST	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road
1S10230001300	TILLA-BAY FARMS INC	40 FENK RD W	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road
1S10230001100	TILLAMOOK COUNTY	201 LAUREL AVENUE	TILLAMOOK	OR	97141	(1) Permanent	(1) Permanent Easement,
1S10230001200	PETERSON, ROY	105 BAYOCEAN RD	TILLAMOOK	OR	97141	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement; (2) Temporary Access Road, Pulling and Tensioning Area
1S10220000300	STIMSON LUMBER COMPANY	520 SW YAMHILL ST #STE 700	PORTLAND	OR	97204-1330	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road; (2) Pulling and Tensioning Area
1S10000001400	STIMSON LUMBER COMPANY	520 SW YAMHILL ST #STE 700	PORTLAND	OR	97204-1330	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road; (2) Pulling and Tensioning Area
1S10000001500	STIMSON LUMBER COMPANY	520 SW YAMHILL ST #STE 700	PORTLAND	OR	97204-1330	(1) Permanent	(1) Permanent Easement,
1S10000002100	STIMSON LUMBER COMPANY	520 SW YAMHILL ST #STE 700	PORTLAND	OR	97204-1330	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road; (2) Pulling and Tensioning Area
1S10000002101	GREEN CROW CORPORATION	PO BOX 2469	PORT ANGELES	WA	98362-0315	(1) Permanent	(1) Permanent Easement,
1S10000002201	GREEN CROW CORPORATION	PO BOX 2469	PORT ANGELES	WA	98362-0315	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road; (2) Pulling and Tensioning Area
1S10000002200	STIMSON LUMBER COMPANY	520 SW YAMHILL ST #STE 700	PORTLAND	OR	97204-1330	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road; (2) Pulling and Tensioning Area
1S10300000500	GREEN CROW CORPORATION	PO BOX 2469	PORT ANGELES	WA	98362-0315	(1) Permanent; (2) Temporary Construction	(1) Permanent Easement, Permanent Access Road, Proposed Oceanside Substation; (2) Pulling and Tensioning Area

The following tax lots are only affected by temporary construction and are not crossed by the permanent tranmission line easement

1S09190001000	AUFDERMAUER, DONALD L TRUSTEE	PO BOX 550	TILLAMOOK	OR	97141	(2) Temporary Construction	(2) Pulling and Tensioning Area
1S09190000600	AUFDERMAUER, DONALD L TRUSTEE	PO BOX 550	TILLAMOOK	OR	97141	(2) Temporary Construction	(2) Pulling and Tensioning Area
1S09190000900	HOGAN, DAVID & RITA	2614 1ST ST	TILLAMOOK	OR	97141	(2) Temporary Construction	(2) Pulling and Tensioning Area
1S10250000400	AUFDERMAUER, BARBARA L TRUSTEE	1845 WILSON RIVER LP RD	TILLAMOOK	OR	97141	2) Temporary Construction	(2) Temporary Access Road
1S10260000900	PETERSON, ROY	105 BAYOCEAN RD	TILLAMOOK	OR	97141	2) Temporary Construction	(2) Temporary Access Road

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 207

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

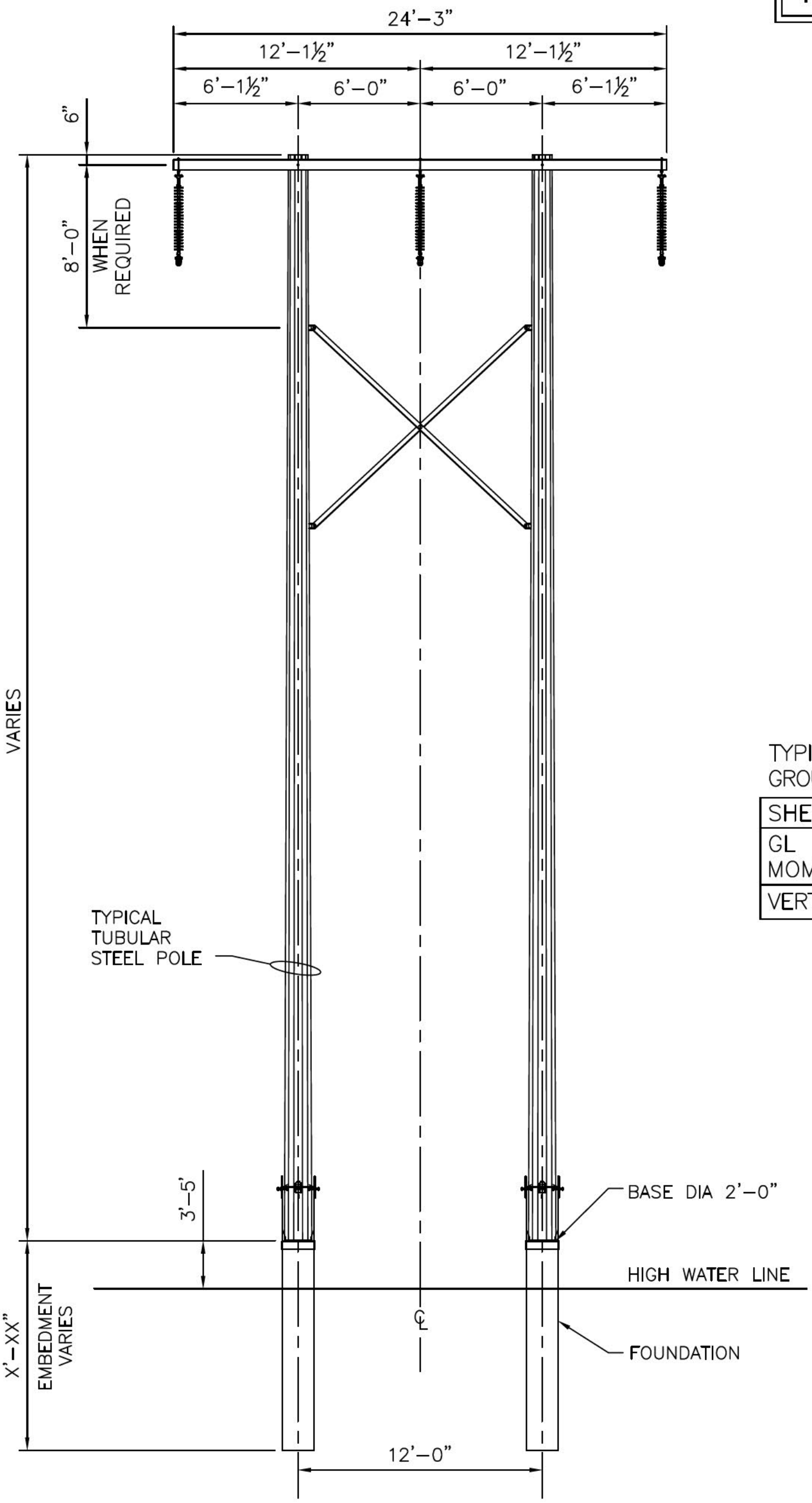
POWER POLE DIAGRAMS

October 6, 2017

TPUD/207
Fagen/1

STRUCTURE TYPE CONCEPT 1

PRELIMINARY



TYPICAL STRUCTURE GROUNDLINE REACTIONS

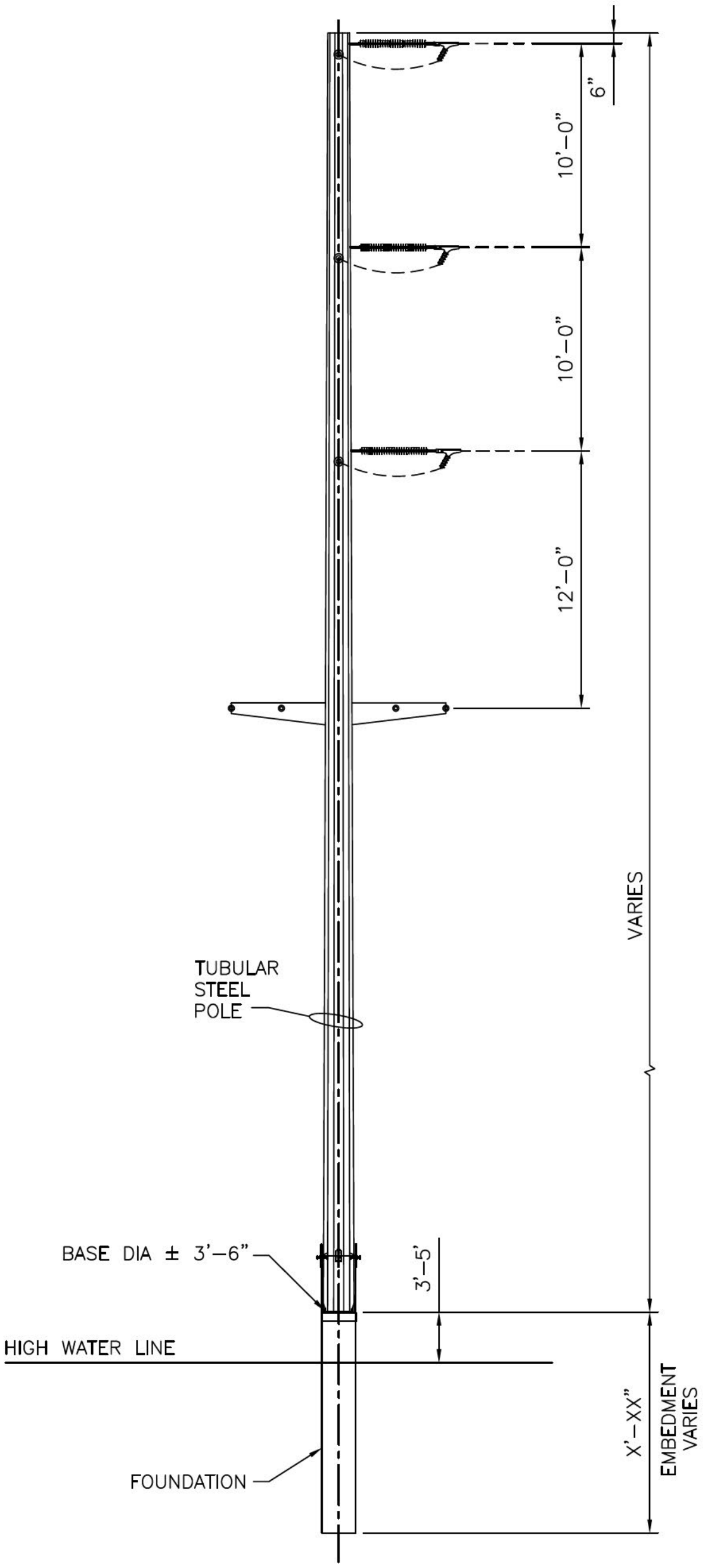
SHEAR	4 KIPS
GL MOMENT	85 FT–KIPS
VERTICAL	17 KIPS

TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 1 TYPICAL 115–KV 2–POLE STEEL TANGENT STRUCTURE	TriAxis Engineering, Inc.

TPUD/207
Fagen/2

STRUCTURE TYPE CONCEPT 2

PRELIMINARY



NOTES:
1. STRUCTURE DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS MAY VARY.
2. DRAWING IS NOT TO EXACT SCALE.
3. FOUNDATION BY OTHERS.

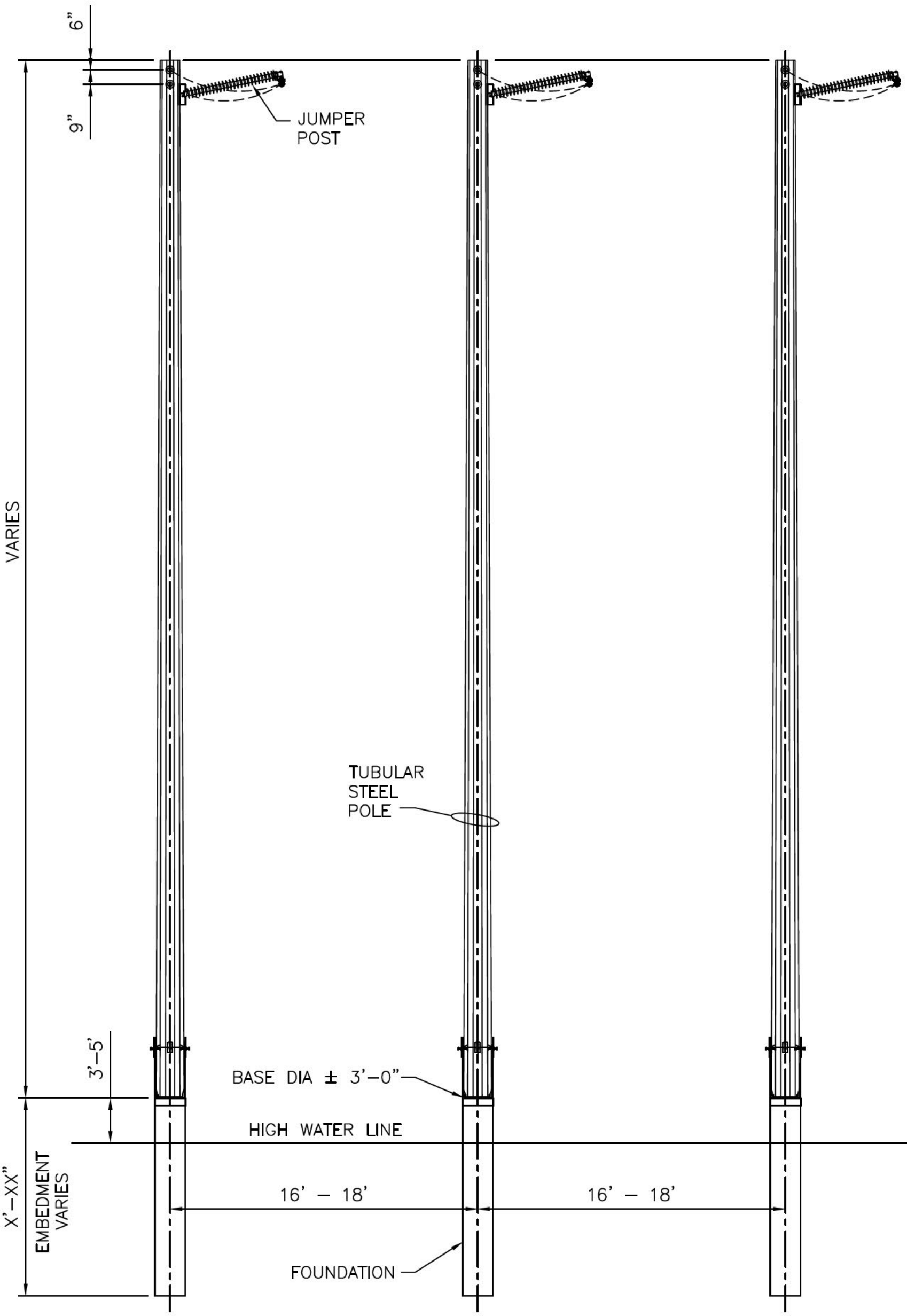
TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 2 TYPICAL 115–KV STEEL POLE DOUBLE–DEADEND STRUCTURE WITH UNDERBUILD	TriAxis Engineering, Inc.

TPUD/207
Fagen/3

STRUCTURE TYPE CONCEPT 3

PRELIMINARY

NOTES:
1. STRUCTURE DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS MAY VARY.
2. DRAWING IS NOT TO EXACT SCALE.
3. FOUNDATIONS BY OTHERS.

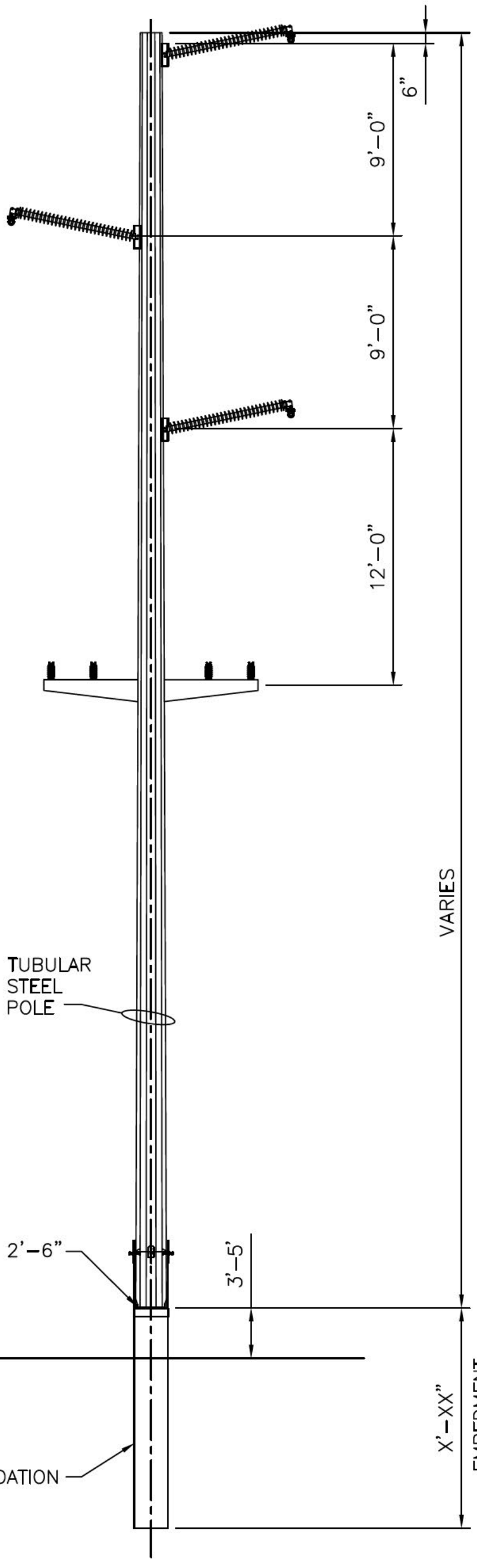


TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 3 TYPICAL 115–KV STEEL 3–POLE DOUBLE–DEADEND STRUCTURE SELF–SUPPORTING	TriAxis Engineering, Inc.

TPUD/207
Fagen/4

STRUCTURE TYPE CONCEPT 4

PRELIMINARY

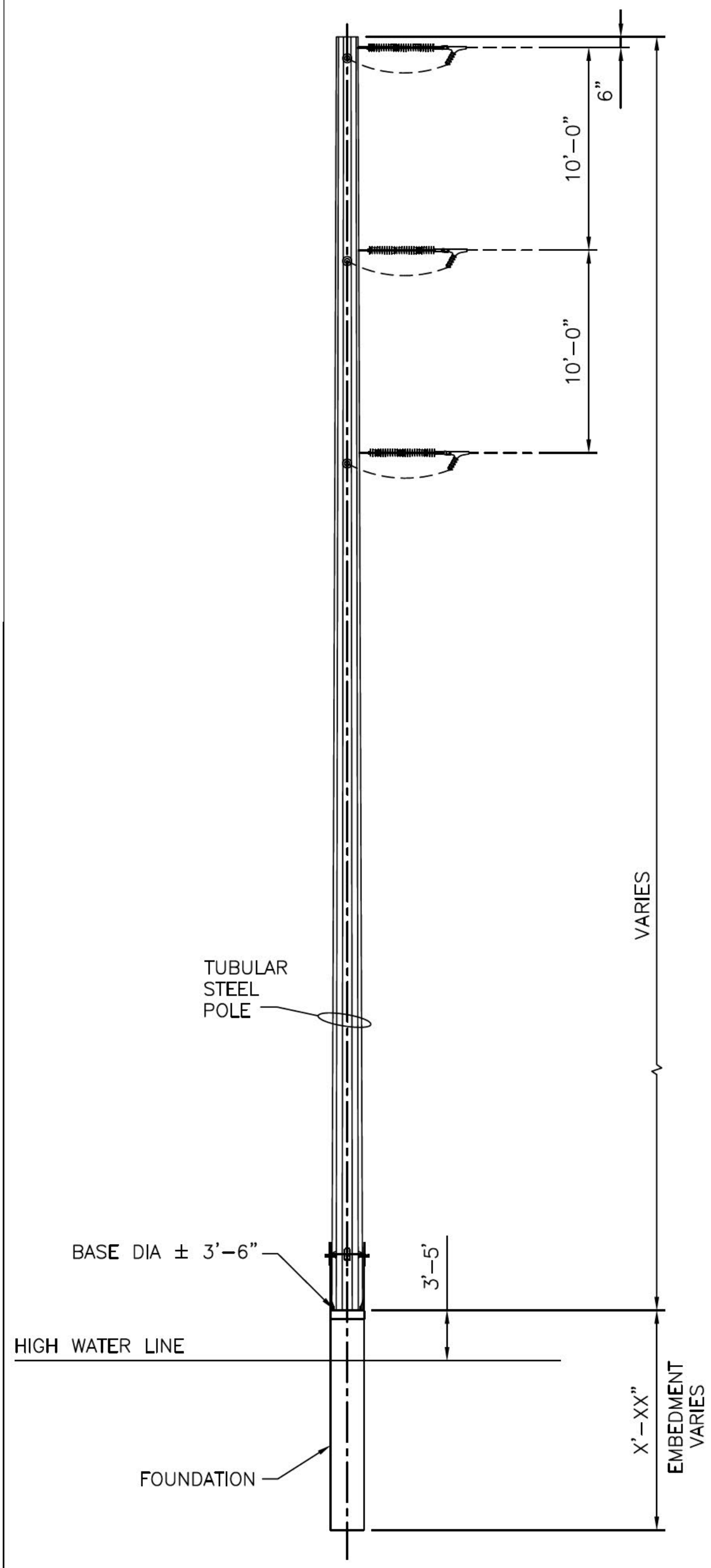


TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 4 TYPICAL 115–KV STEEL POLE TANGENT STRUCTURE WITH UNDERBUILD	TriAxis Engineering, Inc.

TPUD/207
Fagen/5

STRUCTURE TYPE CONCEPT 5

PRELIMINARY



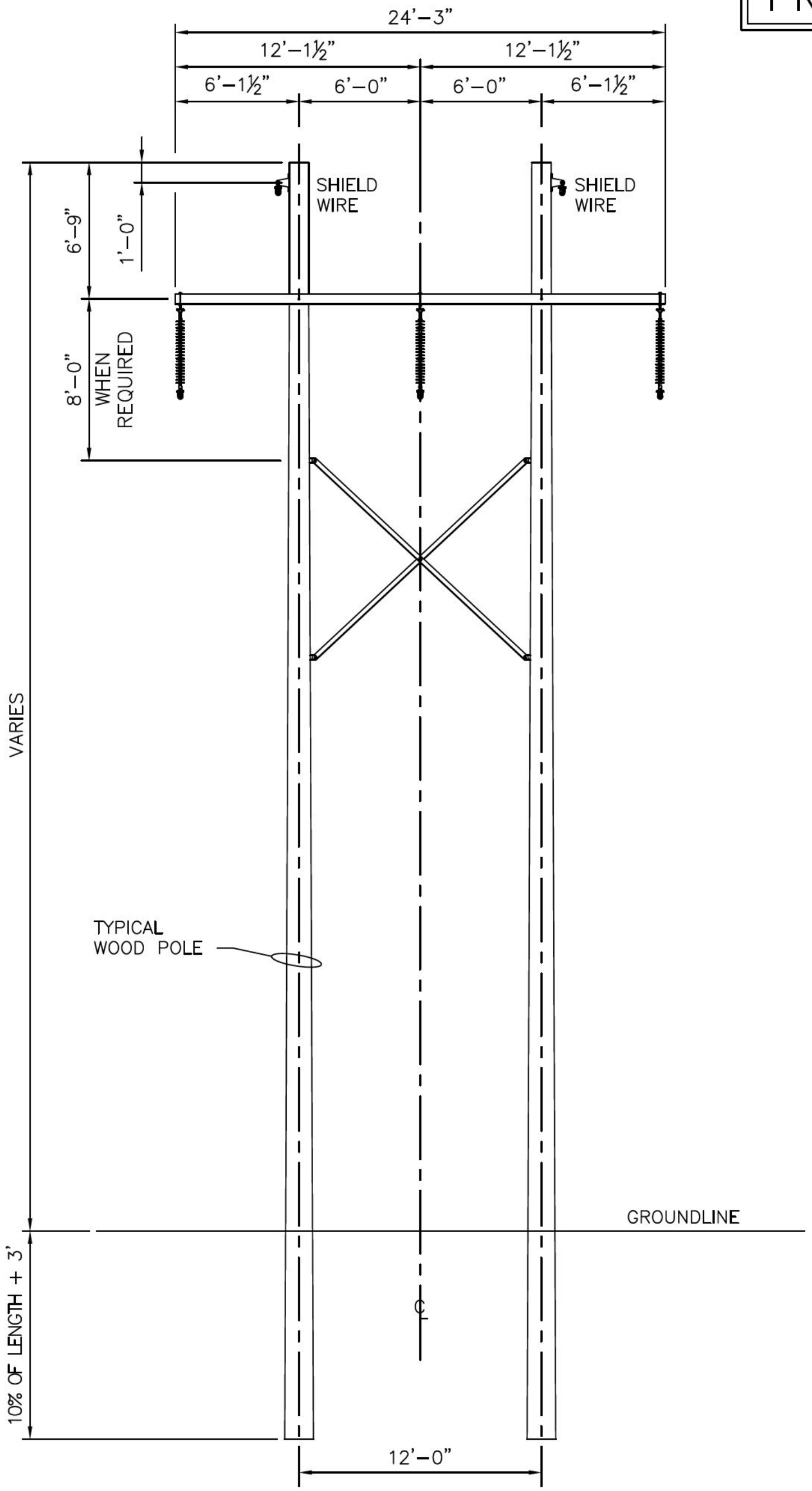
NOTES:
1. STRUCTURE DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS MAY VARY.
2. DRAWING IS NOT TO EXACT SCALE.
3. FOUNDATION BY OTHERS.

TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 5 TYPICAL 115–KV STEEL POLE DOUBLE–DEADEND STRUCTURE	TriAxis Engineering, Inc.

TPUD/207
Fagen/6

STRUCTURE TYPE CONCEPT 6

PRELIMINARY

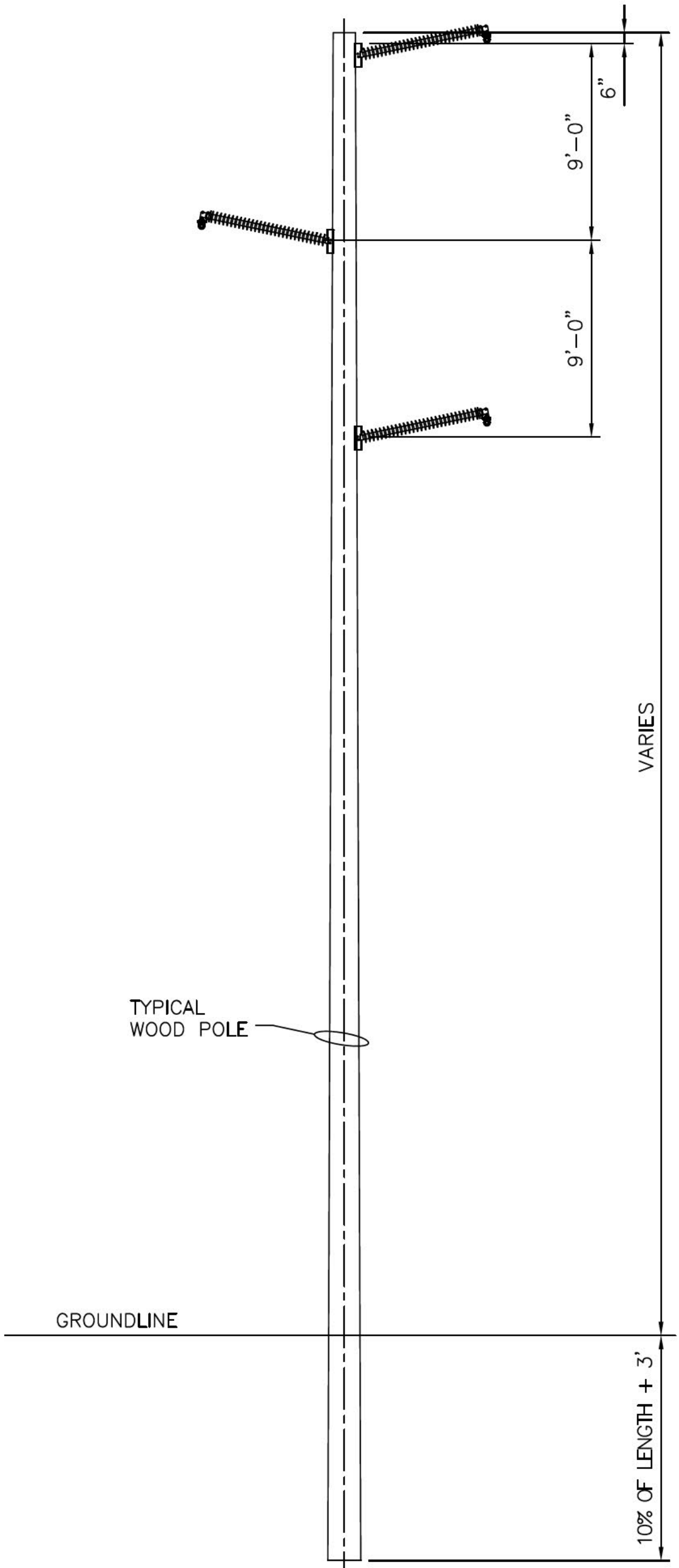


TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 6 TYPICAL 115–KV 2–POLE WOOD TANGENT STRUCTURE WITH SHIELD WIRE	TriAxis Engineering, Inc.

TPUD/207
Fagen/7

STRUCTURE TYPE CONCEPT 7

PRELIMINARY

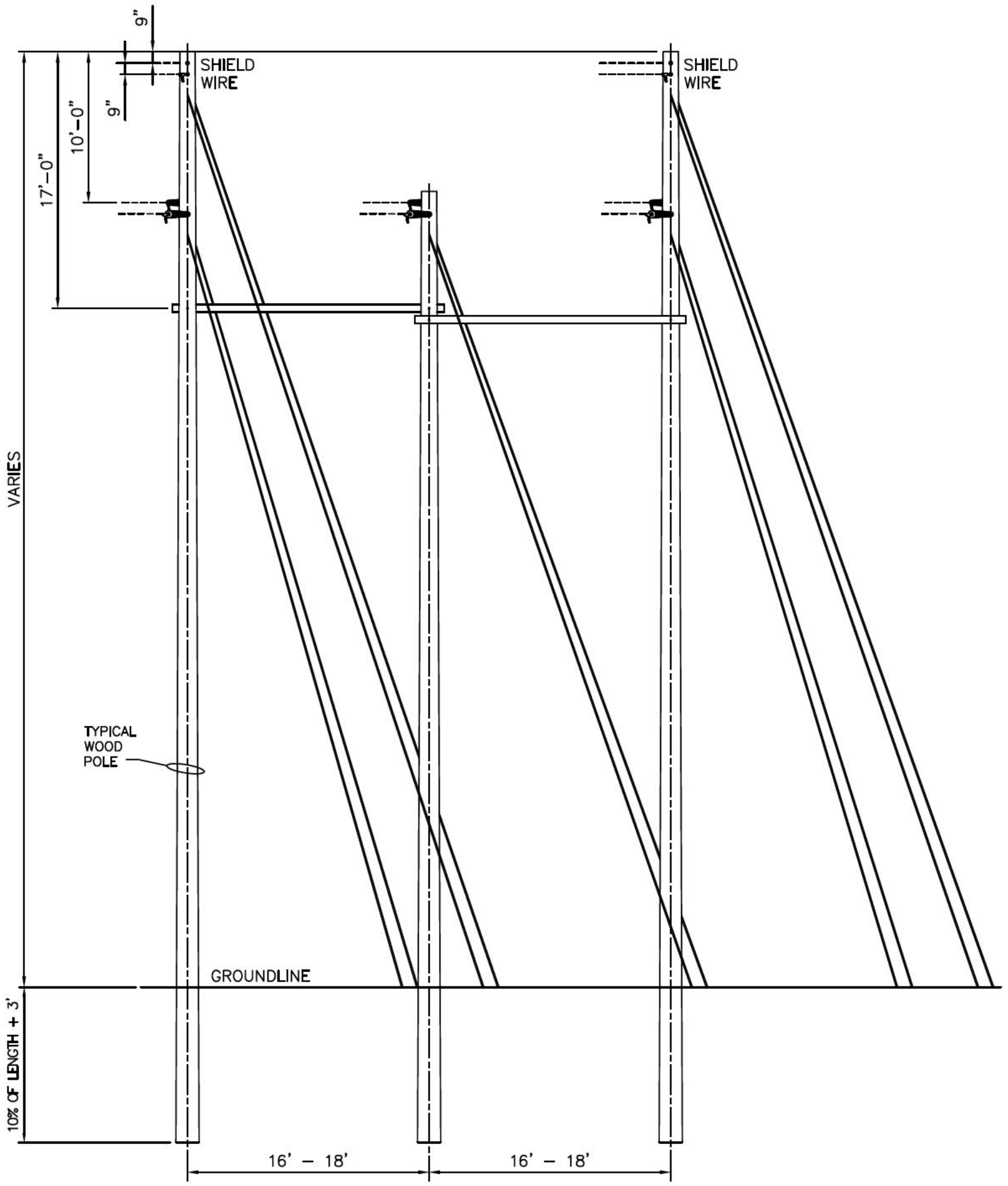


TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 7 TYPICAL 115–KV WOOD POLE TANGENT STRUCTURE	TriAxis Engineering, Inc.

TPUD/207
Fagen/8

STRUCTURE TYPE CONCEPT 8

PRELIMINARY

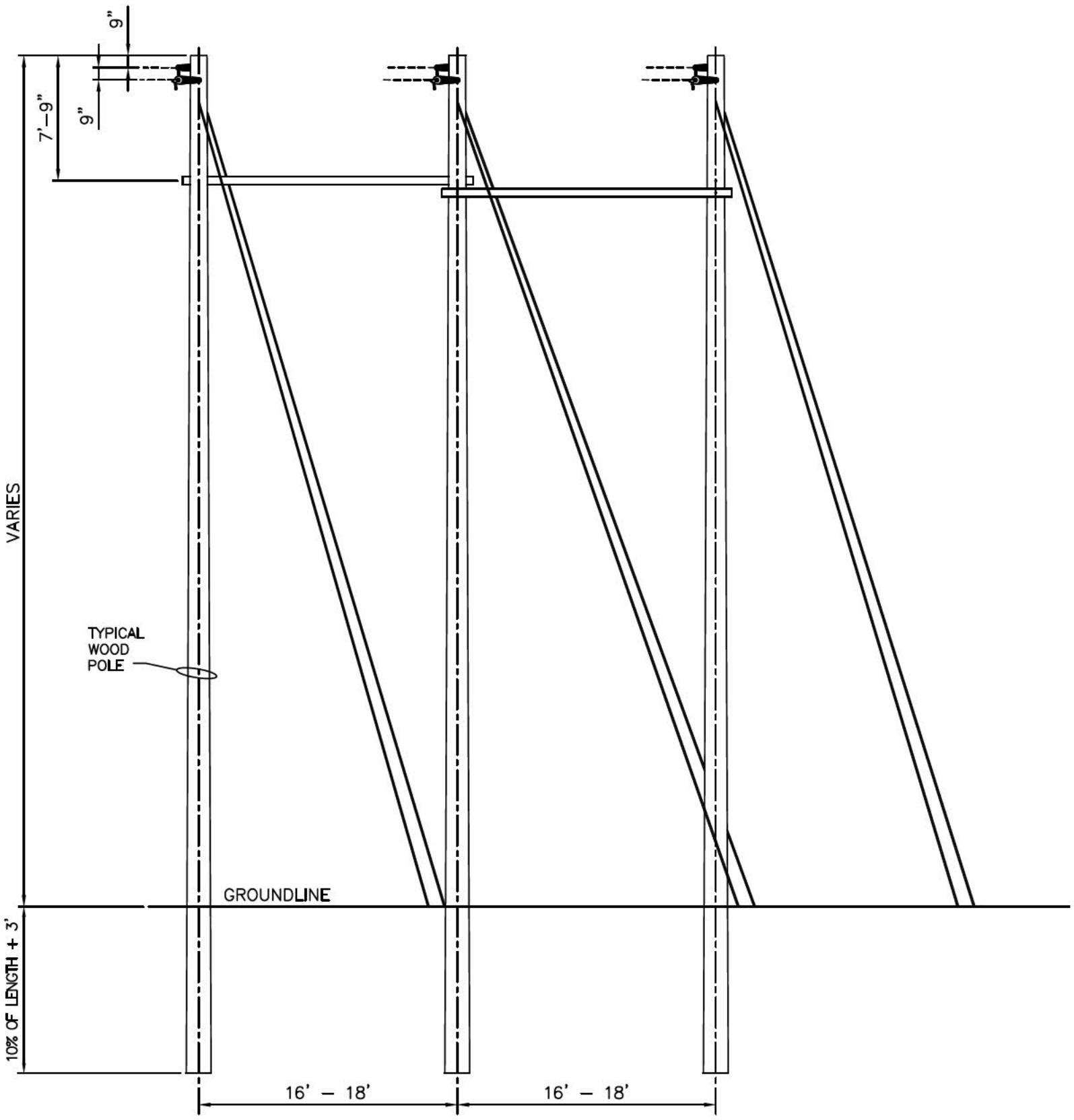


TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 8 TYPICAL 115–KV WOOD 3–POLE DOUBLE–DEADEND GUYED ANGLE STRUCTURE WITH SHIELD WIRE	TriAxis Engineering, Inc.

TPUD/207
Fagen/9

STRUCTURE TYPE CONCEPT 9

PRELIMINARY



NOTES:
1. STRUCTURE DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS MAY VARY.
2. DRAWING IS NOT TO EXACT SCALE.
3. DIRECT–EMBEDDED POLES.

TILLAMOOK PUD 115–KV TO OCEANSIDE ROUTING & CONSTRUCTABILITY ASSISTANCE	STRUCTURE CONCEPT 9 TYPICAL 115–KV WOOD 3–POLE DOUBLE–DEADEND GUYED ANGLE STRUCTURE	TriAxis Engineering, Inc.

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 208

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

LINE PLAN AND PROFILE

October 6, 2017

APATEL PLS-CADD VERSION 14.40X64
TOTL 115-KV FINAL,6/23/2017,8:15:26 AM

TILLAMOOK PEOPLE`S UTILITY DISTRICT

TILLAMOOK TO OCEANSIDE 115-KV TRANSMISSION LINE

PLAN AND PROFILE

GENERAL NOTES:

1. THE INTENT OF THE PLAN AND PROFILE MAP IS TO SHOW THE GENERAL ALIGNMENT AND PRELIMINARY STRUCTURE LOCATIONS.

2. THE TRANSMISSION LINE CENTERLINE IS BASED ON THE GROUND DATA FROM PUBLICLY AVAILABLE USGS 10 METER AND AERIAL IMAGERY.

PROJECT LOCATION:

TILLAMOOK, OREGON

DESCRIPTION:

115-KV TRANSMISSION LINE BEGINS AT BPA TILLAMOOK SUBSTATION AND ENDS AT LOCATION JUST WEST OF BAYOCEAN ROAD.

THE LINE IS DESIGNED AS A SINGLE-CIRCUIT 115-KV.
A PORTION OF THE LINE WILL HAVE A DISTRIBUTION UNDER BUILD.

WEATHER:
- NESC MEDIUM, 4 PSF WIND, 1/4 IN ICE, 15 DEG. F
- NESC 250C, 100 MPH WIND (25.6 PSF), 0 IN ICE, 60 DEG. F
- NESC 250D; 2-3 PSF WIND, 0.25 IN ICE, 15 DEG.
- EXTREME ICE, 0.5" ICE, 0 PSF WIND , 30 DEG F
- EVERYDAY (NORMAL), 0" ICE, 0 PSF WIND, 60 DEG F

LOADING:
- NESC MEDIUM OVERLOAD FACTORS: VERTICAL - 1.5, TENSION - 1.65, WIND - 2.5
- NESC 250C AND 250D OVERLOAD FACTORS: VERTICAL - 1.0, TENSION - 1.0, WIND - 1.0
- DEADEND STRUCTURES HAVE FULL TERMINAL LOADING UNDER NESC RULES 250B, 250 C, 250D AND EXTREME ICE
- TANGENT STRUCTURES HAVE UNBALANCED ICE LOADING; ONE SPAN WITH 0.5" ICE, NO WIND, 30 DEG F WHILE OTHER SPAN HAS NO ICE, NO WIND, 30 DEG F

CONDUCTORS
115-KV
FROM STR# 1 TO 43, 465.4 KCMIL 19 STRANDS AAAC CAIRO, TENSION LIMIT 8.4% INITIAL AT 60 DEG. F
FROM STR# 43 TO 50, 2X246.9 KCMIL 19 STRANDS AAAC AMARILLO-VR2, 20% AFTER LOAD AT 15 DEG F
FROM STR# 50 TO OCEANSIDE SUB, 465.4 KCMIL 19 STRANDS AAAC CAIRO, TENSION LIMIT 8.4% INITIAL AT 60 DEG. F

15-KV DISTRIBUTION
FROM STR#15 TO 22, 465.4 KCMIL 19 STRANDS AAAC CAIRO, TENSION LIMIT 8.4% INITIAL AT 60 DEG. F
FROM STR# 26 TO 39, 77.5 KCMIL 7/0 STRANDS AMES AAAC, TENSION LIMIT 8.4% INITIAL AT 60 DEG. F

FROM #69 TO OCEANSIDE SUB, ONE 24) FIBER OPGW AND 1) SHIELD WIRE

STRUCTURES:
- SELF SUPPORT DEADENDS ARE ENGINEERED STEEL MONOPOLES ON DRILLED PIER FOUNDATIONS OR VIBRATORY CAISSON FOUNDATIONS

GROUNDWIRE TENSION:
- GW WILL BE SAGGED TO APPROXIMATELY 80% OF CONDUCTOR SAG AT 60 DEG. F, NO WIND, NO ICE, FINAL

WIRE DISPLAY:
TRANSMISSION AT 167 DEG. F
DISTRIBUTION AT 167 DEG F
GROUND WIRE AT 120 DEG F
NEUTRAL WIRE AT 120 DEG F

TriAxis ENGINEERING, INC

DSGN	AJP						
DR	WO						
CHK	BSK						
APVD	BSK	NO.	DATE	REVISION	BY	APVD	

IF NOT PLOTTED TO SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV

SHEET	1 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

APATEL PLS-CADD VERSION 14.40X64
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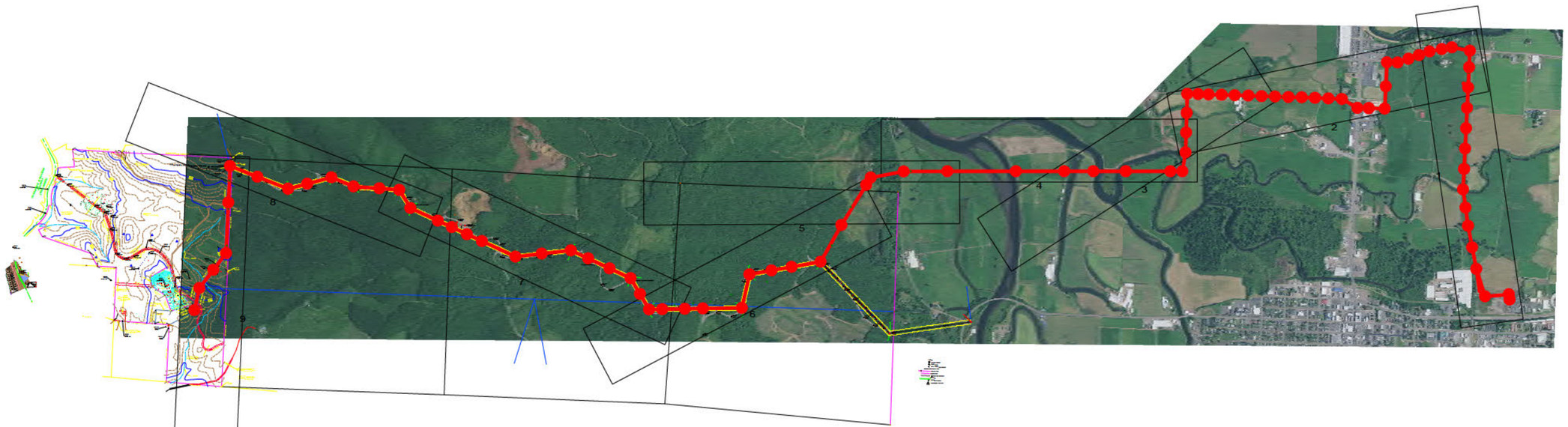
TPUD/208
Fagen/2



GENERAL PLAN MAP AND SHEET INDEX

TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV

SHEET	2 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

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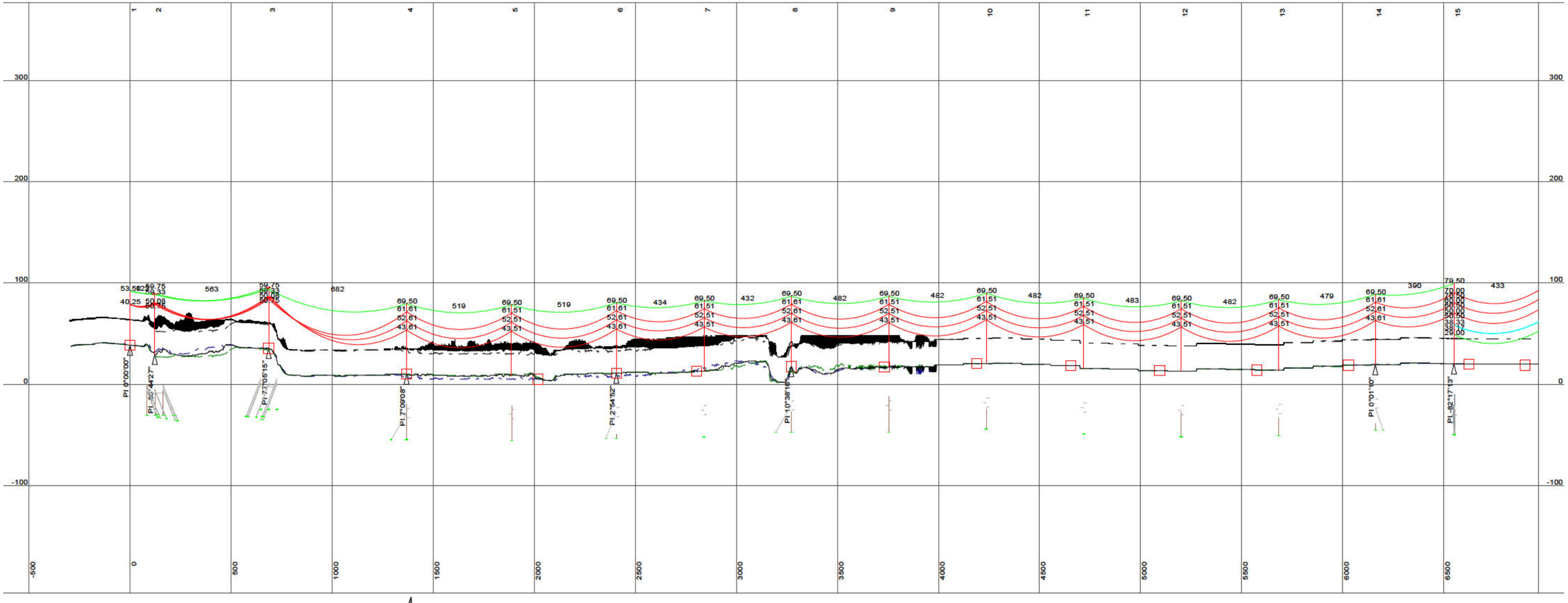
TPUD/208
Fagen/3



500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

NORTH

TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

IF NOT SCALED
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

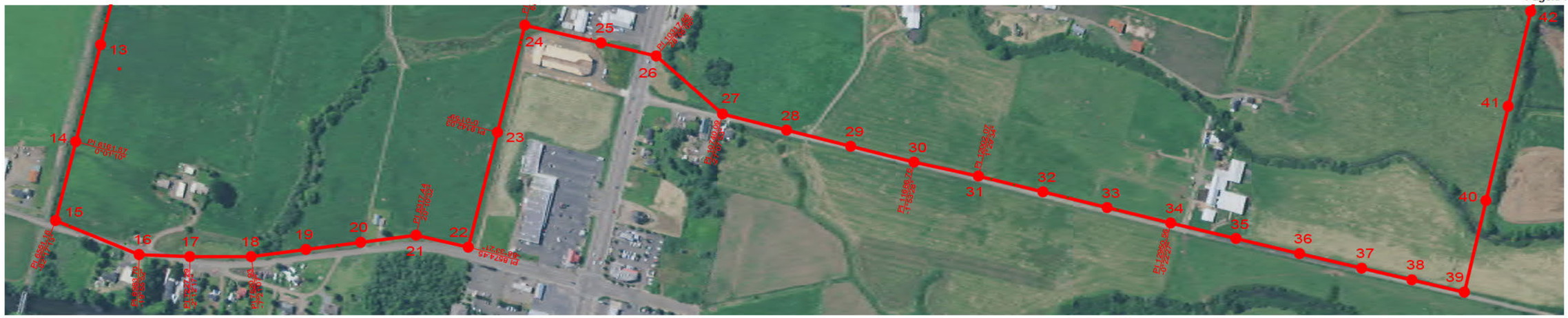
TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 1 TO 15

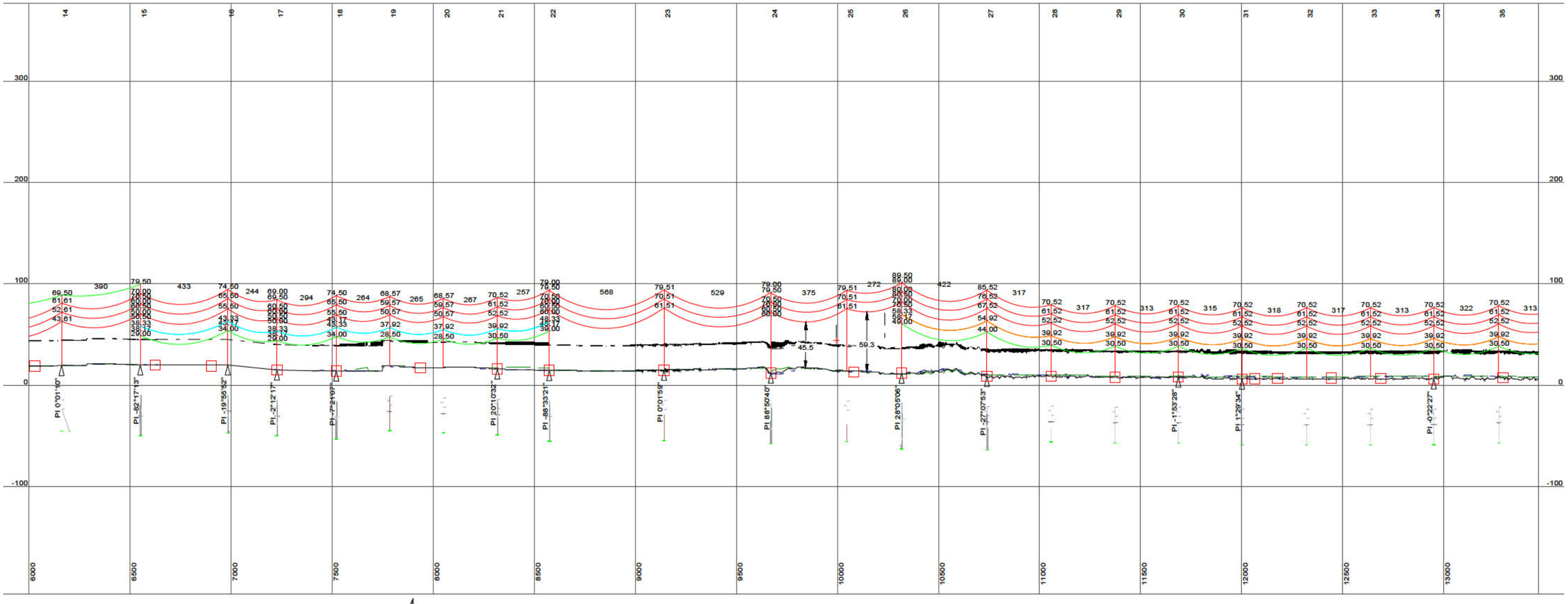
SHEET	3 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLSCADD TOTL 115KVFINAL

APATEL PLS-CADD VERSION 14.40X64
TOTL 115-KV FINAL,6/23/2017,8:15:28 AM

TPUD/208
Fagen/4





500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

NORTH

TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

IF NOT SCALED
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
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TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 14 TO 35

SHEET	4 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLS-CADD TOTL 115KVFINAL

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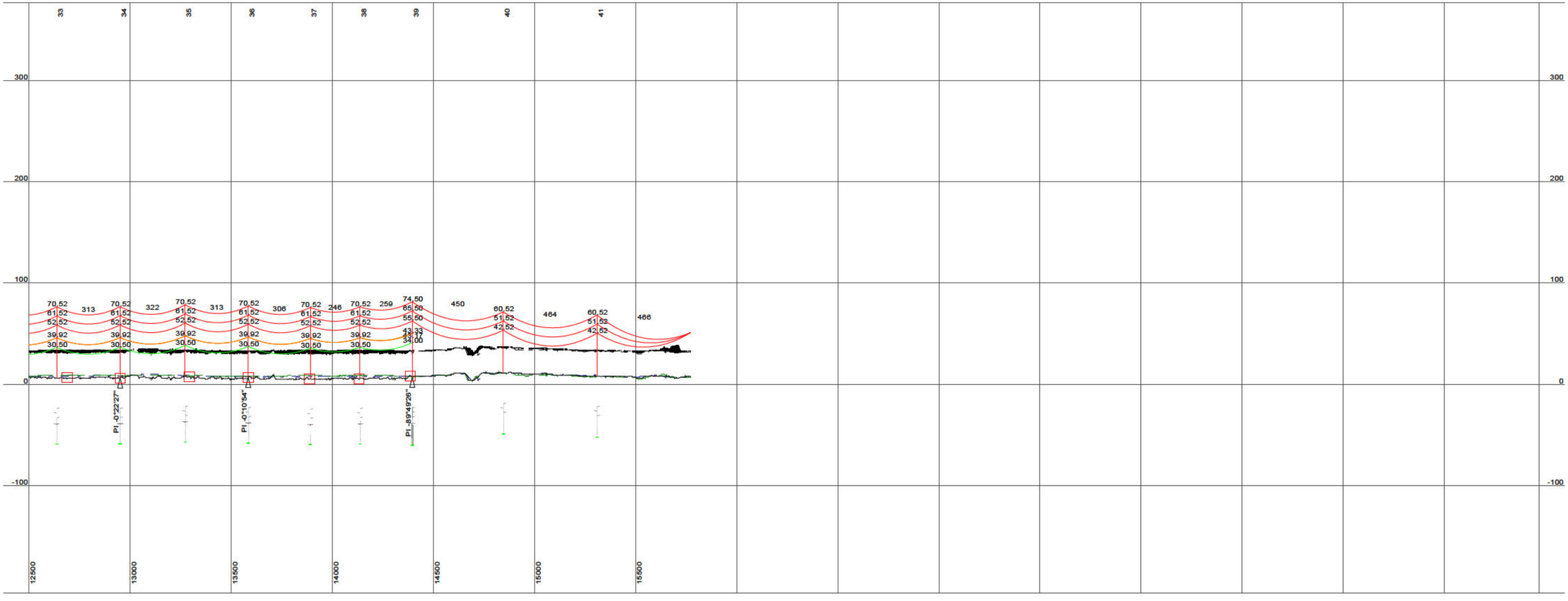
TPUD/208
Fagen/5



500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

NORTH

TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

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TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 33 TO 41

SHEET	5 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLSCADD TOTL 115KVFINAL

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TPUD/208
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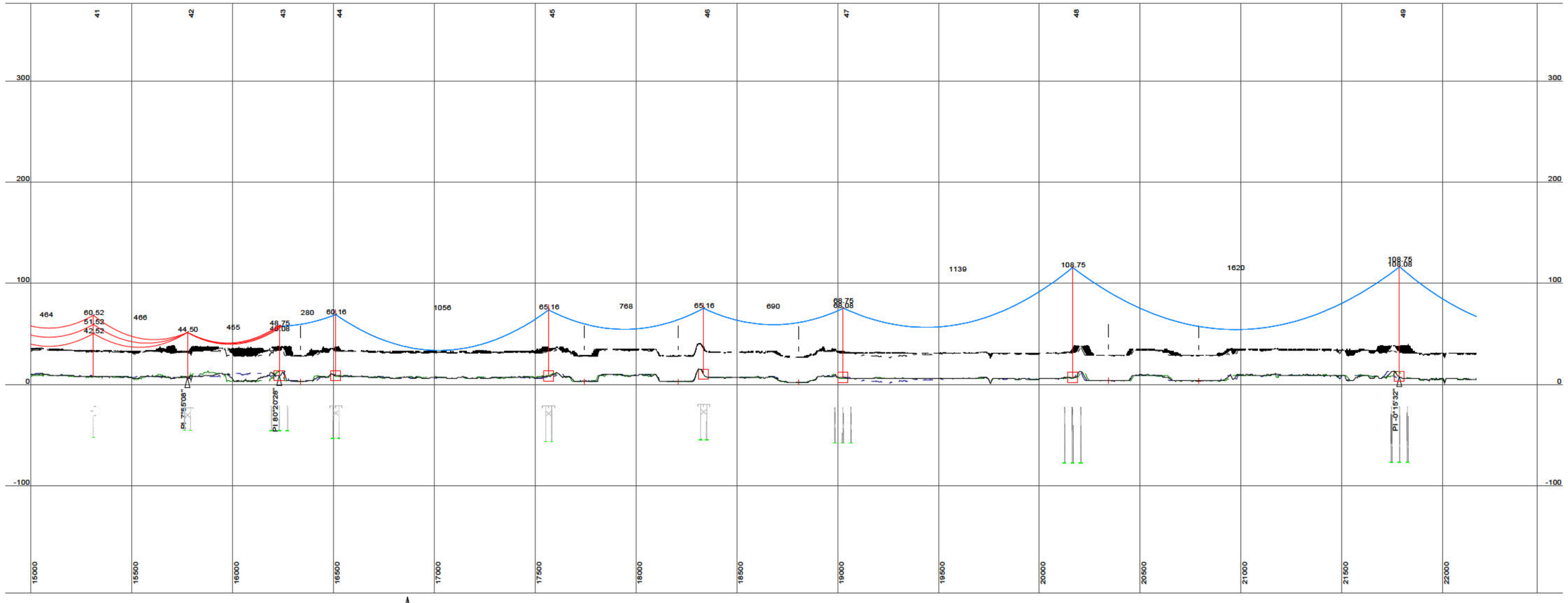

500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

NORTH

TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 41 TO 49

SHEET	6 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLSCADD TOTL 115KVFINAL

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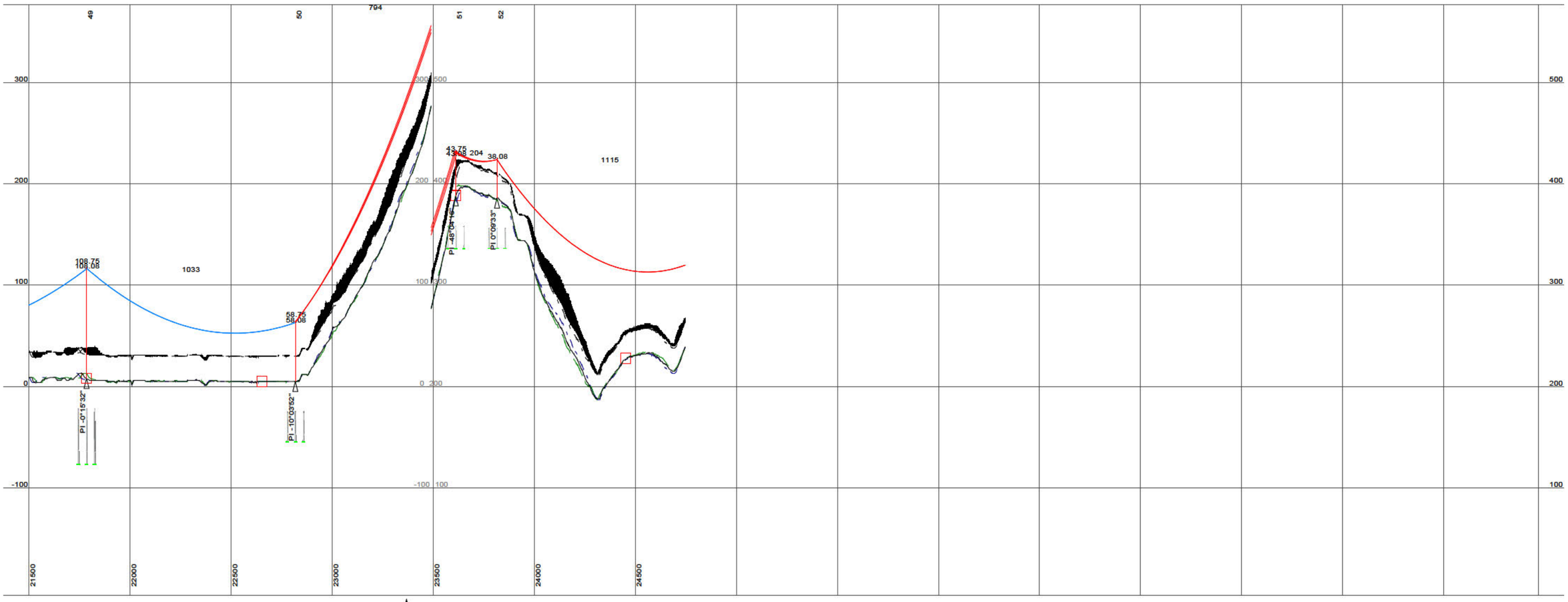

500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

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TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

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TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 49 TO 52

SHEET	7 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLS-CADD TOTL 115KVFINAL

PLS-CADD DRAWING

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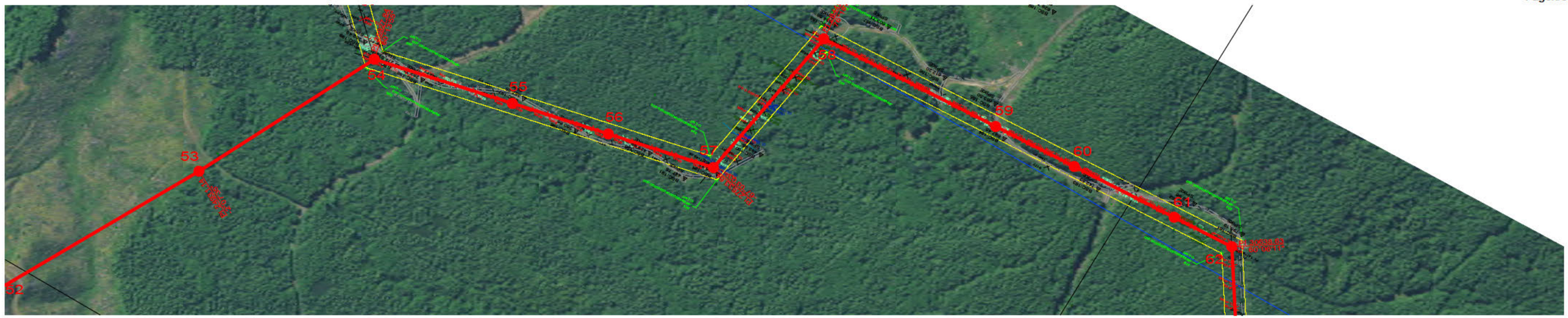

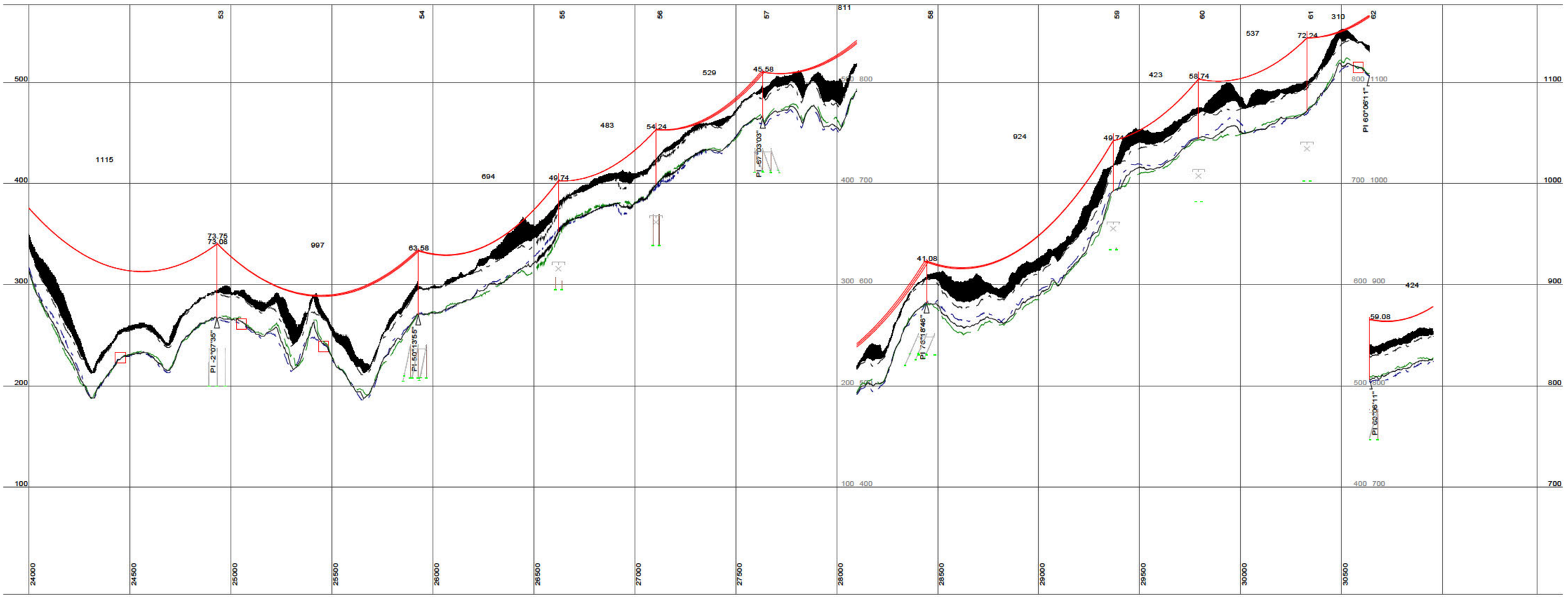

500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

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TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

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TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 53 TO 62

SHEET	8 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15384-1

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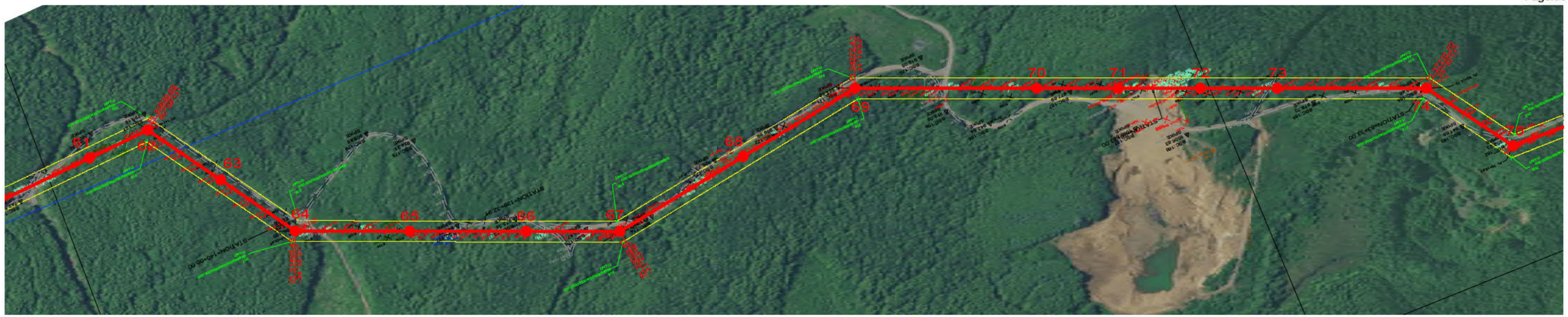

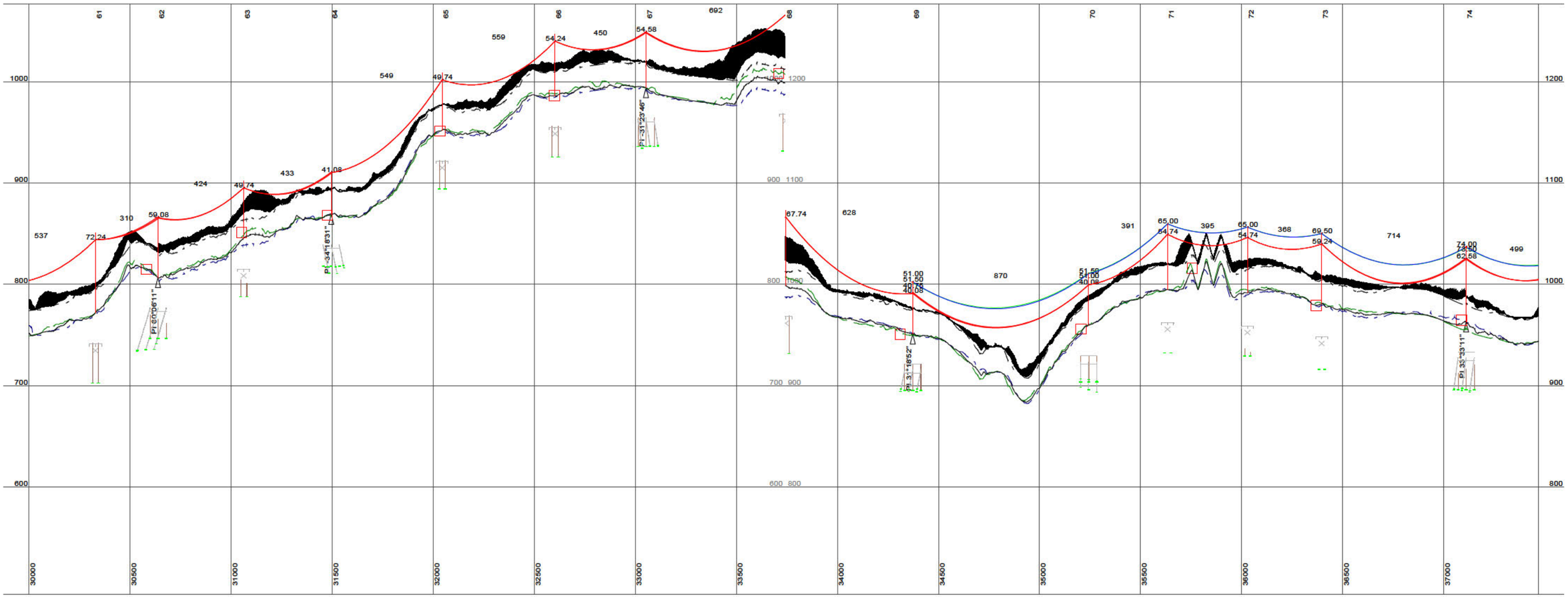

500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

NORTH

TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

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TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 61 TO 74

SHEET	9 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLS-CADD TOTL 115KVFINAL

PLS-CADD DRAWING

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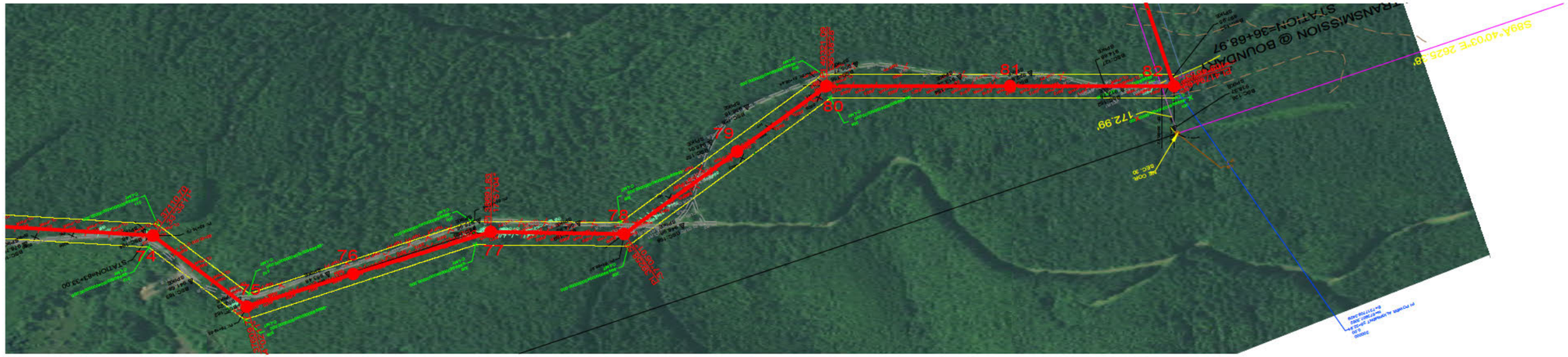

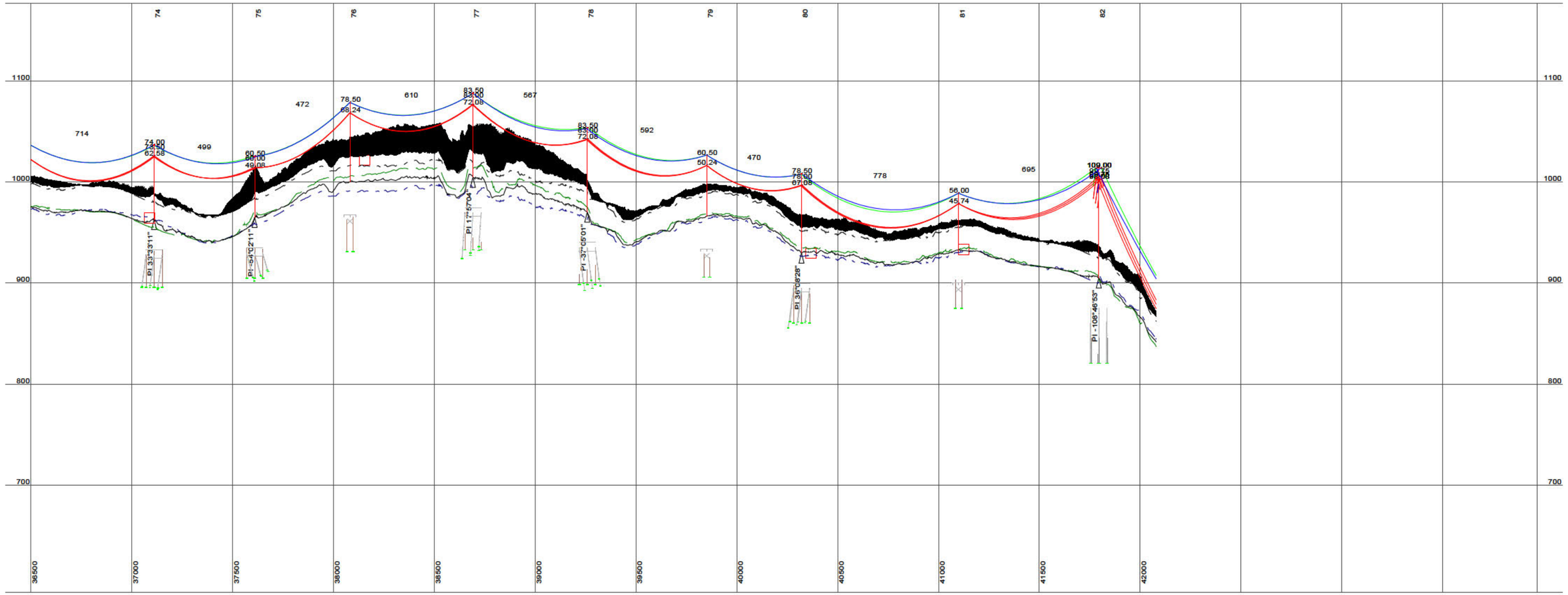

500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

NORTH

TriAxis ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

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TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 74 TO 82

SHEET	10 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLS-CADD TOTL 115KVFINAL

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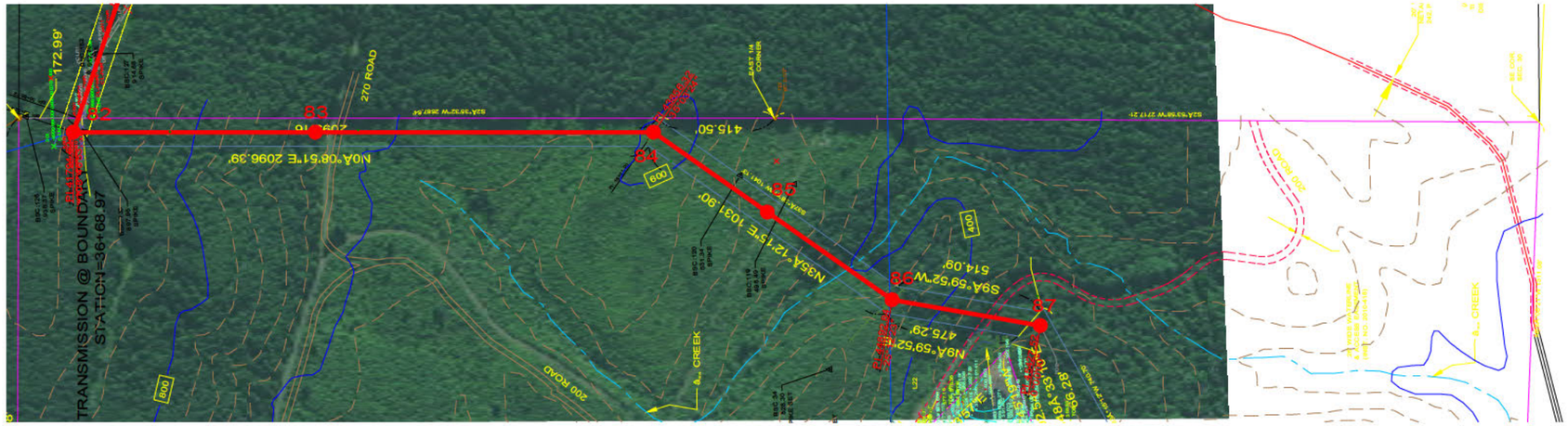

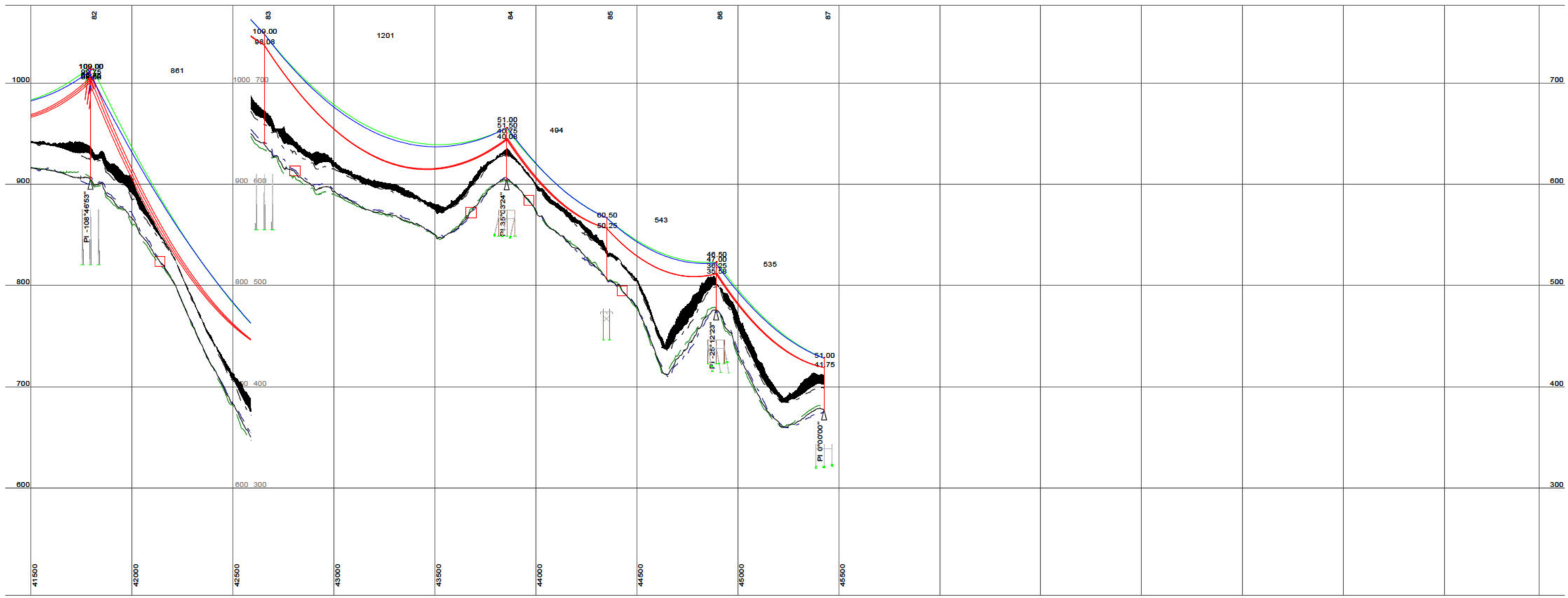

500.0 FT. HORIZ. SCALE
100.0 FT. VERT. SCALE

NORTH

TriAxis
ENGINEERING, INC

DSGN	AJP
DR	WO
CHK	BSK
APVD	BSK

NO.	DATE	REVISION	BY	APVD
		PRELIMINARY		

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TILLAMOOK PEOPLE`S UTILITY DISTRICT
TILLAMOOK TO OCEANSIDE 115-KV
STRUCTURES 82 TO 87

SHEET	11 OF 11
DWG NO.	15364TOX
DATE	6/23/2017
PROJ NO.	15364-1

PLSCADD TOTL 115KVFINAL

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 209

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

COST ESTIMATE

October 6, 2017

Column1	Column2	Column3
Tillamook People's Utility District		
Tillamook Oceanside Transmission Line Project		
Cost Estimates		
Item	Estimated Costs	Notes
Transmission line	$ 9,023,700	Esimate TriAxis Engineering
Substations	$ 2,933,000	Esimate TriAxis Engineering
Easements	$ 302,000	Esimate Tillamook PUD
Permitting	$ 500,000	Esimate Tillamook PUD
Tillamook PUD	$ 450,000	Esimate Tillamook PUD
Total	$ 13,208,700	

Tillamook Oceanside Substation Cost Estimate (Total estimated project cost) Labor: $130/hr

Esitmate is based on the sketch (3/9/17) and Trask River Substation CAD files (3/20/17) provided by TPUD

TriAxis, a Division of David Evans and Associates, Inc. A 3/24/2017

Item Description	Count Per	Item Qty	Labor Hours	Material Costs	Total Material Cost	Total Labor Cost	Misc Costs	Subtotal	
Upstream Utility Costs (BPA)									
Metering		1		$42,000	$42,000	$0			Note 1
Line Tap		1		$50,000	$50,000	$0			
Project Management (Excludes Bid prep & RUS doc prep)		1		$25,000	$25,000	$0			
Total								**$117,000**	Note 2
Transformer Bank									
Substation Power Transformer (Assume 25MVA)		1	N/A	$800,000	$800,000				
								$800,000	
Transformer Bank Installation									
Installation, Dress-out, Wiring		Yes	44. Hrs	$7,500	$7,500	$5,720			
Oil Containment		Yes	24. Hrs	$25,000	$25,000	$3,120			
Total								**$41,340**	
Breakers and Reclosers									
Circuit Switcher: 115-kV, 1200A, 20kAIC		1	20. Hrs	$45,000	$45,000	$2,600			
Recloser, 25 kV, 630 A		2	15. Hrs	$25,000	$50,000	$3,900			
Total								**$101,500**	
Disconnect Switches									
Vertical Break: 115kV, 1200A, w/o MO		1	20. Hrs	$9,200	$9,200	$2,600			
Vertical Break: 25kV, 2000A		1	20. Hrs	$4,000	$4,000	$2,600			
Hookstick: 25kV, 1200A		18	4. Hrs	$600	$10,800	$9,360			
Total								**$38,560**	
Instrument Transformers									
Potential Transformer: 550kV BIL, 1000/600:1:1		3	6. Hrs	$8,000	$24,000	$2,340			
Potential Transformer: 150kV BIL, Metering/Relaying		6	3. Hrs	$1,500	$9,000	$2,340			Note 3
Current Transformer: 150kV BIL, Metering		3	4. Hrs	$2,500	$7,500	$1,560			
Total								**$46,740**	
Surge Arresters									
Station Class, 84kV MCOV		3	6. Hrs	$900	$2,700	$2,340			
Intermediate Class, 15.3kV MCOV		6	2. Hrs	$200	$1,200	$1,560			
Total								**$7,800**	
Insulators									
115-kV Dead-End w/ assembly		3	4. Hrs	$150	$450	$1,560			
TR-208		21	1.5 Hrs	$32	$672	$4,095			
Total								**$6,777**	
Bus and Fittings									
3" Sch 40 IPS AL		130 ft	0.5 Hrs	$6.00	$780	$8,450			
2" Sch 40 IPS AL		135 ft	0.5 Hrs	$2.20	$297	$8,775			
Fittings (Bus Length Multiplier)		25X			$6,625.00				
Total								**$24,927**	
Conductor									
1272 kcmil AAAC		200 ft	0.25 Hrs	$3.25	$650	$6,500			
336 kcmil AAAC		365 ft	0.25 Hrs	$2.00	$730	$11,863			
3/8 EHS Shield Wire		400 ft	0.05 Hrs	$0.50	$200	$2,600			
Fittings (Bus Length Multiplier)		25X			$14,125.00				
Total								**$22,543**	
Relaying (Excludes Revenue Metering)									
Transformer Rack & Feeder Rack		1	4. Hrs	$30,000	$30,000	$520			
SCADA Rack, HMI, RTACs		1	4. Hrs	$7,500	$7,500	$520			
Total								**$38,540**	
Maintenance or Control Building Building									
Control Building		1		$160,000	$160,000	$0			
Total								**$160,000**	
Station Service									
1-ph Polemount 120/240VAC Transformer		1	8. Hrs	$2,500	$2,500	$1,040			
1-ph 120/240VAC Utility Feed		1		$12,500	$12,500	$0			
1-ph 120/240VAC MTS		1	6. Hrs	$2,500	$2,500	$780			
1-ph 120/240VAC Panel		1	4. Hrs	$1,250	$1,250	$520			
Total								**$21,090**	
Battery and Charger									
Lead Acid Batteries:125VDC, 110A/hr		1	60. Hrs	$14,000	$14,000	$7,800			
Charger: 30A, 120/240VAC, 125VDC		1	6. Hrs	$5,000	$5,000	$780			
Rack and Spill Kit		1	4. Hrs	$6,500	$6,500	$520			
125VDC Panel		2	4. Hrs	$1,250	$2,500	$1,040			
Total								**$38,140**	
Yard Lighting									
Lighting - LED		6	4. Hrs	$850	$5,100	$3,120			
Lighting Contactor		1	2. Hrs	$250	$250	$260			
Total								**$8,730**	
Site Development and Fence									
L= 150 ft	A= 2,500 sq yd								
W= 150 ft									
Grading		2,500 sq yd	Severe Grade	$22.50 per sq yd	$56,250				
Rock		2,500 sq yd		$15.00 per sq yd	$37,500				
Chain-Link Fence	Yes	600 ft		$30 per ft	$18,000				
Total								**$111,750**	
115-kV Foundations (Spread Footers)									
Dead End Tower	4 per str	1 units	12.4 cu yd	$1,400	$69,440				
Circuit Breaker	1 per str	1 units	3.4 cu yd	$1,400	$4,760				
Power Xfmr (excludes oil containment)	1 per str	1 units	10.7 cu yd	$1,400	$14,980				
Control Building	1 per str	1 units	37.9 cu yd	$1,400	$53,060				
Total			**101.6 cu yd**					**$142,240**	
25-kV Foundations (Spread Footers)									
Circuit Breaker	1 per str	3 units	1.4 cu yd	$1,400	$5,880				
3-ph LOW Bus Support	1 per str	1 units	1.4 cu yd	$1,400	$1,960				
3-ph LOW Disconnect Switch	1 per str	1 units	1.5 cu yd	$1,400	$2,100				

PRELIMINARY TRANSMISSION LINE CONSTRUCTION COST
FINAL ALIGNMENT

Notes:

1 Estimates are order-of-magnitude for the construction of structures and foundations. It includes all construction assemblies, conductors, pole material, foundation, engineering, geotechnical work, and surveying.

2 Estimates do not include mobilization and de-mobilization, ROW costs, permitting, or other costs that may be associated with the project.

3 Wood structures are direct-embedded.

4 Wood pole, tangent, H-Frame, and 3-pole deadend material and labor costs are based on 2015 cost estimates from BPA Lane-Wendson 115-kV reconductor project.

5 Refer to associated Plan and Profile for reference.

6 Foundation Caisson length, Caisson Diameter, and Caisson Labor costs provided by Foundation Engineering.

7 Conductors: 115-kV, 465.5 AAAC "Cairo", Distribution 465.5 AAAC "Cairo", Tension limit 8.4% initial @60 Deg F. Special conductors for long spans 2 x 246.9 kcmil 19 Strand AAAC "Amarillo/VR2", with standard RUS limits 20% initial at 15 Deg F Final

8 Option 2 is only 115-kV Transmission without the double-circuit distribution underbuild from Tillamook Substation to Wilson River Loop Road along the railroad tracks.

9 From Str #69 to #87, one OPGW and one shield wire.

SUBMITTED BY :TriAxis Engineering
Date: JUNE 23, 2017

	OPTION 2 Note 8
Transmission Cost Estimate	**NO UNDERBUILD BETWEEN TILLAMOOK SUB AND WILSON RIVER LOOP RD**
Construction, Geotechnical, Surveying	
Transmission Line Cost	7,612,568
Geotechnical Investigation	50,000
Surveying, aerial & ground control, Staking	50,000
Contingency **Total**	**7,712,568**
Contingency (10%)	771,257
Total	8,483,825
Engineering, Construction Mgmt, Inspection	
Engineering & Construction Mgmt (5%)	385,628
Inspection (2%)	154,251
Subtotal	539,880
Total	**9,023,704**
Taxes	0
Total (Rounded)	**$ 9,023,700**

Line Length	**8.50 miles**
Cost per Mile	**$ 1,062,132**

OPTION 2 - MATERIAL AND LABOR ESTIMATE SUMMARY WITHOUT UNDERBUILD

Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost ($)	Total Material Cost ($)	Labor Unit Cost ($)	Total Labor Cost ($)	Total Cost ($)
3-SD-0-40	Steel, 3-Pole Structure,0 deg. DDE, 40-FT	1	Each	20,834	20,834	10,417	10,417	31,251
3-SD-0-70	Steel, 3-Pole Structure,0 deg. DDE, 70-FT	1	Each	36,688	36,688	18,344	18,344	55,032
3-SD-0-75	Steel, 3-Pole Structure,0 deg. DDE, 75-FT	1	Each	35,646	35,646	17,823	17,823	53,469
3-SD-0-110	Steel, 3-Pole Structure,0 deg. DDE, 110-FT	3	Each	85,588	256,764	42,794	128,382	385,146
3-SD-10-60	Steel, 3-Pole Structure,10 deg. DDE, 60-FT	1	Each	33,360	33,360	16,680	16,680	50,040
3-SD-60-45	Steel, 3-Pole Structure,60 deg. DDE, 45-FT	1	Each	19,905	19,905	9,952	9,952	29,857
3-SD-60	Steel, 3-Pole Structure, DDE, 60-FT	1	Each	29,299	29,299	14,650	14,650	43,949
3-SD-90-50	Steel, 3-Pole Structure, 90 deg. DDE, 50-FT	1	Each	25,066	25,066	12,533	12,533	37,599
3-SD-110-100	Steel, 3-Pole Structure, DDE, 110-FT	1	Each	86,243	86,243	43,121	43,121	129,364
Amarillo VR2	Conductor, AAAC Amarillo/VR2	19566.88	(ft)	3	58,701	4	68,484	127,185
C8S	13.8-KV, Double-Deadend	7	Each	2,000	14,000	3,000	21,000	35,000
C9-1	13.8-KV, 4-Wire Tangent	14	Each	1,000	14,000	1,500	21,000	35,000
DAMP_COND	Dampers,Conductor,Stockbridge	252	Each	50	12,600	50	12,600	25,200
DAMP SHIELD	Dampers, Shield Wire,Spiral	31	Each	25	775	25	775	1,550
DF-1-50	Wood Pole,Doug. Fir, DF-1-50	6	Each	946	5,676	3,000	18,000	23,676
DF-1-55	Wood Pole,Doug. Fir, DF-1-55	6	Each	1,097	6,582	3,000	18,000	24,582
DF-1-60	Wood Pole,Doug. Fir, DF-1-60	14	Each	1,264	17,696	3,000	42,000	59,696
DF-1-65	Wood Pole,Doug. Fir, DF-1-65	3	Each	1,469	4,407	3,000	9,000	13,407
DF-1-70	Wood Pole,Doug. Fir, DF-1-70	10	Each	1,679	16,790	3,000	30,000	46,790
DF-1-75	Wood Pole,Doug. Fir, DF-1-75	3	Each	1,683	5,049	3,000	9,000	14,049
DF-1-80	Wood Pole,Doug. Fir, DF-1-80	13	Each	2,145	27,885	3,000	39,000	66,885
DF-1-85	Wood Pole,Doug. Fir, DF-1-85	3	Each	2,445	7,335	3,000	9,000	16,335
DF-1-90	*** UNDEFINED PART ***	5	Each	0	0	0	0	0
DF-1-95	Wood Pole,Doug. Fir, DF-1-95	6	Each	3,045	18,270	3,000	18,000	36,270
DF-2-65	Wood Pole,Doug. Fir, DF-2-65	10	Each	1,495	14,950	3,000	30,000	44,950
DF-2-70	Wood Pole,Doug. Fir, DF-2-70	8	Each	1,513	12,104	3,000	24,000	36,104
DF-2-75	Wood Pole,Doug. Fir, DF-2-75	6	Each	1,613	9,678	3,000	18,000	27,678
DF-2-80	Wood Pole,Doug. Fir, DF-2-80	2	Each	1,744	3,488	3,000	6,000	9,488
DF-2-85	Wood Pole,Doug. Fir, DF-2-85	2	Each	1,944	3,888	3,000	6,000	9,888
DF-2-90	Wood Pole,Doug. Fir, DF-2-90	4	Each	2,144	8,576	3,000	12,000	20,576
FOUND-20FT	Foundation Caisson, 20-FT	13	Each	20,000	260,000	25,000	325,000	585,000
FOUND-30FT	Foundation Caisson, 30-FT	19	Each	23,000	437,000	25,000	475,000	912,000
FOUND-40FT	Foundation Caisson, 40-FT	17	Each	26,000	442,000	25,000	425,000	867,000
FOUND-45FT	Foundation Caisson, 45-FT	7	Each	29,000	203,000	25,000	175,000	378,000
OPGW CC-27/27/465	OPGW, AFL, CC-27/27/465	11158.05	(ft)	3	27,895	3	27,895	55,790
OPGW SPLICE	OPGW Splice Box and Accessories	2	Each	3,000	6,000	3,000	6,000	12,000
OPGW TESTING	OPGW Spice and Testing	1	Each	0	0	5,000	5,000	5,000
SA-3-70	Steel, Structure,Small Angle, 70-FT	1	Each	9,625	9,625	4,813	4,813	14,438
SA-10-75	Steel, Structure,Small Angle, 75-FT	1	Each	11,825	11,825	5,913	5,913	17,738
SA-20-70	Steel, Structure,Medium Angle, 70-FT	1	Each	11,998	11,998	5,999	5,999	17,997
SA-20-75	Steel, Structure,Medium Angle, 75-FT	1	Each	29,791	29,791	14,895	14,895	44,686
SD-30-90	Steel, Structure, 90 deg, DDE, 70-FT	1	Each	31,713.00	31,713	15,857.00	15,857	47,570
SD-70	Steel, Structure, DDE, 70-FT	1	Each	26,725.00	26,725	13,362.50	13,363	40,088
SD-90-70	Steel, Structure, 90deg DDE, 70-FT	1	Each	31,713.00	31,713	15,857.00	15,857	47,570
SD-90-75	Steel, Structure, 90deg DDE, 75-FT	1	Each	24,151	$24,151	$12,075	$12,075	$36,226
SD-90-80	Steel, Structure,90 deg.DDE, 80-FT	2	Each	32,915	$65,830	$16,458	$32,916	$98,746
SH-65	Steel, Structure, H-frame, 2-pole, 65-FT	1	Each	16,660	$16,660	$8,330	$8,330	$24,990

OPTION 2 - DETAILED BILL OF MATERIAL POLE-BY-POLE

Str. No.	Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost ($)	Total Material Cost ($)	Labor Unit Cost ($)	Total Labor Cost ($)	Total Cost ($)
1	TM-4E	Shield Wire Deadend with insulator	1	Each	100	100	500	500	600
1	TM-4	Shield Wire Deadend Assembly	1	Each	100	100	500	500	600
1	TM-115	115-KV Deadend Insulator	3	Each	6,000	18,000	6,000	18,000	36,000
1	cairo_aaac	Conductor 465.5 AAAC Cairo	321	(ft)	2	642	4	1,284	1,926
1	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	241	(ft)	1	241	4	845	1,086
2	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
2	DAMP_SHIELD	Dampers, Shield Wire,Spiral	4	Each	25	100	25	100	200
2	DF-1-60	Wood Pole,Doug. Fir, DF-1-60	1	Each	1,264	1,264	3,000	3,000	4,264
2	DF-1-70	Wood Pole,Doug. Fir, DF-1-70	2	Each	1,679	3,358	3,000	6,000	9,358
2	TA-50D	Plate Anchor Assembly	8	Each	1,000	8,000	3,000	24,000	32,000
2	TG-21A	Down Guy Assembly	8	Each	250	2,000	1,000	8,000	10,000
2	TGI-21	Guy Strain Insulator Assembly	16	Each	125	2,000	125	2,000	4,000
2	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
2	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
2	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
2	cairo_aaac	Conductor 465.5 AAAC Cairo	1,639	(ft)	2	3,277	4	6,554	9,831
2	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	1,123	(ft)	1	1,123	4	3,931	5,055
3	DAMP_SHIELD	Dampers, Shield Wire,Spiral	4	Each	25	100	25	100	200
3	DF-1-60	Wood Pole,Doug. Fir, DF-1-60	1	Each	1,264	1,264	3,000	3,000	4,264
3	DF-1-70	Wood Pole,Doug. Fir, DF-1-70	2	Each	1,679	3,358	3,000	6,000	9,358
3	TA-50D	Plate Anchor Assembly	8	Each	1,000	8,000	3,000	24,000	32,000
3	TG-21A	Down Guy Assembly	8	Each	250	2,000	1,000	8,000	10,000
3	TGI-21	Guy Strain Insulator Assembly	16	Each	125	2,000	125	2,000	4,000
3	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
3	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
3	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
3	cairo_aaac	Conductor 465.5 AAAC Cairo	2,024	(ft)	2	4,048	4	8,096	12,144
3	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	692	(ft)	1	692	4	2,423	3,115
4	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
4	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
4	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
4	TA-50D	Plate Anchor Assembly	1	Each	1,000	1,000	3,000	3,000	4,000
4	TG-21A	Down Guy Assembly	1	Each	250	250	1,000	1,000	1,250
4	TGI-21	Guy Strain Insulator Assembly	1	Each	125	125	125	125	250
4	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
4	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
4	TP-115G	115-KV Deadend Insulator with Shield	1	Each	4,000	4,000	2,500	2,500	6,500
4	cairo_aaac	Conductor 465.5 AAAC Cairo	1,557	(ft)	2	3,113	4	6,227	9,340
4	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	519	(ft)	1	519	4	1,816	2,335
5	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
5	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
5	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
5	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
5	cairo_aaac	Conductor 465.5 AAAC Cairo	1,558	(ft)	2	3,116	4	6,232	9,347
5	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	519	(ft)	1	519	4	1,817	2,336
6	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
6	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
6	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
6	TA-50D	Plate Anchor Assembly	1	Each	1,000	1,000	3,000	3,000	4,000
6	TG-21A	Down Guy Assembly	1	Each	250	250	1,000	1,000	1,250
6	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
6	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
6	TP-115G	115-KV Deadend Insulator with Shield	1	Each	4,000	4,000	2,500	2,500	6,500
6	cairo_aaac	Conductor 465.5 AAAC Cairo	1,302	(ft)	2	2,603	4	5,206	7,809
6	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	434	(ft)	1	434	4	1,518	1,952
7	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
7	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
7	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
7	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
7	TP-115G	115-KV Deadend Insulator with Shield	1	Each	4,000	4,000	2,500	2,500	6,500
7	cairo_aaac	Conductor 465.5 AAAC Cairo	1,296	(ft)	2	2,592	4	5,185	7,777
7	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	432	(ft)	1	432	4	1,512	1,944
8	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
8	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
8	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
8	TA-50D	Plate Anchor Assembly	1	Each	1,000	1,000	3,000	3,000	4,000
8	TG-21A	Down Guy Assembly	1	Each	250	250	1,000	1,000	1,250
8	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
8	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
8	TP-115G	115-KV Deadend Insulator with Shield	1	Each	4,000	4,000	2,500	2,500	6,500
8	cairo_aaac	Conductor 465.5 AAAC Cairo	1,447	(ft)	2	2,894	4	5,788	8,682
8	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	482	(ft)	1	482	4	1,688	2,171
9	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
9	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
9	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
9	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
9	cairo_aaac	Conductor 465.5 AAAC Cairo	1,447	(ft)	2	2,894	4	5,788	8,683
9	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	482	(ft)	1	482	4	1,688	2,170
10	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
10	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
10	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
10	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
10	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
10	cairo_aaac	Conductor 465.5 AAAC Cairo	1,447	(ft)	2	2,894	4	5,789	8,683
10	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	482	(ft)	1	482	4	1,688	2,170
11	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
11	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
11	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
11	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
11	cairo_aaac	Conductor 465.5 AAAC Cairo	1,448	(ft)	2	2,897	4	5,794	8,691
11	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	483	(ft)	1	483	4	1,689	2,172
12	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
12	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
12	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
12	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
12	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
12	cairo_aaac	Conductor 465.5 AAAC Cairo	1,448	(ft)	2	2,895	4	5,790	8,686
12	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	482	(ft)	1	482	4	1,688	2,171
13	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
13	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
13	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
13	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
13	cairo_aaac	Conductor 465.5 AAAC Cairo	1,436	(ft)	2	2,873	4	5,746	8,619
13	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	479	(ft)	1	479	4	1,675	2,154
14	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
14	DAMP_SHIELD	Dampers, Shield Wire,Spiral	2	Each	25	50	25	50	100
14	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
14	TA-50D	Plate Anchor Assembly	1	Each	1,000	1,000	3,000	3,000	4,000
14	TG-21A	Down Guy Assembly	1	Each	250	250	1,000	1,000	1,250
14	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
14	TP-115G	115-KV Deadend Insulator with Shield	1	Each	4,000	4,000	2,500	2,500	6,500
14	cairo_aaac	Conductor 465.5 AAAC Cairo	1,158	(ft)	2	2,315	4	4,630	6,945
14	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	390	(ft)	1	390	4	1,364	1,754

OPTION 2 - DETAILED BILL OF MATERIAL POLE-BY-POLE

Str. No.	Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost ($)	Total Material Cost ($)	Labor Unit Cost ($)	Total Labor Cost ($)	Total Cost ($)
15	C8S	13.8-KV, Double-Deadend	1	Each	2,000	2,000	3,000	3,000	5,000
15	DAMP_SHIELD	Dampers, Shield Wire,Spiral	1	Each	25	25	25	25	50
15	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
15	SD-90-80	Steel, Structure,90 deg.DDE, 80-FT	1	Each	32,915	32,915	16,458	16,458	49,373
15	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
15	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
15	cairo_aaac	Conductor 465.5 AAAC Cairo	2,992	(ft)	2	5,985	4	11,969	17,954
16	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
16	FOUND-20FT	Foundation Caisson, 20-FT	1	Each	20,000	20,000	25,000	25,000	45,000
16	SA-20-75	Steel, Structure,Medium Angle, 75-FT	1	Each	29,791	29,791	14,895	14,895	44,686
16	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
16	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
16	cairo_aaac	Conductor 465.5 AAAC Cairo	1,670	(ft)	2	3,340	4	6,681	10,021
17	C8S	13.8-KV, Double-Deadend	1	Each	2,000	2,000	3,000	3,000	5,000
17	FOUND-20FT	Foundation Caisson, 20-FT	1	Each	20,000	20,000	25,000	25,000	45,000
17	SA-3-70	Steel, Structure,Small Angle, 70-FT	1	Each	9,625	9,625	4,813	4,813	14,438
17	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
17	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
17	cairo_aaac	Conductor 465.5 AAAC Cairo	2,020	(ft)	2	4,039	4	8,078	12,118
18	C8S	13.8-KV, Double-Deadend	1	Each	2,000	2,000	3,000	3,000	5,000
18	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
18	FOUND-20FT	Foundation Caisson, 20-FT	1	Each	20,000	20,000	25,000	25,000	45,000
18	SA-10-75	Steel, Structure,Small Angle, 75-FT	1	Each	11,825	11,825	5,913	5,913	17,738
18	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
18	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
18	cairo_aaac	Conductor 465.5 AAAC Cairo	1,832	(ft)	2	3,665	4	7,329	10,994
19	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
19	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
19	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
19	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
19	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
19	cairo_aaac	Conductor 465.5 AAAC Cairo	1,854	(ft)	2	3,707	4	7,414	11,122
20	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
20	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
20	DF-1-80	Wood Pole,Doug. Fir, DF-1-80	1	Each	2,145	2,145	3,000	3,000	5,145
20	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
20	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
20	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
20	cairo_aaac	Conductor 465.5 AAAC Cairo	1,872	(ft)	2	3,743	4	7,486	11,229
21	C8S	13.8-KV, Double-Deadend	1	Each	2,000	2,000	3,000	3,000	5,000
21	FOUND-20FT	Foundation Caisson, 20-FT	1	Each	20,000	20,000	25,000	25,000	45,000
21	SA-20-70	Steel, Structure,Medium Angle, 70-FT	1	Each	11,998	11,998	5,999	5,999	17,997
21	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
21	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
21	cairo_aaac	Conductor 465.5 AAAC Cairo	1,780	(ft)	2	3,559	4	7,119	10,678
22	C8S	13.8-KV, Double-Deadend	1	Each	2,000	2,000	3,000	3,000	5,000
22	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
22	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
22	SD-90-80	Steel, Structure,90 deg.DDE, 80-FT	1	Each	32,915	32,915	16,458	16,458	49,373
22	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
22	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
22	cairo_aaac	Conductor 465.5 AAAC Cairo	1,692	(ft)	2	3,385	4	6,769	10,154
23	DF-1-90	*** UNDEFINED PART ***	1	Each	0	0	0	0	0
23	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
23	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
23	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
23	cairo_aaac	Conductor 465.5 AAAC Cairo	1,576	(ft)	2	3,153	4	6,305	9,458
24	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
24	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
24	SD-90-70	Steel, Structure, 90deg DDE, 70-FT	1	Each	31,713	31,713	15,857	15,857	47,570
24	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
24	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
24	cairo_aaac	Conductor 465.5 AAAC Cairo	1,113	(ft)	2	2,226	4	4,451	6,677
25	DF-1-90	*** UNDEFINED PART ***	1	Each	0	0	0	0	0
25	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
25	TM-9	Pole Ground, Rod Type	1	Each	75	75	100	100	175
25	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
25	cairo_aaac	Conductor 465.5 AAAC Cairo	805	(ft)	2	1,609	4	3,218	4,827
26	C8S	13.8-KV, Double-Deadend	1	Each	2,000	2,000	3,000	3,000	5,000
26	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
26	FOUND-40FT	Foundation Caisson, 40-FT	1	Each	26,000	26,000	25,000	25,000	51,000
26	SD-30-90	Steel, Structure, 90 deg, DDE, 70-FT	1	Each	31,713	31,713	15,857	15,857	47,570
26	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
26	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
26	ames_aaac	Conductor 77.5 AAAC AMES	1,684	(ft)	1	2,105	3	4,209	6,314
26	cairo_aaac	Conductor 465.5 AAAC Cairo	1,257	(ft)	2	2,513	4	5,026	7,540
27	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
27	FOUND-40FT	Foundation Caisson, 40-FT	1	Each	26,000	26,000	25,000	25,000	51,000
27	ST-75	Steel, Structure, H-frame, 2-pole, 75-FT	1	Each	14,471	14,471	7,236	7,236	21,707
27	STUB30-85	Steel, Structure, Tangent, 85-FT	1	Each	16,255	16,255	8,128	8,128	24,383
27	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
27	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
27	ames_aaac	Conductor 77.5 AAAC AMES	1,270	(ft)	1	1,588	3	3,175	4,763
27	cairo_aaac	Conductor 465.5 AAAC Cairo	954	(ft)	2	1,909	4	3,817	5,726
28	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
28	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
28	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
28	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
28	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
28	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
28	ames_aaac	Conductor 77.5 AAAC AMES	1,266	(ft)	1	1,583	3	3,166	4,749
28	cairo_aaac	Conductor 465.5 AAAC Cairo	950	(ft)	2	1,899	4	3,799	5,698
29	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
29	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
29	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
29	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
29	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
29	ames_aaac	Conductor 77.5 AAAC AMES	1,252	(ft)	1	1,564	3	3,129	4,693
29	cairo_aaac	Conductor 465.5 AAAC Cairo	939	(ft)	2	1,878	4	3,755	5,633
30	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
30	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
30	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
30	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
30	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
30	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
30	ames_aaac	Conductor 77.5 AAAC AMES	1,261	(ft)	1	1,577	3	3,154	4,730
30	cairo_aaac	Conductor 465.5 AAAC Cairo	946	(ft)	2	1,892	4	3,784	5,677
31	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
31	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
31	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
31	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
31	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
31	ames_aaac	Conductor 77.5 AAAC AMES	1,273	(ft)	1	1,592	3	3,184	4,775

OPTION 2 - DETAILED BILL OF MATERIAL POLE-BY-POLE

Str. No.	Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost ($)	Total Material Cost ($)	Labor Unit Cost ($)	Total Labor Cost ($)	Total Cost ($)
31	cairo_aaac	Conductor 465.5 AAAC Cairo	955	(ft)	2	1,910	4	3,820	5,730
32	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
32	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
32	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
32	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
32	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
32	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
32	ames_aaac	Conductor 77.5 AAAC AMES	1,268	(ft)	1	1,586	3	3,171	4,757
32	cairo_aaac	Conductor 465.5 AAAC Cairo	951	(ft)	2	1,903	4	3,805	5,708
33	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
33	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
33	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
33	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
33	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
33	ames_aaac	Conductor 77.5 AAAC AMES	1,253	(ft)	1	1,566	3	3,131	4,697
33	cairo_aaac	Conductor 465.5 AAAC Cairo	939	(ft)	2	1,879	4	3,758	5,637
34	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
34	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
34	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
34	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
34	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
34	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
34	ames_aaac	Conductor 77.5 AAAC AMES	1,286	(ft)	1	1,608	3	3,216	4,824
34	cairo_aaac	Conductor 465.5 AAAC Cairo	965	(ft)	2	1,930	4	3,859	5,789
35	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
35	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
35	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
35	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
35	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
35	ames_aaac	Conductor 77.5 AAAC AMES	1,251	(ft)	1	1,564	3	3,128	4,692
35	cairo_aaac	Conductor 465.5 AAAC Cairo	939	(ft)	2	1,877	4	3,754	5,631
36	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
36	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
36	FOUND-30FT	Foundation Caisson, 30-FT	2	Each	23,000	46,000	25,000	50,000	96,000
36	SD-70	Steel, Structure, DDE, 70-FT	1	Each	26,725	26,725	13,363	13,363	40,088
36	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
36	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
36	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
36	ames_aaac	Conductor 77.5 AAAC AMES	1,226	(ft)	1	1,532	3	3,064	4,597
36	cairo_aaac	Conductor 465.5 AAAC Cairo	919	(ft)	2	1,839	4	3,677	5,516
37	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
37	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
37	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
37	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
37	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
37	ames_aaac	Conductor 77.5 AAAC AMES	984	(ft)	1	1,230	3	2,459	3,689
37	cairo_aaac	Conductor 465.5 AAAC Cairo	738	(ft)	2	1,476	4	2,951	4,427
38	C9-1	13.8-KV, 4-Wire Tangent	1	Each	1,000	1,000	1,500	1,500	2,500
38	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
38	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
38	STUB-070	Steel, Structure, Tangent, 70-FT	1	Each	7,057	7,057	3,528	3,528	10,585
38	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
38	TP-115	115-KV Tangent Assembly without Shield	1	Each	3,500	3,500	2,300	2,300	5,800
38	ames_aaac	Conductor 77.5 AAAC AMES	1,027	(ft)	1	1,283	3	2,566	3,850
38	cairo_aaac	Conductor 465.5 AAAC Cairo	764	(ft)	2	1,528	4	3,056	4,583
39	C8S	13.8-KV, Double-Deadend	1	Each	2,000	2,000	3,000	3,000	5,000
39	FOUND-45FT	Foundation Caisson, 45-FT	1	Each	29,000	29,000	25,000	25,000	54,000
39	SD-90-75	Steel, Structure, 90deg DDE, 75-FT	1	Each	24,151	24,151	12,075	12,075	36,226
39	TM52	Pole, ID Tag	1	Each	10	10	150	150	160
39	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
39	cairo_aaac	Conductor 465.5 AAAC Cairo	1,339	(ft)	2	2,678	4	5,355	8,033
40	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
40	ST-60	Steel, Structure, Tangent, 60-FT	1	Each	5,291	5,291	2,646	2,646	7,937
40	cairo_aaac	Conductor 465.5 AAAC Cairo	1,393	(ft)	2	2,787	4	5,573	8,360
41	FOUND-30FT	Foundation Caisson, 30-FT	1	Each	23,000	23,000	25,000	25,000	48,000
41	ST-60	Steel, Structure, Tangent, 60-FT	1	Each	5,291	5,291	2,646	2,646	7,937
41	cairo_aaac	Conductor 465.5 AAAC Cairo	1,375	(ft)	2	2,750	4	5,500	8,250
42	FOUND-30FT	Foundation Caisson, 30-FT	2	Each	23,000	46,000	25,000	50,000	96,000
42	THDE-45	115-KV Double-Deadend, H-Frame	1	Each	15,054	15,054	7,527	7,527	22,581
42	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
42	cairo_aaac	Conductor 465.5 AAAC Cairo	1,313	(ft)	2	2,627	4	5,253	7,880
43	3-SD-60	Steel, 3-Pole Structure, DDE, 60-FT	1	Each	29,299	29,299	14,650	14,650	43,949
43	3-SD-90-50	Steel, 3-Pole Structure, 90 deg. DDE, 50-FT	1	Each	25,066	25,066	12,533	12,533	37,599
43	Amarillo_VR2	Conductor, AAAC Amarillo/VR2	814	(ft)	3	2,442	4	2,849	5,291
43	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
43	FOUND-40FT	Foundation Caisson, 40-FT	3	Each	26,000	78,000	25,000	75,000	153,000
43	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
43	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
44	Amarillo_VR2	Conductor, AAAC Amarillo/VR2	3,169	(ft)	3	9,507	4	11,091	20,598
44	FOUND-40FT	Foundation Caisson, 40-FT	2	Each	26,000	52,000	25,000	50,000	102,000
44	SH-65	Steel, Structure, H-frame, 2-pole, 65-FT	1	Each	16,660	16,660	8,330	8,330	24,990
44	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
44	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
45	Amarillo_VR2	Conductor, AAAC Amarillo/VR2	2,306	(ft)	3	6,917	4	8,070	14,988
45	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
45	FOUND-40FT	Foundation Caisson, 40-FT	2	Each	26,000	52,000	25,000	50,000	102,000
45	SH-70	Steel, Structure, H-frame, 2-pole, 70-FT	1	Each	26,433	26,433	13,217	13,217	39,650
45	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
45	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
46	Amarillo_VR2	Conductor, AAAC Amarillo/VR2	2,044	(ft)	3	6,131	4	7,153	13,285
46	FOUND-40FT	Foundation Caisson, 40-FT	2	Each	26,000	52,000	25,000	50,000	102,000
46	SH-70	Steel, Structure, H-frame, 2-pole, 70-FT	1	Each	26,433	26,433	13,217	13,217	39,650
46	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
46	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
47	3-SD-0-70	Steel, 3-Pole Structure,0 deg. DDE, 70-FT	1	Each	36,688	36,688	18,344	18,344	55,032
47	Amarillo_VR2	Conductor, AAAC Amarillo/VR2	3,371	(ft)	3	10,113	4	11,799	21,912
47	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
47	FOUND-45FT	Foundation Caisson, 45-FT	3	Each	29,000	87,000	25,000	75,000	162,000
47	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
47	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
48	3-SD-0-110	Steel, 3-Pole Structure,0 deg. DDE, 110-FT	1	Each	85,588	85,588	42,794	42,794	128,382
48	Amarillo_VR2	Conductor, AAAC Amarillo/VR2	4,813	(ft)	3	14,439	4	16,845	31,283
48	FOUND-45FT	Foundation Caisson, 45-FT	3	Each	29,000	87,000	25,000	75,000	162,000
48	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
48	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
49	3-SD-0-110	Steel, 3-Pole Structure,0 deg. DDE, 110-FT	1	Each	85,588	85,588	42,794	42,794	128,382
49	Amarillo_VR2	Conductor, AAAC Amarillo/VR2	3,050	(ft)	3	9,151	4	10,677	19,828
49	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
49	FOUND-40FT	Foundation Caisson, 40-FT	3	Each	26,000	78,000	25,000	75,000	153,000
49	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
49	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
50	3-SD-10-60	Steel, 3-Pole Structure,10 deg. DDE, 60-FT	1	Each	33,360	33,360	16,680	16,680	50,040
50	FOUND-40FT	Foundation Caisson, 40-FT	3	Each	26,000	78,000	25,000	75,000	153,000

OPTION 2 - DETAILED BILL OF MATERIAL POLE-BY-POLE

Str. No.	Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost ($)	Total Material Cost ($)	Labor Unit Cost ($)	Total Labor Cost ($)	Total Cost ($)
50	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
50	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
50	cairo_aaac	Conductor 465.5 AAAC Cairo	2,581	(ft)	2	5,162	4	10,324	15,486
51	3-SD-60-45	Steel, 3-Pole Structure,60 deg. DDE, 45-FT	1	Each	19,905	19,905	9,952	9,952	29,857
51	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
51	FOUND-20FT	Foundation Caisson, 20-FT	3	Each	20,000	60,000	25,000	75,000	135,000
51	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
51	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
51	cairo_aaac	Conductor 465.5 AAAC Cairo	562	(ft)	2	1,123	4	2,246	3,370
52	3-SD-0-40	Steel, 3-Pole Structure,0 deg. DDE, 40-FT	1	Each	20,834	20,834	10,417	10,417	31,251
52	FOUND-20FT	Foundation Caisson, 20-FT	3	Each	20,000	60,000	25,000	75,000	135,000
52	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
52	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
52	cairo_aaac	Conductor 465.5 AAAC Cairo	3,323	(ft)	2	6,646	4	13,291	19,937
53	3-SD-0-75	Steel, 3-Pole Structure,0 deg. DDE, 75-FT	1	Each	35,646	35,646	17,823	17,823	53,469
53	FOUND-20FT	Foundation Caisson, 20-FT	3	Each	20,000	60,000	25,000	75,000	135,000
53	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
53	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
53	cairo_aaac	Conductor 465.5 AAAC Cairo	2,948	(ft)	2	5,896	4	11,793	17,689
54	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
54	DF-1-75	Wood Pole,Doug. Fir, DF-1-75	3	Each	1,683	5,049	3,000	9,000	14,049
54	TA-50D	Plate Anchor Assembly	6	Each	1,000	6,000	3,000	18,000	24,000
54	TG-21A	Down Guy Assembly	6	Each	250	1,500	1,000	6,000	7,500
54	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
54	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
54	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
54	cairo_aaac	Conductor 465.5 AAAC Cairo	2,072	(ft)	2	4,143	4	8,286	12,429
55	DF-2-65	Wood Pole,Doug. Fir, DF-2-65	2	Each	1,495	2,990	3,000	6,000	8,990
55	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
55	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
55	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
55	cairo_aaac	Conductor 465.5 AAAC Cairo	1,458	(ft)	2	2,916	4	5,833	8,749
56	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
56	DF-2-70	Wood Pole,Doug. Fir, DF-2-70	2	Each	1,513	3,026	3,000	6,000	9,026
56	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
56	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
56	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
56	cairo_aaac	Conductor 465.5 AAAC Cairo	1,570	(ft)	2	3,140	4	6,280	9,420
57	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
57	DF-1-55	Wood Pole,Doug. Fir, DF-1-55	3	Each	1,097	3,291	3,000	9,000	12,291
57	TA-50D	Plate Anchor Assembly	6	Each	1,000	6,000	3,000	18,000	24,000
57	TG-21A	Down Guy Assembly	6	Each	250	1,500	1,000	6,000	7,500
57	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
57	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
57	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
57	cairo_aaac	Conductor 465.5 AAAC Cairo	2,413	(ft)	2	4,826	4	9,652	14,479
58	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
58	DF-1-50	Wood Pole,Doug. Fir, DF-1-50	3	Each	946	2,838	3,000	9,000	11,838
58	TA-50D	Plate Anchor Assembly	6	Each	1,000	6,000	3,000	18,000	24,000
58	TG-21A	Down Guy Assembly	6	Each	250	1,500	1,000	6,000	7,500
58	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
58	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
58	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
58	cairo_aaac	Conductor 465.5 AAAC Cairo	2,778	(ft)	2	5,556	4	11,112	16,668
59	DF-2-65	Wood Pole,Doug. Fir, DF-2-65	2	Each	1,495	2,990	3,000	6,000	8,990
59	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
59	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
59	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
59	cairo_aaac	Conductor 465.5 AAAC Cairo	1,282	(ft)	2	2,565	4	5,130	7,695
60	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
60	DF-2-75	Wood Pole,Doug. Fir, DF-2-75	2	Each	1,613	3,226	3,000	6,000	9,226
60	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
60	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
60	cairo_aaac	Conductor 465.5 AAAC Cairo	1,617	(ft)	2	3,234	4	6,468	9,701
61	DF-2-90	Wood Pole,Doug. Fir, DF-2-90	2	Each	2,144	4,288	3,000	6,000	10,288
61	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
61	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
61	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
61	cairo_aaac	Conductor 465.5 AAAC Cairo	906	(ft)	2	1,811	4	3,623	5,434
62	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
62	DF-1-70	Wood Pole,Doug. Fir, DF-1-70	3	Each	1,679	5,037	3,000	9,000	14,037
62	TA-50D	Plate Anchor Assembly	6	Each	1,000	6,000	3,000	18,000	24,000
62	TG-21A	Down Guy Assembly	6	Each	250	1,500	1,000	6,000	7,500
62	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
62	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
62	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
62	cairo_aaac	Conductor 465.5 AAAC Cairo	1,250	(ft)	2	2,499	4	4,998	7,497
63	DF-2-65	Wood Pole,Doug. Fir, DF-2-65	2	Each	1,495	2,990	3,000	6,000	8,990
63	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
63	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
63	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
63	cairo_aaac	Conductor 465.5 AAAC Cairo	1,274	(ft)	2	2,549	4	5,098	7,646
64	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
64	DF-1-50	Wood Pole,Doug. Fir, DF-1-50	3	Each	946	2,838	3,000	9,000	11,838
64	TA-50D	Plate Anchor Assembly	6	Each	1,000	6,000	3,000	18,000	24,000
64	TG-21A	Down Guy Assembly	6	Each	250	1,500	1,000	6,000	7,500
64	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
64	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
64	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
64	cairo_aaac	Conductor 465.5 AAAC Cairo	1,647	(ft)	2	3,293	4	6,587	9,880
65	DF-2-65	Wood Pole,Doug. Fir, DF-2-65	2	Each	1,495	2,990	3,000	6,000	8,990
65	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
65	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
65	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
65	cairo_aaac	Conductor 465.5 AAAC Cairo	1,681	(ft)	2	3,362	4	6,725	10,087
66	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
66	DF-2-70	Wood Pole,Doug. Fir, DF-2-70	2	Each	1,513	3,026	3,000	6,000	9,026
66	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
66	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
66	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
66	cairo_aaac	Conductor 465.5 AAAC Cairo	1,323	(ft)	2	2,646	4	5,292	7,938
67	DF-1-65	Wood Pole,Doug. Fir, DF-1-65	3	Each	1,469	4,407	3,000	9,000	13,407
67	TA-50D	Plate Anchor Assembly	6	Each	1,000	6,000	3,000	18,000	24,000
67	TG-21A	Down Guy Assembly	6	Each	250	1,500	1,000	6,000	7,500
67	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
67	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
67	TS-5	115-KV Double-Deadend Assembly without Shield	1	Each	4,500	4,500	2,300	2,300	6,800
67	cairo_aaac	Conductor 465.5 AAAC Cairo	2,055	(ft)	2	4,110	4	8,221	12,331
68	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
68	DF-2-85	Wood Pole,Doug. Fir, DF-2-85	2	Each	1,944	3,888	3,000	6,000	9,888
68	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
68	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
68	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350

OPTION 2 - DETAILED BILL OF MATERIAL POLE-BY-POLE

Str. No.	Stock Number	Description	Quantity	Unit of Measure	Material Unit Cost ($)	Total Material Cost ($)	Labor Unit Cost ($)	Total Labor Cost ($)	Total Cost ($)
68	cairo_aaac	Conductor 465.5 AAAC Cairo	1,873	(ft)	2	3,746	4	7,492	11,237
69	DF-1-60	Wood Pole,Doug. Fir, DF-1-60	3	Each	1,264	3,792	3,000	9,000	12,792
69	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	868	(ft)	3	2,170	3	2,170	4,339
69	OPGW SPLICE	OPGW Splice Box and Accessories	1	Each	3,000	3,000	3,000	3,000	6,000
69	TA-50D	Plate Anchor Assembly	10	Each	1,000	10,000	3,000	30,000	40,000
69	TG-21A	Down Guy Assembly	10	Each	250	2,500	1,000	10,000	12,500
69	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
69	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
69	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
69	cairo_aaac	Conductor 465.5 AAAC Cairo	2,565	(ft)	2	5,131	4	10,261	15,392
69	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	877	(ft)	1	877	4	3,069	3,946
70	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
70	DF-1-60	Wood Pole,Doug. Fir, DF-1-60	3	Each	1,264	3,792	3,000	9,000	12,792
70	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	394	(ft)	3	985	3	985	1,969
70	TA-50D	Plate Anchor Assembly	10	Each	1,000	10,000	3,000	30,000	40,000
70	TG-21A	Down Guy Assembly	10	Each	250	2,500	1,000	10,000	12,500
70	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
70	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
70	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
70	cairo_aaac	Conductor 465.5 AAAC Cairo	1,157	(ft)	2	2,314	4	4,629	6,943
70	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	394	(ft)	1	394	4	1,379	1,772
71	DF-2-75	Wood Pole,Doug. Fir, DF-2-75	2	Each	1,613	3,226	3,000	6,000	9,226
71	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	396	(ft)	3	989	3	989	1,978
71	TH-1G	115-KV, H-Frame, Tangent with Shield	1	Each	9,500	9,500	15,000	15,000	24,500
71	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
71	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
71	cairo_aaac	Conductor 465.5 AAAC Cairo	1,187	(ft)	2	2,374	4	4,747	7,121
71	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	396	(ft)	1	396	4	1,385	1,780
72	DF-2-75	Wood Pole,Doug. Fir, DF-2-75	2	Each	1,613	3,226	3,000	6,000	9,226
72	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	368	(ft)	3	919	3	919	1,838
72	TH-1G	115-KV, H-Frame, Tangent with Shield	1	Each	9,500	9,500	15,000	15,000	24,500
72	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
72	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
72	cairo_aaac	Conductor 465.5 AAAC Cairo	1,103	(ft)	2	2,206	4	4,413	6,619
72	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	368	(ft)	1	368	4	1,287	1,655
73	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
73	DF-2-80	Wood Pole,Doug. Fir, DF-2-80	2	Each	1,744	3,488	3,000	6,000	9,488
73	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	711	(ft)	3	1,777	3	1,777	3,553
73	TH-1G	115-KV, H-Frame, Tangent with Shield	1	Each	9,500	9,500	15,000	15,000	24,500
73	TM52	Pole, ID Tag	4	Each	10	40	150	600	640
73	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
73	cairo_aaac	Conductor 465.5 AAAC Cairo	2,120	(ft)	2	4,240	4	8,479	12,719
73	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	720	(ft)	1	720	4	2,521	3,242
74	DF-1-85	Wood Pole,Doug. Fir, DF-1-85	3	Each	2,445	7,335	3,000	9,000	16,335
74	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	502	(ft)	3	1,255	3	1,255	2,510
74	TA-50D	Plate Anchor Assembly	10	Each	1,000	10,000	3,000	30,000	40,000
74	TG-21A	Down Guy Assembly	10	Each	250	2,500	1,000	10,000	12,500
74	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
74	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
74	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
74	cairo_aaac	Conductor 465.5 AAAC Cairo	1,447	(ft)	2	2,895	4	5,789	8,684
74	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	497	(ft)	1	497	4	1,739	2,236
75	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
75	DF-1-70	Wood Pole,Doug. Fir, DF-1-70	3	Each	1,679	5,037	3,000	9,000	14,037
75	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	483	(ft)	3	1,207	3	1,207	2,414
75	TA-50D	Plate Anchor Assembly	10	Each	1,000	10,000	3,000	30,000	40,000
75	TG-21A	Down Guy Assembly	10	Each	250	2,500	1,000	10,000	12,500
75	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
75	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
75	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
75	cairo_aaac	Conductor 465.5 AAAC Cairo	1,403	(ft)	2	2,805	4	5,610	8,415
75	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	468	(ft)	1	468	4	1,640	2,108
76	DF-2-90	Wood Pole,Doug. Fir, DF-2-90	2	Each	2,144	4,288	3,000	6,000	10,288
76	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	608	(ft)	3	1,520	3	1,520	3,039
76	TH-1G	115-KV, H-Frame, Tangent with Shield	1	Each	9,500	9,500	15,000	15,000	24,500
76	TM52	Pole, ID Tag	4	Each	10	40	150	600	640
76	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
76	cairo_aaac	Conductor 465.5 AAAC Cairo	1,805	(ft)	2	3,609	4	7,219	10,828
76	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	613	(ft)	1	613	4	2,146	2,759
77	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
77	DF-1-95	Wood Pole,Doug. Fir, DF-1-95	3	Each	3,045	9,135	3,000	9,000	18,135
77	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	571	(ft)	3	1,427	3	1,427	2,854
77	TA-50D	Plate Anchor Assembly	10	Each	1,000	10,000	3,000	30,000	40,000
77	TG-21A	Down Guy Assembly	10	Each	250	2,500	1,000	10,000	12,500
77	TH-1G	115-KV, H-Frame, Tangent with Shield	1	Each	9,500	9,500	15,000	15,000	24,500
77	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
77	cairo_aaac	Conductor 465.5 AAAC Cairo	1,654	(ft)	2	3,307	4	6,615	9,922
77	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	566	(ft)	1	566	4	1,980	2,545
78	DF-1-95	Wood Pole,Doug. Fir, DF-1-95	3	Each	3,045	9,135	3,000	9,000	18,135
78	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	598	(ft)	3	1,496	3	1,496	2,992
78	TA-50D	Plate Anchor Assembly	10	Each	1,000	10,000	3,000	30,000	40,000
78	TG-21A	Down Guy Assembly	10	Each	250	2,500	1,000	10,000	12,500
78	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
78	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
78	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
78	cairo_aaac	Conductor 465.5 AAAC Cairo	1,756	(ft)	2	3,512	4	7,023	10,535
78	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	589	(ft)	1	589	4	2,060	2,649
79	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600
79	DF-2-70	Wood Pole,Doug. Fir, DF-2-70	2	Each	1,513	3,026	3,000	6,000	9,026
79	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	466	(ft)	3	1,165	3	1,165	2,330
79	TH-1	115-KV, H-Frame, Tangent without Shield	1	Each	9,000	9,000	13,378	13,378	22,378
79	TM52	Pole, ID Tag	2	Each	10	20	150	300	320
79	TM-9	Pole Ground, Rod Type	2	Each	75	150	100	200	350
79	cairo_aaac	Conductor 465.5 AAAC Cairo	1,386	(ft)	2	2,772	4	5,544	8,316
79	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	476	(ft)	1	476	4	1,666	2,142
80	DF-1-90	*** UNDEFINED PART ***	3	Each	0	0	0	0	0
80	OPGW_CC-27/27/465	OPGW, AFL, CC-27/27/465	775	(ft)	3	1,937	3	1,937	3,873
80	TA-50D	Plate Anchor Assembly	10	Each	1,000	10,000	3,000	30,000	40,000
80	TG-21A	Down Guy Assembly	10	Each	250	2,500	1,000	10,000	12,500
80	TM52	Pole, ID Tag	3	Each	10	30	150	450	480
80	TM-9	Pole Ground, Rod Type	3	Each	75	225	100	300	525
80	TS-5G	115-KV Double-Deadend Assembly with Shield	1	Each	5,000	5,000	2,500	2,500	7,500
80	cairo_aaac	Conductor 465.5 AAAC Cairo	2,316	(ft)	2	4,632	4	9,263	13,895
80	shieldwire_3/8 inch EHS	Shieldwire, 3/8 inch EHS	785	(ft)	1	785	4	2,749	3,534
81	DAMP_COND	Dampers,Conductor,Stockbridge	6	Each	50	300	50	300	600

Distribution Rack Section	2 per str	3 units	1.9 cu yd	$1,400	$15,960		
Total			**18.5 cu yd**				**$25,900**
115-kV and Misc Steel Supports							
Dead End Tower	1 units	9,950 lbs	22 hrs	$1.50 per lb	$14,925	$2,860	
Total		**9,950 lbs**					**$17,785**
25-kV Steel Supports							
3-ph LOW Bus Support	1 units	400 lbs	3 hrs	$1.50 per lb	$600	$390	
3-ph LOW Disconnect Switch	1 units	750 lbs	6 hrs	$1.50 per lb	$1,125	$780	
Distribution Rack Section	3 units	2,870 lbs	18 hrs	$1.50 per lb	$12,915	$7,020	
Total		**9,760 lbs**					**$22,830**
Grounding							
Conductor: 4/0 AWG Copper		3,000 ft	0.1 Hrs	$3.95 per foot	$11,850	$39,000	
Connectors & Misc Equipment			0.02 Hrs	$2.50 per foot	$7,500	$7,800	
Total							**$66,150**
Conduits							
Conduit: Avg 3" PVC Sch 40		1,000 ft	0.05 Hrs	$2.50 per ft	$2,500	$6,500	
Vaults		6	6. Hrs	$2,500	$15,000	$4,680	
Total							**$28,680**
Control Cable							
600V Control Cable: Field		2,500 ft	0.03 Hrs	$2.75 per ft	$6,875	$8,125	
600V Control Cable: Control House		1,000 ft	0.03 Hrs	$2.75 per ft	$2,750	$3,250	
Total							**$21,000**
Misc Equipment							
Signs, Junction Boxes, Etc		1		$7,500	$7,500	$0	
Total							**$7,500**
Land, Permits, and Site Investigations							
Land Use Permits		1 lot		$15,000		$15,000	
Substation surveying		1 lot		$4,000		$4,000	
Bore Logs		4 bores		$1,500		$6,000	
Geotechnical Report		1 lot		$12,000		$12,000	
Total							**$37,000** Note 4
Contractor Fees							
Contractor Mobilization/Demobilization		Yes		1.0%		$18,375	
Insurance		Yes		0.5%		$9,188	
Surety, Bonding, and Guarantees		Yes		0.5%		$9,188	
Liquidated Damages		None		2.5%		$0	
Project Management		Yes		5.0%		$91,876	
Contractor Profit		Yes		10.0%		$183,752	
Misc/Incidental		Yes		0.5%		$9,188	
Total							**$321,566**
Commissioning							
Relay Commissioning		1 unit	120. Hrs		$15,600		
HV Commissioning		1 unit	120. Hrs		$15,600		
Total							**$31,200**
Engineering							
Station Design			9.5%			$219,000	
Total							**$219,000**

Total (rounded)			$1,750,460	$212,390	$577,570	**$2,541,000**
Contingency	20.0%		$350,092	$42,478	$0	
Total (rounded)						**$2,933,000**

NOTES:

1. No RUS document, bid preparation, or bid administration costs are included
2. These costs are not associated with construction of Oceanside Sub but are assumed would be part of the overall project cost
3. Assume BPA will not allow the use of metering PTs for relaying
4. No property purchase, ROW clearing, Environmental Studies, or other Miscellaneous development costs are included

Appendix 6–
Construction Cost Estimates

PRELIMINARY STRUCTURE PRICES
ROUTE 3A

Notes:
1. Estimates are order-of-magnitude for the construction of structures and foundations.
2. Estimates do not include conductors, mobilization and de-mobilization, ROW costs, Engineering, permitting, or other costs that may be essential to the project.
3. Unit Cost for Structures 1 through 12 do not include foundations.
4. Refer to associated Plan and Profile for reference.
5. Wood pole, tangent, H-Frame, and 3-pole deadend material and labor costs are based on 2015 cost estimates from BPA Lane-Wendson 115-kV reconductor project.
6. Foundation Caisson length, Caisson Diameter, and Caisson Labor costs provided by Foundation Engineering.

SUBMITTED BY :TriAxis Engineering
Date: January 4, 2016

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Str#	Structure Concept Sketch	Structure Description	# of Pole per Structure	Foundation Type	Structure Unit Material Cost (Note 5) ($)	Structure Unit Labor Cost (Note 5) ($)	Foundation Caisson Length (Note 6) (ft)	Foundation Caisson Diameter (Note 6) (ft)	Foundation Material Unit Cost per Pole ($)	Total Structure Foundation Material Cost ($)	Caisson Unit Labor Cost per Caisson (Note 6) ($)	Total Caisson Foundation Labor Cost ($)	Total Cost ($)
1		PULL-OFF	1										$ -
2	8	WOOD,3-POLE, DE, GUYED	3	Direct-Embedded	$ 40,000	$ 20,000							$ 60,000
3	8	WOOD,3-POLE, DE, GUYED	3	Direct-Embedded	$ 40,000	$ 20,000							$ 60,000
4	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
5	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
6	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
7	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
8	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
9	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
10	8	WOOD,3-POLE, GUYED	3	Direct-Embedded	$ 30,000	$ 20,000							$ 50,000
11	7	WOOD, TANGENT, SINGLE POLE	1	Direct-Embedded	$ 5,000	$ 5,000							$ 10,000
12	7	WOOD, TANGENT, SINGLE POLE	1	Direct-Embedded	$ 5,000	$ 5,000							$ 10,000
13	2	STEEL,DE	1	Vibratory Caisson	$ 23,000	$ 23,000	40	4.0	$ 26,000	$ 26,000	$ 25,000	$ 25,000	$ 97,000
14	2	STEEL,DE	1	Vibratory Caisson	$ 28,000	$ 28,000	40	4.0	$ 26,000	$ 26,000	$ 25,000	$ 25,000	$ 107,000
15	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
16	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
17	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
18	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
19	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
20	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
21	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
22	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
23	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
24	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
25	2	STEEL,MONOPOLE, DE	1	Vibratory Caisson	$ 35,000	$ 35,000	45	4.0	$ 29,000	$ 29,000	$ 25,000	$ 25,000	$ 124,000
26	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 17,000	$ 17,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 108,000
27	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 17,000	$ 17,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 108,000
28	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 17,000	$ 17,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 108,000
29	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 52,000	$ 52,000	40	3.0	$ 19,000	$ 57,000	$ 25,000	$ 75,000	$ 236,000
30	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 52,000	$ 52,000	40	3.0	$ 19,000	$ 57,000	$ 25,000	$ 75,000	$ 236,000
31	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 24,000	$ 24,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 122,000
32	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 24,000	$ 24,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 122,000
33	2	STEEL,DE	1	Vibratory Caisson	$ 26,000	$ 26,000	45	4.0	$ 29,000	$ 29,000	$ 25,000	$ 25,000	$ 106,000
34	4	STEEL,MONOPOLE,TANGENT	1	Vibratory Caisson	$ 15,000	$ 15,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 67,000
35	4	STEEL,MONOPOLE,TANGENT	1	Vibratory Caisson	$ 15,000	$ 15,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 67,000
36	4	STEEL,MONOPOLE,TANGENT	1	Vibratory Caisson	$ 32,000	$ 32,000	45	4.0	$ 29,000	$ 29,000	$ 25,000	$ 25,000	$ 118,000
37	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 51,000	$ 51,000	40	3.0	$ 19,000	$ 57,000	$ 25,000	$ 75,000	$ 234,000
38	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 30,000	$ 30,000	40	3.0	$ 19,000	$ 57,000	$ 25,000	$ 75,000	$ 192,000
39	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 43,000	$ 43,000	40	3.0	$ 19,000	$ 57,000	$ 25,000	$ 75,000	$ 218,000
40	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 35,000	$ 35,000	20	3.0	$ 10,000	$ 30,000	$ 25,000	$ 75,000	$ 175,000
41	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 43,000	$ 43,000	20	3.0	$ 10,000	$ 30,000	$ 25,000	$ 75,000	$ 191,000

Total Str. Cost(rounded) $ 3,700,000

PRELIMINARY STRUCTURE PRICES
ROUTE 1D

Notes:
1. Estimates are order-of-magnitude for the construction of structures and foundations.
2. Estimates do not include conductors, mobilization and de-mobilization, ROW costs, Engineering, permitting, or other costs that may be essential with the project.
3. Unit Cost for Structures 1 through 12 do not include foundations.
4. Refer to associated Plan and Profile for reference.
5. Wood pole, tangent, H-Frame, and 3-pole deadend material and labor costs are based on 2016 cost estimates from BPA Lane-Wendson 115-kV reconductor project.
6. Foundation Caisson length, Caisson Diameter, and Caisson Labor costs provided by Foundation Engineering.

SUBMITTED BY :TriAxis Engineering
Date: FEBRUARY 10, 2016

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Str#	Structure Concept Sketch	Structure Description	# of Pole per Structure	Foundation Type	Structure Unit Material Cost (Note 5) ($)	Structure Unit Labor Cost (Note 5) ($)	Foundation Caisson Length (Note 6) (ft)	Foundation Caisson Diameter (Note 6) (ft)	Foundation Material Unit Cost per Pole ($)	Total Structure Foundation Material Cost ($)	Caisson Unit Labor Cost per Caisson (Note 6) ($)	Total Caisson Foundation Labor Cost ($)	Total Cost ($)
1		PULL-OFF	1										$ -
2	8	WOOD,3-POLE, DE, GUYED	3	Direct-Embedded	$ 40,000	$ 20,000							$ 60,000
3	8	WOOD,3-POLE, DE, GUYED	3	Direct-Embedded	$ 40,000	$ 20,000							$ 60,000
4	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
5	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
6	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
7	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
8	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
9	6	WOOD, TANGENT, H-FRAME	2	Direct-Embedded	$ 12,000	$ 12,000							$ 24,000
10	8	WOOD,3-POLE, GUYED	3	Direct-Embedded	$ 30,000	$ 20,000							$ 50,000
11	7	WOOD, TANGENT, SINGLE POLE	1	Direct-Embedded	$ 5,000	$ 5,000							$ 10,000
12	7	WOOD, TANGENT, SINGLE POLE	1	Direct-Embedded	$ 5,000	$ 5,000							$ 10,000
13	2	STEEL,DE	1	Vibratory Caisson	$ 23,000	$ 23,000	40	4.0	$ 26,000	$ 26,000	$ 25,000	$ 25,000	$ 97,000
14	2	STEEL,DE	1	Vibratory Caisson	$ 28,000	$ 28,000	40	4.0	$ 26,000	$ 26,000	$ 25,000	$ 25,000	$ 107,000
15	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
16	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
17	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
18	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
19	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
20	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
21	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
22	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
23	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
24	4	STEEL,TANGENT	1	Vibratory Caisson	$ 12,000	$ 12,000	30	2.5	$ 12,000	$ 12,000	$ 25,000	$ 25,000	$ 61,000
25	2	STEEL,MONOPOLE, DE	1	Vibratory Caisson	$ 35,000	$ 35,000	45	4.0	$ 29,000	$ 29,000	$ 25,000	$ 25,000	$ 124,000
26	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 17,000	$ 17,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 108,000
27	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 17,000	$ 17,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 108,000
28	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 17,000	$ 17,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 108,000
29	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 33,000	$ 33,000	30	3.0	$ 15,000	$ 45,000	$ 25,000	$ 75,000	$ 186,000
30	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 27,000	$ 27,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 128,000
31	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 27,000	$ 27,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 128,000
32	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 27,000	$ 27,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 128,000
33	1	STEEL,H-FRAME,TANGENT	2	Vibratory Caisson	$ 27,000	$ 27,000	30	2.5	$ 12,000	$ 24,000	$ 25,000	$ 50,000	$ 128,000
34	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 89,000	$ 89,000	40	4.0	$ 26,000	$ 78,000	$ 25,000	$ 75,000	$ 331,000
35	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 83,000	$ 83,000	40	4.0	$ 26,000	$ 78,000	$ 25,000	$ 75,000	$ 319,000
36	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 65,000	$ 65,000	40	4.0	$ 26,000	$ 78,000	$ 25,000	$ 75,000	$ 283,000
37	3	STEEL,3-POLE,DE	3	Vibratory Caisson	$ 65,000	$ 65,000	20	3.0	$ 10,000	$ 30,000	$ 25,000	$ 75,000	$ 235,000

Total Str. Cost(rounded) $ 3,500,000

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 210

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

EASEMENT

October 6, 2017

AFTER RECORDING, RETURN TO:

Tillamook People's Utility District
P.O. Box 433
1115 Pacific Avenue
Tillamook, Oregon 97141

TPUD REFERENCE: ___

EASEMENT

_____ ("Grantor(s)"), for good and valuable consideration, receipt of which is hereby acknowledged, grant to **Tillamook People's Utility District**, an Oregon people's utility district ("Grantee"), and to its licensees, successors, and assigns, a perpetual and exclusive easement and right-of-way, the purpose of which is to construct, operate, maintain, repair, and replace utility lines and facilities, including, by way of example and not by way of limitation, lines for the transmission or distribution of electrical power, telephone lines, television and communication lines, poles, conduits, wires, cables, handholes, manholes, connection boxes, transformers, transformer enclosures, and any related system and facilities (collectively, "Facilities") on, across, over, or under a strip of land in Tillamook County, Oregon, Township __, Range ____ of the Willamette Meridian, Section __, and more particularly described as follows:

[Insert Legal Description of Easement Area]

(the "Easement Area"). Grantor(s) further grant Grantee the right to access, inspect, and make repairs, changes, alterations, improvements, removals from, substitutions, and additions to the Facilities as Grantee may from time to time deem advisable, including, by way of example and not by way of limitation, the right to increase or decrease the number of poles, conduits, wires, cables, handholes, manholes, connection boxes, transformers and transformer enclosures; to cut, trim, and control the growth by chemical means, machinery, or otherwise, of trees, shrubbery, and vegetation located within the Easement Area (including any control of the growth of other vegetation in the Easement Area that may incidentally and necessarily result from the means of control employed); to fell or trim any trees or brush located on Grantors' land adjoining the Easement Area that may pose a hazard to the operation of the Facilities within the Easement Area; to keep the Easement Area clear of all buildings, structures, or other obstructions; and to license, permit, or otherwise agree to the joint use or occupancy of the lines, system, or, if any of said system is placed underground, of the trench and related underground facilities, by any other person, association, or corporation.

Grantor(s) agree that they shall not construct, place, or otherwise locate any building, structure, or other obstruction in, upon, or under the Easement Area that does not already exist in, upon, or under the Easement Area as of the Effective Date. Notwithstanding the foregoing, Grantors' buildings and other structures that already exist in, upon, or under the Easement Area as of the Effective Date are permitted to remain; Grantors also may replace such existing buildings and other structures in the event of destruction, provided that such construction complies with all applicable laws and regulations and does not expand the original footprint or increase the original height of the building or structure being replaced, and Grantors obtain the written consent of Grantee, which shall not be unreasonably withheld. Further, Grantor(s) may [insert any applicable exceptions that allow continued use of farming in the Easement Area].

Grantor(s) agree that all poles, wires, and other Facilities, including any equipment installed in, upon, or under the above-described lands at Grantee's expense, shall remain the property of Grantee, removable at the option of Grantee.

Grantee agrees to repair damage caused to the Easement Area or Grantors' adjacent lands by Grantee and to reasonably restore the Easement Area to the same condition as existed in the Easement Area prior to Grantee's disturbance of the Easement Area. Grantee

shall not be responsible, however, for the maintenance of any landscape (e.g., grass, trees, plants, flowers, branches, shrubs, etc.) in the Easement Area or any other portion of Grantors' property or adjacent lands.

Because governmental approvals may be necessary from the land-owning Grantor(s) for Grantee to use the easement, Grantors appoint Grantee as Grantors' attorney-in-fact, agent, and authorized representative to make and progress on Grantors' behalf any and all land use and regulatory requests and to make applications and requests to governmental entities and agencies, so Grantee may make use of this easement and all associated rights, including but not limited to the following: (1) applying for conditional use and other land use permits and progressing those applications through to completion and any modifications thereof, including defending the applications and appealing adverse decisions; and (2) applying for any other necessary governmental and administrative approvals and progressing them through to completion and any modifications thereof, including defending the applications and appealing adverse decisions. Grantor(s) agree not to make any objections to the above applications, or to oppose them in any way at any time. Grantors may not revoke these appointments during the effective period of this easement. All Grantee's applications and work shall be at its sole cost and expense.

Grantor(s) covenant that they are the owner of the above-described lands and that the said lands are free and clear of encumbrances and liens of whatsoever character.

Effective Date:
This _____ day of _____, 20__.

GRANTORS,

_____

_____

GRANTEE,

_____
Print Name _____
Title_____
For Tillamook People's Utility District

STATE OF _____)
) ss.
County of _____)

THIS CERTIFIES that on this _____day of _____, 20__, before me the undersigned personally appeared the above named _____known to me to be the identical person(s) described in and who executed the foregoing instrument and acknowledged to me that _____ executed the same.

Before me:_____

Notary Public for _____
My Commission Expires: _____

STATE OF _____)
) ss.
County of _____)

THIS CERTIFIES that on this _____day of _____, 20__, before me the undersigned personally appeared the above named _____known to me to be the identical person(s) described in and who executed the foregoing instrument and acknowledged to me that _____ executed the same.

Before me: _____
Notary Public for _____
My Commission Expires: _____

STATE OF _____)
) ss.
County of _____)

THIS CERTIFIES that on this _____day of _____, 20__, before me the undersigned personally appeared the above named _____is the _____ of Tillamook People's Utility District, an Oregon people's utility district, on behalf of the district, known to me to be the identical person(s) described in and who executed the foregoing instrument and acknowledged to me that _____executed the same.

Before me: _____
Notary Public for: _____
My Commission Expires: _____

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 211

TO THE TESTIMONY OFF KC FAGEN

ON BEHALF OF

TILLAMOOK PEOPLE'S UTILITY DISTRICT

SAFETY MANUAL

October 6, 2017

TILLAMOOK PEOPLE'S UTILITY DISTRICT

SAFETY MANUAL

REVISED JANUARY 2017

DISTRICT PHILOSOPHY

Our Basic Safety Philosophy can be summed up as follows:
"No operating condition or urgency of service can ever justify endangering the life of anyone."
Safety can be achieved through intelligence, cooperation, and an understanding of and adherence to safety measures. It also takes the diligence of all parties at all times. Our successful safety efforts benefit not only ourselves but our co-workers, customers and the general public.

In order to be successful, the safety of this District is designed to achieve the following:

1) Integrate safety with all District operations.
2) Provide safe working conditions, proper and adequate tools, equipment and protective devices.
3) Train employees in practices for the safe conduct of their work.
4) Enforce safety measures.

PURPOSE AND SCOPE

This Safety Manual is for your guidance in the prevention of accidents which may result in injury to you, your co-workers, the public, or damage to District equipment or property.
The safety instructions are divided into seven sections:

1) General Safety
2) Electrical
3) Motor Vehicle
4) Office Safety
5) Hazardous Materials
6) First Aid
7) Injury or Incident Investigation/Reporting Procedures

No manual can cover all conditions that may arise when work is in progress. Everyone is expected to be alert and to exercise good judgment when circumstances arise that are not specifically covered.

Safety manuals and codes prescribe minimum requirements and cannot be a complete working guide. Additional safety practices will be incorporated when they are considered necessary or desirable. Above all, employees are encouraged to submit safety suggestions to your immediate supervisor, safety representative or the safety committee.

FUNDAMENTALS OF SAFETY

Accident prevention can be accomplished only through wholehearted cooperation of all members of the organization. Neither management, supervision, nor the Safety Manual can prevent incidents without the help of each employee.

An unsafe employee is a danger to themselves, co-workers, the public, and the equipment with which the employee works. Care and attention to all safely rules and devices are essential, not only to prevent injury, which is paramount, but also to protect District equipment and the tremendous investment which it represents.

A capable, mentally alert employee will avoid accidents by learning all they can about their work, using proper safeguards and protective equipment, and avoiding shortcuts and makeshift work methods and equipment.

A job done safely is a job done efficiently, and this is true of both employees and equipment. Accidents do not "just happen." Accidents are the result of unsafe conditions or unsafe practices; usually a combination of both.

Machinery and equipment generally are manufactured as perfectly as human ingenuity can conceive. In fact, statistics show that most accidents are due to the human element, such as failure to use safety devices and observe safety rules and procedures.

Examples of unsafe conditions and acts which can cause accidents include the following:

Improper Guarding: Unshielded moving parts of machines, non-barricaded floor openings and excavations, unenclosed high voltage equipment, lack of protective equipment, insufficient warning signs, etc.

Using Unsafe Equipment or Using Equipment Improperly: Using dull cutting tools, mushroom-head chisels, pipe extensions on wrenches not designed for them, the wrong tool for the job, or using hands instead of hand tools.

Hazardous Arrangements: Arrangements due to poor housekeeping, unsafe planning, or inadequate working space as well as adjusting moving machinery, and working on or near live electrical equipment.

Failure to Use Safe Clothing or Protective Equipment: Wearing loose sleeves, necktie or jewelry near moving machinery, failure to use rubber gloves around energized equipment, and failure to use safety glasses, hard hat, respirator, gloves, or apron, when necessary.

Improper Illumination: Insufficient light, unsuitable location producing glare, or objectionable shadows.

Improper Ventilation: Insufficient change of air or presence of harmful vapor, dust, or gas.

Operating Without Authority or Warning: Closing switches without authority, operating hoists and trucks without warning, failure to place warning signs or signal person where needed, failure to block or guard equipment against unexpected movement.

Operating or Working at Unsafe Speed: Driving too fast, throwing material or tools to another employee, jumping from vehicles or platform, running or unnecessary haste.

Unsafe Loading, Placing or Mixing: Overloading cranes and winches, carrying too heavy a load, leaving objects where they are likely to fall, improper packing, unsecured loads, inadequate tie-downs, combining chemicals to form a dangerous mixture.

Taking Unsafe Position or Posture: Working on live conductors from above instead of below, walking under suspended loads or too close to openings. Lifting while in an awkward position, entering areas where there are dangerous gases or fumes, passing on curves or hills, riding on running boards or other unsafe places on vehicles.

Distracting, Teasing or Startling: Practical joking, horseplay, quarreling or annoying.

Elimination of all unsafe conditions and unsafe practices is the only sure way to eliminate accidents.

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GENERAL SAFETY SECTION

S-1 Responsibility of the Individual

1.1 It is the individual's responsibility to act so as to provide:
   a) Safety to yourself.
   b) Safety to your co-worker.
   c) Protection to the customer.
   d) Protection to District property.

1.2 You are expected to keep yourself fully informed of the contents of the Safety Manual and apply it to your work.

1.3 You are expected, as part of your job, to take an active part in the District's safety process.

1.4 Before attempting any work under conditions which you believe are unsafe, you should call these conditions to the attention of the person in charge and get their advice.

1.5 You shall report promptly to a supervisor any dangerous or improper condition of District apparatus or equipment which comes to your attention.

S-2 Personal Conduct

2.1 Every employee is expected to be alert and professional in their work, courteous and considerate in all their contacts.

2.2 Use of intoxicating liquor and/or controlled substance while on the job is prohibited. No employee shall report for work while under the influence of alcohol or controlled substance, and no foreman or other supervisor shall knowingly permit an employee to work who is under the influence of alcohol and/or controlled substance.

2.3 Practical joking or horseplay while on the job is prohibited.

2.4 No employee shall distract the attention of another employee from their job until it is definitely determined that no danger will result.

2.5 Employees shall not ride on cranes, fork lift trucks, side boards, tractors, bulldozers, or other mobile equipment except in the discharge of their duties.

2.6 Compressed air or gas shall not be blown at a co-worker nor be used for dusting clothing or any part of the body.

2.7 Any employee violating the foregoing requirements of personal conduct or unnecessarily endangering their own or others' personal safety shall be subject to disciplinary action up to and including termination of employment.

S-3 Physical Fitness

3.1 Any employee, who is unable to perform their duties safely due to illness, injury or other disability, shall promptly report their condition to their immediate supervisor.

3.2 After absence from work due to illness or injury, an employee may be required to provide medical documentation to determine their fitness-for-duty and ability to perform the essential functions of their position.

3.3 All injuries should receive prompt first aid attention.

S-4 Personal Protective Equipment

4.1 Refer to specific personal protective equipment requirements in this manual.

4.2 Safety glasses, face shields, or other suitable protection shall always be worn wherever there is danger of exposing the eyes to flying particles, acids, caustic substances, harmful light rays, or any condition considered hazardous by you or your supervisor. Examples of operations which require the use of eye protection include, but are not limited to the following:

a) Acetylene welding or cutting.
b) Electric welding.
c) Chipping, grinding, machining, or buffing.
d) Drilling, cutting, or breaking masonry.
e) Handling or using acids or caustics.
f) Handling molten metal or slag.
g) Controlling escaping gas.
h) Tapping pressurized lines.
i) Using pneumatic tools.
j) Performing work on or near equipment and overhead or underground conductors.

4.3 Safety glasses, sunglasses or other protective eyewear shall conform to the requirements of the American Standards Association Code (Z87.1) and OSHA 1910.133.

4.4 Safety glasses used for protection from harmful light rays shall also meet the requirements for protection against impact hazards.

4.5 An approved (Z89.1 Class E) hard hat shall be worn by all employees when:

a) Performing work in locations where the hazards of falling or flying objects and substances are present.
b) Performing work on or near energized equipment and overhead or underground conductors.
c) Performing work in or around substations and switchyards.
d) Performing work on or near poles and other structures.
e) Performing work on or near elevated equipment, platforms, or other apparatus.

4.6 Protective clothing is required “gate-to-gate.” Employees’ personal attire should conform to normal standards of propriety and personal protection.

4.7 Where there is possible exposure to a gaseous atmosphere, static electricity, electric arc, or harmful rays, wear appropriate personal protective equipment.

4.8 Employees shall wear footwear appropriate for the safe performance and hazards of their jobs. For employees working in the field, this shall mean hard sole boots and long pants. Employees shall wear appropriate protective hearing equipment.

S-5 Safety Acts and Precautions

5.1 Elimination of all unsafe acts and conditions is the only sure way of preventing personal injuries. Every employee shall watch for any unsafe condition or practice and report to their supervisor any that come to their attention.

5.2 Where a hazard cannot be removed or corrected, adequate safety precautions must be taken.

S-6 Safeguarding the Public

6.1 Every effort should be made to protect the public at all times when District work is in progress by the use of signs, barricades, or personal warning.

6.2 Refer to the Manual of Oregon Temporary Traffic Control Handbook.

6.3 Barricades shall be placed at all open manholes, exposed open ditches and excavations. Where necessary, open ditches and excavations should be substantially boarded over to prevent pedestrians, animals, or vehicles falling into them.

6.4 During the night and in all dark locations, barricades with lights should be in place at any obstruction, excavation, or opening which is likely to cause injury to employees or to the public.

6.5 When working on customers' premises or public property, every effort shall be made to avoid hazards to persons or unnecessary property damage. All tools, equipment and excess material should be removed from the site when the job is completed.

6.6 Smoking in District vehicles, within District buildings and customer's property is prohibited.

6.7 All employees should be aware of unauthorized persons in the work area and take appropriate action if deemed necessary.

S-7 Housekeeping

7.1 Walks, aisles, stairways, fire escapes, and all other passageways should be kept clear of all obstructions.

7.2 Tools and materials should not be placed where they may cause tripping or stumbling hazards, or where they may fall and strike anyone below.

7.3 All spills should be cleaned up promptly.

7.4 Nails in boards, such as those removed from scaffolds, forms and packing boxes, should be removed. The boards should be carefully stacked or stored.

7.5 Work areas should be cleaned up as soon as the job is completed and, when necessary, while the work is in progress.

7.6 Scrap material of salvage value should be properly stored until disposed of.

7.7 Dirty and oily waste rags shall be deposited in an appropriate metal container with a closed lid provided for that purpose and be disposed of as soon as practical to avoid fire hazard.

7.8 All customers' premises and District equipment (including vehicles) shall be left in a clean and safe condition.

S-8 Fire Protection

8.1 Good housekeeping is one of the most effective aids to fire prevention. Waste paper, rags and other combustible material should not be allowed to accumulate.

8.2 Flammable liquids shall be kept in approved safety cans and identified by proper labels.

8.3 Open flames and smoking are prohibited in all areas where flammable liquids or gases are stored or being used. Such areas shall be posted with appropriate warning signs.

8.4 Avoid use of matches or open flame. Prevent electric sparks in areas where combustible gas may exist. (Such conditions may exist around gas filled electrical equipment or in manholes, vaults, battery rooms, transformer or oil circuit breaker tanks, regulator stations, odorant stations, meter sets, etc.).

8.5 Flame or excessive heat shall not be used in close proximity to fire detecting devices or automatic sprinkler heads.
8.6 An 18" clearance shall be maintained from all fire sprinklers.
8.7 Firefighting equipment shall not be removed from fire stations or used for purposes other than firefighting.
8.8 All employees should be familiar with the location and proper use of fire extinguishers in their work areas. Use the PASS technique to extinguish fire (Pull, Aim, Squeeze, Sweep).
8.9 To extinguish fires:
a) In ordinary combustible material, such as paper, wood or rubbish, use approved "Type A" extinguisher. Extinguishers for this purpose should be identified by "Green" colored markings.
b) In gasoline, oil or other liquids, use approved "Type B" extinguisher. Extinguishers for this purpose should be identified by "Red" colored markings.
c) In electrical equipment, use only approved "Type C" extinguisher. Extinguishers for this purpose should be identified by "Blue" colored markings.

S-9 Evacuation Information

9.1 Assess the immediate situation for any dangers. If evacuation is required begin evacuation procedures as per the District Emergency Evacuation Plan.

S-10 Material Storage

10.1 Material stored in quantity should be arranged so that the weight is evenly distributed and not top heavy.
10.2 All stacks and piles should be protected against overturning or other movement.
10.3 Sand, gravel, lime, cement and other heavy material should not be stored in buildings unless supports are designed for the additional weight.
10.4 Barrels, drums and kegs should be stored on end or securely blocked to prevent rolling.
10.5 Paints, varnish, lacquers and thinners are highly flammable and should be stored only in designated areas away from all possible sources of ignition.

S-11 Lifting and Carrying

11.1 When lifting heavy objects, your back should be kept close to vertical and the lifting done with your leg muscles. Do not attempt to lift an object by yourself if it weighs more than half your weight; get help.
11.2 Bulky loads should be carried in such a way as to permit an unobstructed view ahead.
11.3 When two (2) or more employees are lifting or pulling together, one (1) employee should give the signals for this group.
11.4 Pipes, conduits, reinforcing rods and other conducting material should not be carried on your shoulders near exposed live electrical equipment or conductors.

S-12 Forklift Trucks

12.1 Only the certified driver wearing a seatbelt shall ride on motor-driven lift trucks unless otherwise designed to carry a passenger.
12.2 Lift trucks shall be operated at speeds which are safe for existing conditions.
12.3 Approach blind corners, doors and intersections cautiously and sound the horn.

12.4 Loads should be picked up near the center of their weight.
12.5 Loose material should be secured to prevent shifting or toppling while in motion.
12.6 Employees shall not be lifted from one elevation to another by a forklift truck unless it is equipped with an approved platform with railing and toe boards securely fastened to the forks.
12.7 When not in use, the forks or platform should be in the lowered position.

S-13 Rigging and Hoisting

13.1 Chain hoists, derricks, cranes and other hoisting equipment shall be inspected at regular intervals. In no case shall such equipment be used until it has been determined that it is free from defects and safe to use.
13.2 Any hoisting equipment found defective should be immediately tagged as unsafe and not used until repaired.
13.3 Be certain that the hoist is properly hung and that the supporting member will carry the load. Before the load is lifted, a strain should be taken on the cable and the hitch rechecked.
13.4 When there is danger of the load being suddenly released, or if the chain hoist is suspended from a long cable, the hooks should be snubbed with wire or shackles.
13.5 Before operating crane, derrick or other hoisting equipment, the operator should sound a warning and accept only **one (1) person's signal** to start raising, lowering or swinging load. However, the operator shall stop immediately upon signal from anyone.
13.6 Before moving a crane in close proximity to overhead electric lines, the boom shall be lowered sufficiently to provide ample clearance.
13.7 When making heavy lifts, outriggers or rail clamps should be used to prevent overturning.
13.8 Extreme caution shall be used when working near cables or ropes under tension. Never place yourself within the angle formed by ropes or cables under tension. When anyone is in this or other dangerous positions, the hoist operator shall never place tension on a rope or cable.
13.9 Employees shall familiarize themselves with the proper knots, ties and hitches, safe working load for ropes, cables, slings and fittings, and proper methods of hooking and slinging required in their work.
13.10 Particular care must be exercised to see that cables, chains and other hoisting equipment are not unduly stressed by improper use. All ropes, cables, chains, slings, etc., shall be discarded when they have worn or deteriorated to the point where their safe use may be questionable in the judgment of a qualified person.
13.11 Chains shall not be spliced or joined by makeshift means such as open links, bolts, or wire. New links shall be inserted by a competent person, or the chain returned to the manufacturer for repairs.
13.12 Wire ropes or cables should not be allowed to kink as this weakens them. Protective pads shall be used where cables are wrapped around sharp objects or corners.
13.13 When applying U-bolt clips to cable, a sufficient number should be used and the bases should bear on the pulling side of the loop.
13.14 The rating of hooks, rings, clevises, and other fittings used on chains or cables shall exceed the carrying capacity of the chain or cable.

13.15 Fiber rope shall be properly cared for to retain its strength and lasting quality. The following precautions will preserve the strength and life of rope:

a) Where a rope sling passes over sharp edges, pads shall be used to protect the fibers against cutting and undue stress.
b) Do not drag rope on the ground unnecessarily to avoid contamination of the fibers.
c) Do not use too small a sheave.
d) Do not use sheaves with rough surfaces or broken edges.
e) Do not let rope slip on winch drum or lie idle on moving drum.
f) Do not place kinked rope under stress.
g) Do not allow rope to unravel; finish the ends.
h) Do not tie knots where splices should be used.
i) Do not allow ropes to become oil soaked or exposed to acid or corrosive substances.
j) Do not allow rope to remain dirty or gritty; wash and dry.
k) Do not allow rope to remain exposed to weather any more than necessary.
l) Carefully dry rope when it becomes wet.
m) Do not use excessive heat when drying rope.
n) Do not allow wet rope to freeze.
o) Do not use fiber rope as insulation.

S-14 Ladders and Scaffolds

14.1 All ladders shall be inspected at regular intervals and maintained to conform to ANSI and State specifications.

14.2 Ladders made of fiberglass, epoxy or other synthetic material shall equal or exceed the strength requirement of approved wood ladders.

14.3 When a ladder has fallen or been struck, it should be carefully examined for possible damage before being used.

14.4 Damaged ladders shall be destroyed.

14.5 All portable ladders shall be equipped with suitable safety feet. Where safety feet do not overcome the hazard of slipping, the ladder should be securely held in place by tying or by an employee at the foot.

14.6 The base of a ladder should not be placed less than one-fourth (1/4) its length from a wall or supporting surface and not further than one-third (1/3) its length unless securely held or tied in place.

14.7 Step ladders shall be fully opened while being used.

14.8 To prevent collapse of extension ladders, the minimum overlap of sections shall be:

a) Three (3) feet on ladders up to 38 feet.
b) Four (4) feet on 40-44 foot ladders and on 3-section ladders above 44 feet.
c) Five (5) feet on 2-section ladders above 44 feet.

14.9 Ladders placed near doors or in passageways should be protected against being struck by doors or traffic.

14.10 While going up or down a ladder, always face the ladder and use both hands for climbing. Use each rung.

14.11 Use the correct size ladder for the job. Ladders should not be climbed higher than the third rung from the top on straight or extension ladders, or the second tread from the top on ordinary step ladders.
14.12 Footwear should be free of grease, mud or other slippery substances when climbing or descending a ladder.
14.13 Linemen should not wear their climbers when working on ladders, except where necessary on hook ladders suspended from wood pole structures.
14.14 Ladders shall not be used in horizontal position for runways or scaffolds.

S-15 Hand Tools

15.1 Employees should use only tools and equipment which are in good condition and only for the purpose for which they are designed. When proper and safe tools are not available for the work at hand, the employee shall report the fact to their supervisor.
15.2 All tools should be inspected at regular intervals, kept clean and lubricated. Tools which develop defects while in use should be removed from service, tagged, and not used again until placed in good condition.
15.3 Impact tools with mushroomed heads such as chisels, drills, hammers, and wedges should not be used until they have been reconditioned.
15.4 Hammers, axes, shovels, and similar tools should not be used if the handles are loose, cracked or splintered.
15.5 Defective wrenches, such as open-end and adjustable wrenches with spread jaws or pipe wrenches with dull teeth, should not be used as they are likely to slip.
15.6 Pipe or other extensions should not be used on a wrench handle to increase the leverage unless the wrench is specifically designed for use for such extensions.
15.7 Metal rules, metal tape lines, or tape lines containing wires shall not be used around electric conductors or equipment.
15.8 Sharp-edged or pointed tools shall have the edge or point guarded when not in use.
15.9 Files or other tools with pointed tangs should be equipped with suitable handles.

S-16 Power Tools

16.1 When performing maintenance or inspection on power tools, remove from all power sources.
16.2 Before installing a new grinding wheel on a grinder, it should be given a “ring” test by supporting it free and tapping lightly with a wood object. If the wheel is not defective, it will give a clear metallic tone.
16.3 When changing a grinding wheel, make sure the rated speed of the wheel exceeds the maximum speed of the rotor.
16.4 Grinding wheels should be equipped with safety washers.
16.5 When starting a grinding wheel, stand to one side, out of line of flying particles in case the wheel breaks.
16.6 Always wear a suitable face shield when using a grinding wheel. Where practical, wheels should also be equipped with transparent shields and wheel guards.
16.7 Keep the tool rest close to the wheel of the grinder to prevent work from being caught between the rest and the wheel. Never adjust a tool rest while the wheel is in motion.
16.8 When using pneumatic tools, be sure that all couplings are secure and proper fittings are used (not hose clamps).

16.9 Pneumatic and electric-drive hand tools should be equipped with controls that will stop the tool when the operator's hand is removed from the controlling valve or switch.
16.10 Before drilling through paving, walls or floors, check to be sure you will not cut into cables, conduits, or pipes.
16.11 When operating a drill press, never hold small work in the hands; always use a clamp or jig.
16.12 Portable electric tools should meet one of the following requirements:
a) Be equipped with 3-wire cord having the ground wire permanently connected to the tool frame and a means for grounding the other end.
b) Be connected to the power supply by means of a fully insulated isolating transformer.
c) Be of the "double insulated" type.
d) Be completely self-contained.
16.13 Extension cords shall be maintained in a safe condition. Worn or frayed cords and broken plugs shall be promptly replaced.
16.14 Extension cords with exposed metal sockets shall not be used.

S-17 Cleaning Fluids

17.1 All commercial cleaning fluids present some fire or health hazard unless proper precautions are taken. Only those solvents which have been approved by the District should be used for cleaning purposes.
17.2 Gasoline shall never be used as a cleaning or degreasing agent.
17.3 Cleaning fluids should not be used in confined areas without adequate forced ventilation.
17.4 Flammable solvents should be handled only in approved safety containers.
17.5 No smoking or open flames shall be allowed where flammable solvents are being used.
17.6 Fire extinguishing equipment shall be readily available when using flammable solvents.

S-18 Storage and Handling of Compressed Gases

18.1 Cylinders containing acetylene, oxygen, hydrogen, nitrogen, carbon dioxide, propane, or any manufactured compressed gas shall always be stored upright, with their caps in place, in approved safe places away from highly combustible material and well separated from radiators, furnaces and other sources of heat. Never subject them to a temperature above 125°F.
18.2 Oxygen cylinders should be stored separately from cylinders containing acetylene or other combustible gases. Full cylinders should be separated from empty ones.
18.3 Gas cylinders should be secured so that they cannot be knocked over.
18.4 Empty cylinders should be plainly marked EMPTY, the valves closed, and the caps replaced to protect the valves. Empty cylinders should be returned to the manufacturer as soon as practicable.
18.5 While moving cylinders, their caps shall be in place and precautions shall be taken to prevent their being knocked over or dropped, as this may damage the cylinder or valve and cause an explosion or fire.
18.6 Compressed gas should not be transferred from one cylinder to another except by a qualified employee using equipment approved for the purpose.

S-19 Painting

19.1 Employees using paints, lacquers or thinners should avoid inhaling the vapors or getting paint into their mouth. Wash hands carefully before eating.

19.2 Do not use or go near open flames while wearing clothing contaminated with paint or thinner.

19.3 Painting rooms or any place where spray painting is being done shall be well ventilated by exhaust systems and protected against all sources of ignition.

19.4 Smoking, welding, burning, or other open flame is prohibited where spray painting is being done.

19.5 Approved mask or respirator and eye protection shall be worn by anyone spray painting.

S-20 Excavating

20.1 A competent person shall be on-site when any employee enters an excavation.

20.2 Trenches or excavations in unstable material or any excavation over four (4) feet shall be securely shored, braced or sloped to prevent cave-in.

20.3 Any excavation over four (4) feet in depth shall have an exit, e.g., ladder within 25 feet of employees in excavation.

20.4 Where shoring, bracing, or sloping is not deemed necessary, the sides of the excavation should be inspected frequently to see that no dangerous conditions have developed. Inspections should always be made after rains or freezing and thawing conditions.

20.5 Excavated material shall be kept at least two (2) feet from the edge of the trench or excavation.

20.6 Heavy machinery or material should not be placed near the edge of excavations as it may cause a cave-in.

ELECTRICAL SECTION

DEFINITIONS OF TERMS USED

1. **Approved:** As used in this Safety Manual, means approval by the general manager of the District or their duly designated representative. In order to take full advantage of new developments and improved practices, it is desirable to try new equipment and new methods. The work "approved" in this Safety Manual shall not be interpreted to restrict such progress. However, caution and exercise of good judgment obviously are necessary to develop new and better practices. After such practices have been demonstrated to be useful and can be performed safely, they may be adopted when the aforementioned approval has been obtained.
2. **Barricade:** A physical obstruction, such as tapes, screens, or cones, etc., intended to warn and limit access to a hazardous area.
3. **Barrier:** A physical obstruction, which by design is intended to prevent accidental contact with exposed energized lines or equipment, or other hazards.
4. **Bonding:** The process of electrically connecting conductive objects together to bring them to the same electric potential.
5. **De-energized:** Means disconnected from all sources of electricity, but not grounded.
6. **Dead:** Means de-energized and grounded.
7. **Dispatcher:** Refers to the Dispatcher, load dispatcher, substation operator, control room operator, shift engineer, or any person in charge of a line, machine, or other apparatus, regardless of his nominal title or classification.
8. **Clearance:** Notification from the Dispatcher to the Employee-in-Charge of performing work that all clearance procedures have been accomplished and that the employee may proceed with work on lines or equipment that were under the Dispatcher's control.
9. **Electrical Insulation:** Any non-conducting cover that provides adequate dielectric strength to withstand the voltage between conductive objects that may be at different potentials.
10. **Foreman or Supervisor:** Refers to the person in charge of the work or working crew, regardless of their nominal title or classification.
11. **Grounding:** The process or method of providing an electrical connection between electric equipment and earth, or to some conductive medium that is at earth potential.
12. **Hazard:** Any unsafe act or unsafe condition that may lead to injury of persons or damage to property.
13. **Hot or live ("alive"):** Means electrically energized as distinguished from "dead" or "de-energized."
14. **Insulated Working Support:** A non-conducting support that permits employees to be in a position electrically isolated from ground.
15. **Insulator:** A non-conducting support that provides physical separation between equipment that may be at different potentials.
16. **Live-Line Tool (or hot stick):** An insulating member in the form of a stick or pole having means on one or both ends for performing work while permitting the employee holding the tool to remain insulated and at a safe distance from energized equipment.

17. **Live-Line Tool Method:** Performing work using tools which insulate employees from energized equipment on which work is being performed.
18. **Normal Voltage of a Circuit or System:** The rated voltage assigned for convenient designation between phase conductors of a three-phase line, or the two (2) conductors of a single-phase line, whether or not it originates from a three-phase line and whether or not one of the conductors is grounded. If not otherwise stated, voltages given in this Safety Manual are nominal values. The actual voltage of a circuit may be higher or lower than the nominal rating.
19. **Potential:** The degree of electrification, or relative voltage, at a point in an electric circuit with respect to some other point, usually with respect to some standard such as earth.
20. **Qualified:** A person who is familiar with the construction or operation of the lines and/or equipment that concern their position and who is fully aware of the hazards involved. A person who has passed a journeyman's examination for the particular branch of the electrical trade with which he/she may be connected. A person who has successfully demonstrated the ability and is recognized by management as qualified to perform the duties to which he/she has been assigned.
21. **Shall:** means mandatory.
22. **Should:** means recommended.
23. **Voltage:** The difference in electrical potential between two (2) points in an electric circuit.
24. **Working Clearance:** The minimum distance that employees shall approach anything that is at a different potential from themselves.

OPERATIONS

E-1 General Precautions

1.1 Before any work is undertaken on energized equipment, employees should be qualified by training and experience to perform work by the prescribed method for the voltage involved and shall be familiar with minimum working clearances stated in this section.

1.2 Maintenance, repair and construction work on electric circuits or apparatus shall not be done until proper authorization has been obtained for performing work. A Job Briefing/Tailboard meeting shall be conducted for all crew members prior to the start of each new job discussing at least the following:

a) Hazards associated with the job.
b) Work procedures involved.
c) Special precautions.
d) Energy-source controls.
e) Personal Protective Equipment (PPE) requirements.
I. Fill out the Job Briefing/Tailboard log.

1.3 All circuits and equipment shall be considered energized at full voltage until de-energized and grounded. Dispatcher's Clearance shall be obtained when required by rule.

1.4 No employee shall begin work on any equipment unless instructed by their supervisor to do so. Where instructions must be given by telephone or radio, each speaker shall satisfy themselves of the identity and authority of the other person.

1.5 On all jobs, a sufficient number of qualified employees must be present to do the work safely. The number of employees required shall be determined by the foreman in charge of the work.

1.6 Whenever it becomes necessary to replace an employee or supervisor during a job, such replacement should be made only after the replacing employee or supervisor has been fully informed of existing conditions. *(Ref. E-1.2)*

1.7 On any job which, in the opinion of the foreman, requires an observer, the foreman, or employee appointed by him, shall act as observer. The observer **shall not** engage in any activity that the foreman considers will interfere with the duty of an observer.

1.8 If, when performing trouble work, an employee finds a condition which is beyond their ability to handle safely, they shall call for assistance.

1.9 Emergency hazards, such as fallen wires, may be removed by one (1) employee using approved tools and protective equipment.

1.10 Before any line truck or digger truck is moved or driven, its boom or derrick shall always be placed in its stowed position. Any exception to the above rule shall be approved by the person in charge, and only if circumstances deem it necessary for the purpose of maneuvering into areas of limited space.

E-2 Care and Use of Rubber Protective Equipment

2.1 All rubber goods shall be of high-grade material and carefully inspected, stored, and cared for.

2.2 When not in use, rubber should be shielded from sunlight, heat, ozone, oils and any other harmful chemicals.

2.3 When large quantities of rubber goods are carried on a truck, their use should be rotated so that all items will be used alternately.
2.4 Rubber gloves shall not be worn wrong side out or left in that condition. Blankets shall be rolled rather that folded when not in use. Line hose and insulator hoods shall be stored in their natural position and shape.
2.5 Rubber glove protectors shall **never** be worn in place of leather gloves.
2.6 Rubber gloves shall not be used for more than 60 days after checked out for use. Tests shall conform to ASTM standards.
2.7 The qualified employees shall perform an Air Roll Test of their rubber gloves **on a daily basis** or before each use.
2.8 Rubber protective cover-up equipment shall be tested every six (6) months after checked out for use.
2.9 Rubber protective cover-up shall be visually inspected before each use.
2.10 Rubber gloves shall be worn before coming into the close proximity or minimum approach distance to energized lines and equipment rated over 600 volts. For voltages less than 600 volts. *(Ref. E-3.11)*
2.11 Protectors furnished for use with rubber gloves shall only be used as rubber glove protectors and nothing else.
2.12 Each employee makes a visual and an air test of their rubber gloves before using them.

E-3 Working on or Near Live Lines and Equipment

3.1 Employees performing live-line work shall devote their undivided attention to the work at hand. Unnecessary conversation shall be avoided.
3.2 Apprentices shall not work on or above circuits, energized at 600 volts or more, until (with foreman approval) they have completed 18 months of apprenticeship and been advanced to fourth (4^{th}) step.
3.3 All aerial equipment and other related equipment shall be grounded or barricaded when said equipment is working on or in the proximity of energized lines. *(Ref. E- 4.5)*
3.4 Only fiberglass ladders may be used for working on equipment energized.

Methods of Working on Energized Equipment

3.5 When working on energized equipment, work shall be performed with rubber protective equipment or with live-line tools. Specific rules covering the above methods follow.
3.6 With the exception of gang operated switches or breakers, **before paralleling** any conductors by the use of rubber gloves or hot sticks, the conductors SHALL be tested to verify proper phasing.
3.7 Noncurrent carrying metal parts of equipment or devices, such as transformer cases, sectionalizing cabinets, circuit breaker housings, shall be treated as energized at the highest voltage to which they are exposed, until such time as the employee can assure that the parts are grounded.

Working with Rubber Protective Equipment

3.8 No employee shall approach or take any conductive object close to energize parts or equipment without proper PPE. *(Ref. E-3.26)*

3.9 All Lines energized at 5kV and above shall be handled with live-line tools. Voltages up to 5kV may be worked with rubber gloves from the pole or an insulated aerial device or platform. Insulated aerial devices shall be dielectrically tested and certified every 12 months. Live-line tools shall be dielectrically tested annually (every 12 months).

3.10 Rubber gloves, hose, hoods, and blankets shall be used to make any work performed on circuits, energized in excess of 50 volts as safe as possible. The ultimate responsibility lies with the foreman, BUT the employees are responsible at all times for safe performance of their work and proper use of the safety equipment and compliance with the safety rules and regulations.

3.11 Class 0 (1,000 volt) rubber gloves and cover-up shall be used when performing work on voltages up to 600 volts.

3.12 Class III (30,000 volt) rubber gloves and cover-up shall be used when performing work on voltages from 600 volts, up to 25kV.

3.13 Approved Flame Resistant (FR) long-sleeve shirts (sleeves rolled down, shirt buttoned up, shirttail tucked in) shall be worn at all times when work is performed on or near voltages in excess of 50 volts. When jackets, coats, or coveralls are worn, they shall also be of an approved FR material.

3.14 Tools shall be of the hotline type (hoist, slings, bolt cutters, etc.).
A visual inspection and wiping of live-line tools shall be performed **before each use** and associated fiberglass equipment shall be cleaned and treated, before each use. This also includes the fiberglass or insulating portion of all derrick and aerial devices.

3.15 Body belts, hooks or tool pouches, other than those designed for bucket work, shall not be worn in the bucket of aerial devices.

3.16 When working on or near roadways, cones shall be placed at the traffic side of the truck, and warning signs in front and rear of truck. Local, State and Federal traffic control regulations shall be adhered to at all times.

3.17 FR rated clothing with long-sleeve shirts (sleeves rolled down, shirt buttoned up, shirttail tucked in) shall be worn when performing ground work.

3.18 An OSHA approved body harness and fall arrest lanyard shall be worn at all times while working in any aerial device or on equipment where potential fall hazards exist. *Personal Fall Arrest System (Section I - Mandatory; Sections II and III - Non-Mandatory) - 1910.66 App C.*

3.19 All precautions for handling energized conductors shall be taken when handling insulated wires and cables. Conductor insulation shall **not** be relied upon for protection.

3.20 Secondary circuits, guys, ground wires, telephone lines, and similar attachments in close proximity to the work area shall be covered with protective equipment.

3.21 From an insulated aerial device or platform, rubber gloves and other protective equipment shall be worn when installing and removing protective equipment or barriers on all conductors or energized circuits, unless the work is performed with live-line tools.

3.22 Low voltage, Class 0 (1,000 volt), rubber gloves shall be worn at all times when coming in contact with any electrical equipment energized at voltages from 50 volts to 600 volts, e.g., installing and removing meters and performing voltage tests.

Working with Live-Line Tools (All Voltages)

3.23 **MAD (Minimum Approach Distances)** Minimum distances for qualified employees from exposed energized live parts. Employees shall not go into or take any conducting object, without the aid of live-line tools or rubber gloves, within the distances listed below, for each nominal voltage range.

Voltage phase-to-phase (kV)	**Distance to the Employee (ft-in) Phase-to-Phase Exposure**
0.50 - 0.300	Avoid Contact
0.301 - 0.750	1'- 2"
0.751 - 5.0	2'- 1"
5.1 - 15.0	2'- 3"
15.1 - 36.0	3'- 0"
36.1 - 46.0	3'- 3"
46.1 - 72.5	4'- 0"
Voltage phase-to-phase (kV)	**** Distance to the Employee (ft-in) Phase-to-Ground Exposure**
72.6 - 121.0	3'- 9"
21.1 - 145.0	4'- 4"
145.1 - 169.0	4'- 10"
169.1 - 242.0	6'- 8"

****** ***No insulated tool may span the gap and no large conductive object can be in the gap. The clear live-line tool distance must equal or exceed the values for the indicated voltage ranges.***

3.24 **Two-Worker Rules**

Not less than two (2) journeymen, or employees with equivalent training and experience, are required for work on equipment more than 600 volts. The following exceptions to the two-worker rule apply:

a) When re-fusing circuits with a live-line tool.
b) When operating switches by means of operating handles or live-line tools.
c) When a qualified apprentice is assigned to work with a journeyman for the purpose of training.
d) When installing or removing a live-line clamp connection with an approved live-line tool on a single phase line or apparatus, providing that the connection or disconnection does not interrupt or pick up a load.
e) When installing or removing a load break elbow with a live-line tool on a single phase line or apparatus.
f) Emergency repairs to the extent necessary to safeguard the general public.

3.25 Live-line tools, insulated working supports, and barriers that can absorb moisture shall be tested for moisture before being used whenever there is any question of excessive moisture.

Working in Close Proximity to Energized Equipment

3.26 When working within reach of lines or equipment energized from 50 volts to 25,000 volts, each employee shall wear rubber gloves, or suitable barriers shall be installed to prevent accidental contact.

3.27 When an aerial lift, derrick, or truck winch line is used in close proximity to energized equipment all employees shall determine that the truck is clear from the energized equipment before contacting, entering, or leaving the truck. Employees who must be near the truck shall use rubber gloves in addition to other required protective equipment. All unnecessary persons on the ground shall stay out of reach of the truck and barricades or markers shall be placed when warranted.

3.28 Barriers, when used, shall provide at least the following minimum clearances to energized conductors to ground for any method of working:

Nominal System kV	Phase-to Phase Inches	Phase-to-Ground Inches
15 and Below	6	4
23	9	6
34	12	8
46	16	10
69	23	14
138	44	31
345	108	-

3.29 When working with rubber protective equipment or live-line tools, and clearances specified in *Ref. E-3.26* cannot be maintained for voltages 69kV and below, barriers providing at least the phase-to-ground clearances in *Ref. E-3.31* or insulation adequate to withstand the voltage shall be provided.

3.30 When raising or lowering poles between or in close proximity to energized equipment, all employees who may contact or come in close proximity to the pole shall use rubber protective equipment or dry hand-lines and wood handle tongs, as voltage may require, when handling the pole.

3.31 Wire being strung, removed, or sagged close to energized equipment shall be considered energized and shall be handled with rubber protective equipment, dry hand-lines, barriers, or other necessary protective equipment, as voltage may require.

3.32 Tagging out of energized primary conductors shall be performed by a qualified person using live-line equipment *(insulated link stick, etc.)* and dry, clean rope.

E-4 Working on De-Energized Equipment

4.1 Lines and equipment shall always be considered energized until tested and grounded. No work shall be done on equipment where Dispatcher's Clearance is required until Clearance has been obtained to proceed in accordance with existing operating procedures. *(Ref. E-15.2)*

4.2 When taking lines or equipment out of service, it shall first be de-energized by an appropriate switching device, such as disconnect, interrupter, circuit breaker, or recloser. For work on equipment, isolating disconnecting switches on both sides of the equipment shall be opened. For work on lines, the line shall be disconnected from the

electric circuit by a **visible disconnecting means** and/or any other possible sources of energy checked open, tagged, and locked, when applicable.

4.3 Every effort shall be made to create an Equi-potential Zone for all employees in the work area.

4.4 When grounding lines for employee protection, only approved grounding cables *(Ref. E-4.8)* and approved clamping devices shall be used. A Single Point Grounding Cluster shall be mounted below the work area first. Approved grounding cables shall be connected to an approved ground, then to the cluster mount, and lastly to the conductors. When removing grounds, the grounding cable shall be disconnected from each conductor first, the cluster next, and lastly from the approved ground. Live-line tools shall always be used for installing and removing ground cables.

4.5 Line trucks and/or bucket trucks, when in close proximity of energized lines, shall observe one of the following protection methods:

a) An approved ground shall be installed from the line truck and/or bucket truck to the system neutral or substation ground.
b) Approved barricading shall be installed around the entire perimeter of the line truck and/or bucket truck and an approved rubber blanket shall be placed at that location to enter the rear bed of the truck.

4.6 When working with equipment such as a wire tensioner, underground pullers and reel trailers, in close proximity of energized lines, employees shall observe one of the following protection methods:

a) Overhead wire tensioner, underground pullers and trailers use an approved **ground mat** to be installed around the entire work area and connected to the equipment and to the system neutral or substation ground grid.
b) An approved ground mat shall be installed around the entire work area of the tensioner and connected to the equipment. Included in this method shall be the installation of approved barricading equipment.
c) When equipment is to be treated as energized, **approved rubber gloves** shall be used for all equipment operations.

4.7 Grounding: Only approved grounding jumper equipment shall be used. Temporary grounding jumpers shall be secured to permanently grounded objects in the following order of preference: 1) station grounds, 2) primary neutral conductor of a 4-wire circuit, 3) steel towers, and 4) anchor rods.
If none of the above is available, an approved, temporary ground rod shall be used.

4.8 Temporary grounding cable shall be flexible-stranded conductor of sufficient current carrying capacity to activate protective devices without damage to the cable, but not less than Flexible 1/0 Stranded Copper. Cables shall be equipped at both ends with approved clamps that apply firm pressure and can be applied with live-line tools.

4.9 When lines or equipment that may become energized from any source rated 50 volts or more to ground have been removed from service to perform work on them, all phases shall be grounded or the work shall be performed using rubber gloves or live-line tools and treated as though the equipment were energized. Before grounding the phases, a check or test for voltage shall be made with an approved testing device. Grounds may be removed for equipment testing purposes, but work on the equipment not associated with the test shall be stopped until the grounds are replaced.

4.10 Whenever possible, a ground shall be placed on all phase conductors at the work structure. (*Ref. E-4.4)*

4.11 On metal structures, conductors shall be considered as bonded together and grounded when each is separately grounded to the structure.

4.12 On wood structures equipped with ground wires or grounded neutrals, the grounding system serves as the ground. On structures without ground wires, guy anchors where available or an approved temporary driven ground, preferably 50 feet away from any area where anyone is likely to be, may serve as the ground.

4.13 When a conductor, neutral, or ground wire is to be opened, a jumper shall be placed across the opening.

4.14 Disconnects and air breaks which have been opened shall be checked visually to ascertain that all blades are in full open position, and when equipped with locks, they shall be locked open and tagged. The motor circuit of motor-operated disconnects shall be opened, tagged, locked, and disabled, when applicable.

4.15 When circuits are taken out of service, the fuses, if applicable, shall be **removed from their holders** and the line properly tagged. If the circuit is controlled by an automatic re-closing breaker, the mechanism shall be placed in the locked-out position; disconnecting devices, if any, opened, and the breaker control circuit opened and tagged. *(Ref. E-15)*

4.16 Grounds under the control of the Dispatcher shall be removed only under their instructions and before the apparatus is returned to service.

4.17 All tools, temporary grounds and other equipment used on the job and all personnel shall be accounted for before releasing a Clearance.

E-5 Handling Poles

5.1 When unloading or loading poles, employees should work at the ends of the poles wherever possible.

5.2 Poles loaded on trailers shall be securely bound together and also to the trailer before towing. A suitable coupling device shall be securely attached to one of the poles to couple the load to the truck unless a long tongue trailer is used.

5.3 Poles being transported along streets and or highways shall be plainly marked at the rear with red flags and an operational signal light bar at all times, day or night. State and local regulations covering the movement of loads on streets and highways shall also be observed.

5.4 Poles placed on piles or racks shall be securely blocked to prevent rolling or shifting.

5.5 For raising, lowering, or pulling poles, a truck and winch should be used whenever possible. When starting to pull a pole, a pole jack shall be used initially, where necessary, to prevent over stressing the truck and winch. At no time shall the truck's boom, extension, or winch line be used for the sole purpose of pulling poles.

5.6 When piking poles, extreme caution shall be used to keep the pole under control at all times, and orders or signals shall be given by only one (1) employee.

5.7 When setting or removing poles in energized lines, care shall be taken to keep the pole from coming in contact with live conductors. *(Ref. E-3.33)*

E-6 Line Work on Poles

6.1 Before climbing poles, they shall be examined to be sure they are safe. When there is doubt, the pole shall be secured with temporary guys located so they do not interfere with public traffic, or by means of a boom truck and its pole claws.

6.2 While guying a pole, pikes may be used if manned. Unmanned pikes alone shall not be relied upon to support a pole while an employee is on it.

6.3 Before removing or adding wires, cables, or guys, additional pole guying or bracing shall be used, where necessary, to take the additional strain.

6.4 When climbing poles, care should be exercised to set the gaffs securely in the pole and to avoid weather cracks, holes, nails, signs, grounds, or other pole attachments.

6.5 Gaffs shall be kept sharp, in good condition, and not cut down to less than one and one-fourth inches (1 ¼) (inside measurement).

6.6 Climbers shall not be worn while setting poles or doing other ground work or while boarding, riding, or leaving District vehicles.

6.7 Lineman and apprentices shall use District approved belts and safety straps while working on a pole.

6.8 **Wire hooks** shall not be attached to linemen's belts or safety straps.

6.9 Safety straps should not be placed above the top cross-arm when it is at the top of the pole.

6.10 Cross-arm braces or other pole attachments should not be relied upon to support a lineman's weight.

6.11 All light equipment and tools to be used aloft should be raised and lowered by means of hand line and canvas bucket or other suitable container. Care shall be taken by employees working overhead to prevent dropping and falling of tools or material. Employees on the ground should stay clear of overhead work to prevent being struck by falling objects.

6.12 Tools and material shall not be thrown from the ground to a lineman working aloft, nor shall lineman throw tools and material from above to the ground.

6.13 Hand axes shall not be used on overhead work.

6.14 When an old pole is being replaced by a new pole, lineman should work from the new pole or aerial device whenever possible. Before stripping the old pole of transferring conductors, the old pole should be lashed to the new pole or supported by a boom truck and its pole claws, or guyed.

6.15 Employees should not be on poles that are being plumbed, canted, or tamped.

6.16 When working along streets or highways, employees shall exercise care to keep hand-lines from blowing into the line of traffic.

6.17 When stringing wires across streets and highways, avoid interfering with traffic or causing injury to employees or pedestrians. Warning/Danger signs and traffic cones shall be put in place at each end of the work location. Local, State and Federal traffic control regulations shall be adhered to at all times.

6.18 A lineman working on energized lines should, whenever possible, work from below the wires.

6.19 When working on or near energized circuits on wood poles, never stand on or touch grounded circuits such as telephone wires, messenger wires, cable sheaths, ground wires, guy wires or transformer cases. Such hazards should be covered by suitable protective equipment.

6.20 All lines, after being placed on cross-arms or racks, shall be considered energized at full voltage unless they are grounded.

6.21 A lineman shall not lean on or crowd through unprotected wires, and should protect against the possibility of falling into high-voltage circuits. If employees must pass through other circuits to reach a working position, such circuits shall first be covered with protective equipment.

6.22 In handling lines on a pole, they should be raised or lowered with a dry hand-line and extreme care exercised to prevent them from coming in contact with live lines and equipment.

6.23 Poles, towers, and other structures shall not be stepped lower than eight (8) feet above ground, unless they are within locked enclosures.

E-7 Transformers

7.1 Before starting work on transformers, the possibility of back-feed, abnormal voltage, or other dangerous conditions shall be eliminated. Transformer cases shall be grounded.

7.2 On transformers connected by hot line clamps, the clamps **shall be removed** before starting work.

7.3 **Hot sticks shall be used** when operating cut-outs and disconnects that are made for hot stick operation. Whenever possible, fused cartridges should be installed or removed with fuse sticks or tongs.

7.4 When transformers are to be left out of service for a long period, the line lead from the cut-out or the primary riser **shall be disconnected.**

7.5 Whenever transformers are replaced, the replacement transformer shall be checked for proper voltage before restoring service. Polarity and phase rotation shall also be checked as applicable.

7.6 Only approved potential transformers, voltage detectors, or voltmeters shall be used in phasing out circuits and transformers and in testing for potential.

7.7 On distribution transformers that are used to boost or buck voltage, and where the case is not grounded, the transformer shall be disconnected and the case grounded before starting work on the transformer.

7.8 Employees shall make sure that the cases of instrument transformers are grounded before working on them.

7.9 Employees shall never open a current transformer secondary when the current transformer is connected to the primary, and they shall make sure that there is a ground in the secondary circuit before restoring the current transformer to service.

7.10 Employees shall not short circuit secondary circuits of potential transformers when the potential transformer is connected to the primary, and they shall make sure that there is a ground in the secondary circuit before restoring the potential transformer to service.

E-8 Capacitors

8.1 All capacitors shall be treated as energized until proved otherwise. All static capacitors shall be de-energized before working on them and all terminals shall be grounded.

8.2 Before any work is attempted on a capacitor or a bank of capacitors, the following procedures shall be observed.

a) Oil switches shall be opened (if applicable).
b) Disconnects (fused cut-out) shall be opened.

c) Primary leads shall be removed from the line.
d) Allow at least five (5) minutes after de-energizing (opening the switches) before discharging.
e) Then apply a grounding jumper(s) to each capacitor using an approved hot stick. The grounding jumper(s) shall be left connected until all work has been completed. If capacitors are to be removed from service, shunts shall be applied before removing the grounding jumper(s).

8.3 Before re-energizing any capacitor or capacitor bank that may be suspicious in nature, a test should be performed with an approved capacitor tester.

E-9 Voltage Regulators

9.1 Voltage regulators shall be placed in the neutral position and tested for neutral and the control circuit opened or on manual before they are by-passed.

9.2 Before paralleling any circuit, regulation voltage must be matched and regulators placed in the "off" or "manual" position.

E-10 Tree Trimming, Right-of-Way Clearing and Re-Clearing

10.1 Brush and limbs shall not be dropped outside the barricaded area on streets, highways, and sidewalks.

10.2 When climbing trees, an employee should inspect the limbs to make sure they will hold their weight.

10.3 Employees working in trees shall always use safety harness, saddle, or belt with life line attached in such a way that if they lose their footing, they will fall away from electric conductors or other hazards.

10.4 Axes shall not be used aloft when trimming trees.

10.5 All tools shall be raised and lowered by hand-lines in such a way as to avoid touching energized conductors.

10.6 Parts of trees in contact with energized conductors shall be handled as energized conductors.

10.7 Before cutting down a tree, all limbs shall be cut off for a sufficient height to avoid striking electric conductors. Ropes shall be used to control the direction of the fall when necessary. Felling operations, once started, shall be finished before the crew leaves.

E-11 Substations

11.1 Anyone visiting any substation shall record the reason for the visit in the substation logs.

a) Only **qualified** employees or employees accompanied by a **qualified** worker shall be permitted inside substations. *(Ref. E-Definitions)*
b) Employees shall make sure the "DANGER" signs are in place and not obscured.

11.2 Before driving a car or truck into a station, the radio antenna shall be lowered when possible and secured in place whenever the vehicle will be driven close to energized equipment.

11.3 Gates in station fences shall be kept closed and locked except when employees are working in the yard near the open gate. Doors to enclosures containing live equipment shall be kept closed, except when work is being performed inside.

11.4 When carrying long material in areas where there is a possibility of touching energized equipment, the material shall be held by at least two (2) employees, one at each end, and carried in the hands and not on the shoulders.
11.5 When working around movable switch mechanisms that may operate without warning, they shall be barricaded or the operating mechanisms made inoperative.
11.6 When operating gang-operated switches, a check shall be made to see that all blades are in either a full open or full closed position. The switch shall then be locked and then tagged with an approved tagging device, if applicable.
11.7 Work shall only be done on lightning arresters when they are disconnected from the energized circuit and both terminals are grounded.
11.8 Before doing any work on rotating equipment, e.g., regulators, switch mechanisms, etc., the equipment should be shut down and properly disconnected.
11.9 Dust-proof safety glasses shall always be used when cleaning with compressed air.
11.10 Only non-metallic fish tapes shall be used near energized equipment.
11.11 When making electrolyte for storage batteries, always pour the acid into the water. Safety glasses or face shields shall be worn when making electrolyte.
11.12 Smoking and use of matches or other open flames are not permitted in battery rooms or while inspecting, filling, testing, or handling batteries.
11.13 When testing with high-voltage test equipment, the area of the test shall be barricaded with rope, tape, or other means to warn all personnel.

E-12 Underground Systems

12.1 When testing with high-voltage test equipment, the area of the test shall be barricaded with rope, tape, or other means to warn all personnel.
12.2 Before entering a manhole/vault, the following procedures shall be observed:
   a) An air and gas test shall be performed around the seam of the cover or around the test holes prior to lifting the cover, plus the top, the middle and the bottom of the space using a certified tester.
   b) Vault/manhole guarding shall be secured around the vault/manhole opening.
   c) An external fan or blower shall be installed and directed into the manhole/vault for a minimum of five (5) minutes before vault/manhole entry is made and shall continue until all work in the vault/manhole has been completed.
   d) Approved vault rescue equipment shall be positioned at or near the vault/manhole opening and made ready for use.
   e) Employee performing work in a vault/manhole shall wear appropriate safety harness.
12.3 Before re-entry into a vault/manhole, another air and gas test shall be performed.
12.4 When entry into a vault/manhole becomes necessary, one (1) qualified employee shall remain outside the vault/manhole within a safe sight and sound distance to render assistance in case of an emergency. Open flames and smoking are prohibited while working in or around any open vault/manhole.
12.5 Approved local and state mandated traffic control devices, such as Men Working Signs, Arrow Boards, or Traffic Cones, shall be installed in and around the work area, including around any and all vehicles and/or equipment associated with the work being performed.

12.6 Live cables shall never be stepped on even though they are encased in a sheath. Tools and materials shall not be allowed to rest against the sheath of live cables.

12.7 Underground cables rated in excess of 600 volts shall not be moved, bent, or re-racked while energized without the use of an approved hot stick.

12.8 Before any work is performed on cables carrying voltages in excess of 600 volts, such cables shall be de-energized, isolated, tested de-energized by an approved test device and grounded at "**Each Work Location."**

12.9 With the exception of gang operated underground switches or breakers, with the use of an approved hot stick, before paralleling any underground cables by the use of load break elbows, the **cables shall be tested to verify proper phasing first**.

E-13 Meter and Service Work

13.1 Where a customer has a vicious animal on the premises, try to arrange to enter the premises when the customer is present.

13.2 Only approved voltmeters shall be used to determine if equipment is energized or if a fuse is blown.

13.3 Fuse pullers and rubber gloves shall be used in replacing cartridge fuses in energized service installations.

13.4 Before connecting or reconnecting a customer's service, the following test shall be performed:

a) Check to assure that the ground wire is correctly secured in the meter socket.
b) Test to assure that no other conductor is at ground potential.
c) Test voltage to assure correct voltage.

13.5 The following method has been approved to perform the task of safely pulling and *installing* energized Single Phase meters:

a) A technician must wear Class 0 rubber gloves to remove a meter with additional PPE as follows:
   I. The technician shall wear an approved hard hat.
   II. The technician shall wear approved safety glasses.
   III. The technician shall wear an approved fire resistant shirt with sleeves extending all the way down to the wrist.
   IV. The technician shall verify that the meter has no load by turning off the main breaker, if feasible, or there is very low load present prior to pulling the meter.

13.6 All waste material shall be removed to leave the customer's premises and District equipment in a clean, safe condition.

13.7 Class 0 (1,000 volt) rubber gloves shall be worn at all times when coming in contact with any electrical equipment energized at voltages from 50 volts to 600 volts.

13.8 Before connecting or reconnecting meters with a nominal voltage of 480 volts, the service shall be disconnected and de-energized from the source.

E-14 Communication Procedures for Emergency Situations

14.1 **Mayday** is an international distress message used by a crew, employee or the public when in dire need of assistance. It is only used when professional medical personnel are required.

14.2 The following methods are approved **Mayday** procedures for <u>Field Personnel.</u>

a) Make sure the channel is clear. **(You cannot talk over another conversation in progress.)**
b) Key the radio, say "**Mayday, Mayday, Mayday**" and then state your unit number, location and the nature of the emergency, Man Down, etc.**.. DO NOT USE ANYONE'S NAME OVER THE RADIO.**
c) If no answer, repeat STEP (b). If no acknowledgement use whatever other means available to contact the proper emergency agencies. Unless directed otherwise field personnel are not to contact family members of the injured party.
d) Maintain contact with the Dispatcher until help arrives and/or the Dispatcher releases you.

14.3 Dispatcher Operations Mayday Procedure

a) Upon receipt of a "MAYDAY" distress call, the Dispatcher is to document the unit number, location, time and nature of the emergency. At that time an "ALL CALL" will be dispatched over the radio that a "Mayday" is in progress and to clear all non-emergency radio traffic until the Dispatcher clears the air for normal traffic. All non-emergency telephone traffic shall stop as well until told otherwise.
b) The Dispatcher at that time will call "911" to report the emergency and request EMS or law enforcement assistance based on the information given by the unit number calling in the Mayday.
c) The Dispatcher will then notify the Tillamook PUD General Manager, Public Relations Manager and/or the appropriate Supervisor of the situation.
d) If required, notification and method of notification to family members will be determined by the General Manager and/or the appropriate Supervisor.
e) After the Mayday situation has ended the Dispatcher will clear the radio and give permission to resume normal traffic.

14.4 As part of a standard Tailboard/Job Briefing, Mayday procedures will be discussed.

14.5 **Emergency Situation:** Is when there is (or the potential exists for) injury/fatality to human life, damage to property, or the curtailing or disruption of services.

14.6 **Serious Injury**: An injury which would require emergency transportation of an injured person by ambulance to obtain medical assistance.

14.7 **Non-Serious Injury**: An injury which does not require emergency transportation by ambulance to obtain medical assistance but usually will be accompanied by a District vehicle for medical treatment.

14.8 **First Aid Injury**: an injury which does not require immediate medical attention shall be reported to the supervisor as soon as is practical.

14.9 District employees involved in an emergency situation, serious injury or non-serious injury described above are responsible for the immediate notification to Dispatch, though the latter two are not Mayday situations.

E-15 Switching

15.1 **Purpose:** This Transmission & Distribution (T&D) Switching and Clearance Procedure establishes the authority, responsibility, and procedure for operating disconnecting devices, and requesting, issuing and releasing clearances while working on lines, cables, stations and equipment, operating at 600 volts and above, which is owned and operated by the District. The complexity of the District's T&D

system requires switching and clearance procedures to be performed in a uniform and highly disciplined manner. Anyone working on the District's T&D electrical system shall follow all procedures detailed in this section.

Definitions:

a) **Clearance**: The certification by the Dispatcher that a specified line, cable, station or equipment, operating at 600 volts or more, is de-energized from all normal sources of electrical energy, controlled by the Dispatcher, and a Clearance Tag has been placed at all Clearance Points. The Dispatcher issues a Clearance through formal recorded procedures releasing control of the line, cable, station or equipment to the Clearance Holder.
b) **Clearance Tag:** These tags are red and white and are used in association with the clearances. Clearance Tags indicate "Personnel are at Work," and shall be considered the equivalent of a lock. These tags shall be securely attached on or near the point of control for the device, operating mechanism, or source that could energize the line, cable, station or equipment to be worked.
c) **Clearance Boundary**: The location of the isolating device that is opened – checked open – and tagged.
d) **De-energized**: Disconnected from all intentional sources of electrical supply by opening switches, jumpers, taps, or other means. De-energized conductors or equipment could be electrically charged or energized through various means, e.g., inductions from energized circuits, portable generators, lightning.
e) **Dispatcher**: An employee who has received training in this written procedure who is responsible for granting permission to do switching procedures and issuing and releasing Clearances and Hold Orders.
f) **Employee in Charge (EIC)**: The designated person on a crew, normally the foreman, responsible for requesting, taking and releasing Clearances and Hold Orders for the crew. The EIC is responsible for determining the boundaries of the Clearance.
g) **Energized**: Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of ground.
h) **Grounded**: A means of connecting an electrical circuit or electrical equipment to ground whether intentional or accidental.
i) **Hold Order**: Assurance from the Dispatcher that the Reclose Relay has been rendered inoperable tagged and will not be restored to Normal without the release of the Hold Order.
j) **SCADA**: An acronym for "Supervisory Control and Data Acquisition," a system of equipment, hardware and software whereby equipment may be controlled and data retrieved remotely.
k) **Switching Logbook**: A logbook where the Dispatcher records all necessary information associated with the issuing and releasing of Clearance and Hold Orders.
l) **Terminal Clearance**: A Terminal Clearance is a formal assurance of isolation of a local terminal or terminals of an interconnecting circuit provided by the local system Dispatcher. The Terminal Clearance assures the requesting

Dispatcher that the terminal or course is open, properly cleared and tagged according to local procedures, and that it will not be energized until a release is given by the Dispatcher receiving the Terminal Clearance (BPA).

15.2 **Switching:**

a) **Oral-Switching Orders**: Oral-switching orders may always be used for Hold Orders and may be used for clearances when only one (1) crew is involved with the switching and the crew has sole control of the isolating device(s). Permission shall be received from the Dispatcher to perform the switching prior to starting the switching. Clearances or Hold Orders that are issued as a result of oral switching orders will be recorded by the Dispatcher in the logbook.

b) **Requests for Written Switching Orders**: When necessary to obtain a written switching order, a request shall be submitted to the Operations Department Dispatcher. The Operations Department will prepare the switching order, and submit copies to others involved in the execution of the written switching orders.

   I. Requests for written switching orders shall be submitted far enough ahead of the planned work to allow time to prepare the switching orders, place personnel or make other arrangements necessary for the execution of said written switching orders.
   II. Written switching orders shall be filed in the Operations Department and the Clearance or Hold Order number recorded in the logbook.

c) **Switch or Device Numbers**: In all cases, to the extent feasible, switches and devices will be referred to by their device number when carrying out switching, whether a written switching order is used or not. Station numbers may be used if it is appropriate and if a switch or device number has not been assigned.

d) **Switching Instructions**: The Dispatcher will issue the instructions for each step of the written switching orders.

e) **Repeating Oral Messages**: Each person receiving an oral message concerning the switching of lines and equipment shall immediately repeat it back to the sender and obtain the identity of the sender. Each person sending an oral message shall require it to be repeated back by the receiver and secure the latter's identity.

f) **Switching Logbook**: A Switching Logbook is maintained in the Operations Department and is used to record the issuing and releasing of Clearance and Hold Orders. Clearances shall be recorded in the logbook using red ink. The following information shall be recorded in the logbook.

   I. Name of the EIC and the crew number.
   II. The Dispatcher's name that issued the Clearance or Hold Order.
   III. The Clearance or Hold Order number.
   IV. The device number, when appropriate.
   V. The station number, when appropriate.

VI. The date and time the Clearance or Hold Order was issued and released.
VII. A short description of the reason for the Clearance or Hold Order.

g) **Areas of Non-Communication:** In areas where radio or telephone communication between the Dispatcher and the crew is not available and Clearances or Hold Orders need to be taken:
I. The crew will request permission from the Dispatcher to perform the necessary switching prior to entering the area of non-communication.
II. The crew will perform the necessary switching and installation of tags.
III. Upon completion of their work, the crew shall take the actions necessary to release their Clearance or Hold Order, except notification to the Dispatcher.
IV. Upon the crew's return to communication capability with the Dispatcher, crews will notify the Dispatcher what actions were taken.
V. When a second crew is about to enter an area of non-communication where the first crew is working, the second crew shall notify the first crew of their presence. Each crew will communicate with the other crew prior to performing Clearance or Hold Order switching actions that will affect the other crew or the safety of either crew.

h) **Clearances:**
I. All clearances shall be sequentially numbered using a **"TC"** prefix. The Dispatcher will record the information in the Switching Logbook. When the Dispatcher is not in the office and does not have access to the Switching Logbook, the Clearance tag shall be numbered using the following method. The Clearance Number will be made up of the name of the EIC and the date, e.g., Weber - 4/14/14. If more than one (1) Clearance is required by the same person in a 24-hour period, add a numerical suffix, e.g., – 1. The Clearance shall be recorded in the Switching Logbook and have the next available "TC" number assigned when the Dispatcher returns to the office.
II. Clearances that involve more than one (1) crew should be written, and the original copy retained in the Operations Department for a permanent record. The EIC shall be furnished a copy of the switching order, which will be reviewed with the crew. The execution of all switching shall be cleared through the Operations Dispatcher.

i) **Employee in Charge (EIC):** One (1) person on the crew shall be designated as the EIC who shall request the Clearance from the Dispatcher and be responsible for the Clearance. The EIC is responsible for informing their

crew of the boundaries of the Clearance and the energy control measures taken.

I. If a foreman is a part of the crew structure, they are designated the EIC. When a foreman is not a part of the crew structure, one of the journeymen will be designated as the EIC.

j) **Transfer of a Clearance:**

I. If the EIC is forced to leave the worksite or crew and needs to transfer responsibility for the Clearance, they shall:
   1. Designate a new EIC.
   2. Notify the Dispatcher.
   3. Inform the employees on the crew of the transfer.

II. If the EIC is not available, their supervisor is authorized to transfer the Clearance, provided the following procedures are followed:
   1. A reasonable effort shall be made to locate the EIC.
   2. The supervisor shall designate the new EIC.
   3. The supervisor shall notify all employees working under the Clearance.
   4. The supervisor shall notify the Dispatcher of the transfer.
   5. The supervisor will ensure the prior EIC is notified of the transfer when they resume work.

k) **More Than One Crew:** In cases where more than one (1) crew is working on a line or equipment under separate supervision, each EIC shall request their own Clearance for that line or equipment.

l) **Automatic or Remotely Controlled Switches:** Automatic and remotely controlled switches that could cause the opened disconnecting means to close shall also be tagged at the point of control. The automatic or remote control feature shall be rendered inoperable unless its design does not permit.

m) **Acceptance of Clearances:** The EIC shall not accept a Clearance unless they have confirmed that a non-electrically operated, visibly confirmable, disconnecting device has the line or equipment isolated from known sources of electric energy.

n) **Tags and Hold Blocks:** A tag shall be attached to each non-electrically operated, visibly verifiable switch or device furnishing electrical clearance to the work area. The Clearance Number, the name of the EIC and a short description of the purpose for the Clearance shall be written on the tag.

I. When non-electrically operated, visibly verifiable switch is made up of more than one (1) single-pole, non-group operated switches, one (1) tag may be hung on one of the switches and Hold Blocks may be hung in the remaining switches.

o) **Installation of Personal Protective Grounds:** Placement of protective safety grounds are not part of the Clearance Procedure and is only applied after a Clearance has been granted. The District's "Procedures for the Installation of Personal Protective Grounds" shall be followed when installing personal protective grounds.

p) **Release of Clearances:**
To release a Clearance, the EIC shall:
   I. Notify employees under their direction that the Clearance is to be released.
   II. Determine that all employees in the crew are clear of the lines and equipment.
   III. Determine that all protective grounds installed by the crew have been removed.
   IV. Report this information to the Dispatcher and release the Clearance.
   V. Tags may now be removed.

When the EIC is not available, their supervisor is authorized to release the Clearance, provided the following procedures are followed:
   I. A reasonable effort shall be made to locate the EIC.
   II. The supervisor shall follow steps 1-5 above. (*Ref. E-15.2 j (II)*
   III. The supervisor will ensure the original EIC is notified of the Release when they resume work.

When multiple crews have separate Clearances, only when all EIC's have released all Clearances will switching for Clearance removal commence.

q) **Re-Energizing Lines:** Instructions to re-energize lines or equipment that have been de-energized by permission of the Dispatcher shall not be issued until:
   I. All protective grounds have been removed.
   II. All crews working on the lines or equipment have released their Clearances.
   III. All employees are clear of the lines and equipment.
   IV. All protective tags have been removed

r) **Receiving Clearances From Foreign Utilities:** The Dispatcher of the foreign utility, normally BPA or Pacific Power, will issue a Clearance to the District's Dispatcher. The District's Dispatcher will then issue a Clearance to the District's EIC as outlined above.

s) **Releasing Clearances from Foreign Utilities:** The District's EIC will release their Clearance to the District's Dispatcher as outlined above. The District's Dispatcher will then release the Clearance to the Dispatcher of the foreign utility.

t) **Issuing Clearances to Foreign Utilities:** The District's Dispatcher will work with the District crews to establish a Clearance as outlined above. The Dispatcher will issue the Clearance to the District's Dispatch. District's Dispatch will then issue a "Terminal Clearance" against the same clearance number (TC) to the foreign utility dispatch, (e.g., BPA Dispatch, PacWest Dispatch, etc.). Clearance and Terminal Clearance will be recorded in the Switching Logbook separated by a double dashed line. *(Ref. E-15.2 f)*

u) **Releasing Clearances Issued to Foreign Utilities:** The Dispatcher will release the Terminal Clearance issued to the foreign utility upon assurance from the Dispatcher of the foreign utility that:

I. All employees of the foreign utility are clear of the lines and equipment.
II. All protective grounds installed by the foreign utility have been removed.
III. All protective tags have been removed.

The District's Dispatcher will then release the Dispatch clearance and work with District crews to release the Clearance as outlined above.

v) **Hold Orders:**

I. All Hold Orders shall be sequentially numbered using "**TH**" prefixes. The Dispatcher will record the information in the Switching Logbook. When the Dispatcher is not in the office and does not have access to the Switching Logbook, the Hold Order tag shall be numbered using the following method:
   1. The Hold Order Number will be made up of the initials of the EIC and the date, e.g., MW- 4/15/14. If more than one (1) Hold Order is required by the same person in a 24-hour period, add a numerical suffix, e.g., -1.
   2. The Hold Order shall be recorded in the Switching Logbook and have the next available "TH" number assigned when the Dispatcher returns to the office.

II. When lines/equipment are to be worked energized using hot line procedures, the first reclosing device(s) between the work location and the source shall be disabled and a Hold Tag will be placed on the reclosing device(s). Separate Hold Orders will be issued when more than one (1) crew is working on the line/equipment. All Hold Orders must be released before reclosing device(s) can be restored to normal operation.

w) **SCADA Controlled Devices:**

I. When a Clearance or Hold Order Tag is issued on equipment that is SCADA (Supervisory Control and Data Acquisition) controlled, the supervisory controlling point at the Master Station Terminal shall be tagged and the place of the tag will be noted on the switching orders when written switching orders are used.
II. When SCADA controlled devices establish the boundary of a Clearance, the SCADA action shall be verified and the remote control feature rendered inoperable by the qualified employee before the EIC accepts the Clearance.
III. When a Ground Relay or Reclosing Relay is disabled by SCADA:
   1. A signal confirming the disabling action must be received by the Master Station Terminal before the Dispatcher places an electronic tag on the controlling point.

2. The electronic tag must be removed before the Ground Relay or Reclosing Relay is restored to normal operation.
3. A signal light shall be illuminated on the control panel for the equipment to alert any potential on-site operator that the Ground Relay or Reclosing Relay has been disabled.

x) **Training:** This procedure will be reviewed annually by the Operations Department.

y) **Contract Crews:** Contract crews performing work for Tillamook PUD must be trained and abide by this procedure.

MOTOR VEHICLE SECTION

M-1 General

1.1 The Operation's Manager, or designee, has overall responsibility for the operation of District vehicles. For items not addressed in this manual, please contact the Operation's Manager, or designee, directly.

1.2 It is the responsibility of every employee who drives a District vehicle to know and obey all state and local traffic laws covering the territory in which they operate the vehicle. Employees need to be familiar with and abide by District rules and policies relative to the operation of District vehicles. Employees shall be personally responsible for all fines and other penalties assessed against them (except vehicle over-weight).

1.3 Equipment should be kept in good operating condition and operated in a safe and courteous manner. Before operating a District vehicle (including pool vehicles), each driver shall make sure, insofar as they can determine, that it is in proper operating condition. Any unsafe condition of the vehicle should be reported and corrected before use.

1.4 No employee shall operate a District car or truck upon a public thoroughfare unless they have a proper license in their possession. Supervisors shall not permit an unqualified employee, or one whose license is not valid, to drive a District vehicle.

1.5 Before filling the gasoline tank, the motor shall always be shut off and the hose nozzle shall be kept in contact with the gas tank to avoid static sparks. Overfilling of gasoline tanks should be avoided. Smoking and open flames shall not be permitted. Also avoid using cell phones or returning to the interior of the vehicle during the refueling process. If unavoidable, be sure to discharge any potential static electricity by touching something else metal before touching the nozzle. If a static electricity charge ignites a flash fire, do not remove the nozzle from the tank.

1.6 When filling a portable fuel container, use only approved containers. Always place the container on the ground before filling, and keep the pump nozzle in contact with the container.

1.7 Vehicles with restricted rear vision such as line trucks, vans, forklifts, etc., shall be equipped with approved backup alarms or shall have an observer in view of the driver while **backing up.**

M-2 Driving

2.1 District vehicles shall be operated within the legal speed limit at all times and at lower speeds where conditions warrant. A fundamental rule which all drivers must observe is that "any speed which is unsafe is unlawful."

2.2 Seat belts **shall** be properly fastened and used at all times while driving or riding in District vehicles.

2.3 Upon the approach of an emergency vehicle, such as an ambulance, police car, or fire-fighting equipment, pull to the right side of the street or highway and stop until the emergency vehicle has passed.

2.4 Do not follow another vehicle so closely or at speeds so fast that you cannot stop within the assured clear distance ahead. Allow a following distance of at least one (1) car length per ten (10) miles per hour of car speed.

2.5 District vehicles driven after dark shall not be operated at a speed that prevents stopping within the distance clearly illuminated by the headlights.

2.6 Use the low headlight beam when approaching a car from the opposite direction and when following within 500 feet of a vehicle going in the same direction.

2.7 Do not attempt to pass another vehicle going in the same direction unless you can see far enough ahead to be sure you can pass safely. Use directional signals to warn other drivers of your intentions.

2.8 Do not drive to the left of road center when approaching the crest of a hill, an intersection, railroad crossing, curve, or where a full view of the roadway ahead is obstructed for any other reason.

2.9 Before crossing railroad tracks, the driver of any vehicle should reduce speed and take all precautions necessary to determine that it is safe to do so.

2.10 Practice "defensive driving." That is, make every effort to avoid an accident even though the other party may be at fault. Do not insist on your right-of-way.

2.11 Pedestrians should be considered as having the right-of-way at all times. When driving on wet streets, be careful not to splash pedestrians.

M-3 Operation of Truck and Trailers

3.1 Before starting a truck, it should be carefully inspected to see that material is properly loaded and secured and that all employees are safely aboard.

3.2 Loading of vehicles should not exceed their rated capacity, and objects should not be permitted to extend beyond the sides.

3.3 Where objects extend more than three (3) feet (or less if specified by local regulations) beyond the rear of the truck, the projecting end shall be marked with a red, 12" x 12" flag by day and a red light by night.

3.4 No one shall be permitted to ride in District vehicles in areas that are not designed for an operator or passenger.

3.5 No extremities are to extend beyond the confines of the operating compartment.

3.6 Employees shall not be transported while standing in the vehicle with their heads above the cab or roll bar where they may be injured by low-hanging wires or tree branches, etc.

3.7 The driver shall not permit such a number of persons in the front seat as to obstruct their view to front and sides or interfere with the safe operation of the vehicle.

3.8 Trailers, while being towed, shall be adequately marked with red flags and red lights. These warnings should be placed at the extreme end of the trailer load and such intervals as the length of the load warrants. *(Ref. E-5.3)*

3.9 Local, state, and federal rules on lights, markers, size, weight, and load of vehicle and other regulations that apply, must also be complied with.

3.10 Before any line truck or digger truck is moved or driven, its boom or derrick shall always be placed in its stowed position. Any exception to the above rule shall be approved by the person in charge, and only if circumstances deem it necessary for the purpose of maneuvering into areas of limited space.

M-4 Procedure in Traffic Accidents

The following are provided as guidelines concerning what to do in case of a motor vehicle accident:

4.1 Call for emergency services if required, i.e., 911. Local law enforcement should be called to any accident scene that involves the public.

4.2 Do not become involved in an argument as to who was responsible for an accident, but endeavor to get all the facts in the case. Remember that accidents which may appear trivial often result in claims for personal injury or property damage.

4.3 Do not lose your temper; try to be courteous and helpful.

4.4 Do not admit responsibility or offer to make any kind of settlement. Representatives of our District or insurance company will address.

4.5 The following instructions should be observed in the order given, if possible, when you are involved in a traffic accident:

a) STOP-Pull over to the curb or out of traffic, if possible. Never leave the scene of an accident without stopping to identify yourself.
b) Set flags or flares where necessary to warn traffic.
c) Try to extinguish any fires and guard against starting any.
d) Do not move seriously injured persons unless necessary for their protection against further injury.
e) When requested, give your name, address, District affiliation and show your driver's license to the other party.
f) Obtain the name, address, and license number of the other driver, car license plate number, and names of car owner and insurance information.
g) Record names and addresses of witnesses and, if possible, get statements.
h) Unless some law enforcement officer is present at the scene of the accident, notify police having jurisdiction *(state, county or city depending upon where the accident occurs)*. Record name and badge number of any officer present. Obtain copies of any police reports completed at the scene.
i) Sketch the location showing position of vehicles or pedestrians involved and any special conditions such as obstructions, parked car, and skid marks. Document date, time of day, weather, road conditions, and any other information which you may consider useful.
j) Notify your supervisor and submit a written report with all useful information you possess.
k) If the fire extinguisher or first-aid kits have been used, report this to a Safety Committee member and/or Supervisor so merchandise can be refilled.

M-5 Reporting Vehicle Accidents

5.1 In the event of any accident involving District-owned or leased vehicles, the applicable form *"Notice of Injury or Incident"* must be completed.

M-6 Vehicle Maintenance and Repair

6.1 Each department shall be responsible for maintaining all fire extinguishers, first-aid kits, flares, chains, and other safety equipment in automotive equipment.

M-7 Commercial Driver's License (CDL)

7.1 On October 26, 1986, Congress passed the Commercial Motor Vehicle Safety Act of 1986. This law requires each state to meet the same minimum standards for commercial driver licensing. The standards require commercial motor vehicle drivers to get a

Commercial Driver's License (CDL). You must have a CDL Class A to operate any of Tillamook People's Utility District Commercial Motor Vehicles:

a) A single vehicle with a gross vehicle weight rating (GVWR) of more than 26,000 pounds.
b) A trailer with GVWR of more than 10,000 pounds if the gross combination weight rating is more than 26,000 pounds.
c) A vehicle designed to transport more than 15 persons (including the driver).
d) Any size vehicle which requires hazardous materials placards.

M-8 Vehicles Subject To DOT Regulation

8.1 Vehicles that are 10,000 pounds or more are subject to the Department of Transportation (DOT) Federal Motor Carrier Safety Act regulations.

M-9 Safe Stopping Distances

9.1 The following time/distance chart shows the distance traveled while the driver perceives a hazard and reacts to bring the car to a stop:

Miles Per Hour	Feet Per Second	Reaction Distance	Braking Distance Dry	Braking Distance Wet	Stopping Distance Dry	Stopping Distance Wet
20	29	44	19	24	63	68
30	44	66	43	55	109	121
40	59	88	76	97	164	185
50	73	110	119	152	229	262
55	81	121	144	183	265	304
60	88	132	171	218	303	350
65	95	143	201	256	344	399
70	103	154	233	297	387	451
75	110	165	268	341	433	506

The following chart assumes an average Perception Reaction time of 1.5 seconds and a level asphalt surface producing a drag factor of 0.7 for dry pavement and 0.55 for wet pavement. Distances listed are measured in feet.

COMPARITIVE STOPPING ABILITY OF TIRES AND TIRE CHAINS

Braking distances in feet at speed of 20 MPH—based on hundreds of test runs. Distances do not allow for reaction times, which average between 3/4 and 1 1/2 seconds, and add at least 22 feet to figures shown.

REGULAR TIRES – 21 feet

DRY PAVEMENT

REGULAR TIRES – 60 feet

SNOW TIRES – 52 feet

REGULAR TIRE CHAINS – 46 feet

REINFORCED TIRE CHAINS – 38 feet

LOOSELY PACKED SNOW

196 feet

REGULAR TIRES

174 feet

SNOW TIRES

GLARE ICE at 20° F

99 feet

REGULAR TIRE CHAINS

77 feet

REINFORCED TIRE CHAINS

M-10 All-Terrain Vehicles (ATV) and Utility Equipment Vehicles (UEV)

10.1 Only trained and authorized operators shall be permitted to operate ATV's and UEV's. All operators must hold their ATV Safety Education Card.

10.2 Before operating any ATV or UEV, the operator shall determine that the unit is in a safe operating condition. If any defect is found it shall not be operated and shall be reported to the supervisor.

10.3 A person operating an ATV or UEV shall ride only on the permanent and regular seat attached to the unit. The operator of an ATV shall not carry another person unless the vehicle is designed to carry more than one (1) person. If a UEV is designed to carry more than one (1) person, a passenger may ride on the permanent and regular seat if it is designed for two (2) persons or on another seat firmly attached to the UEV at the rear or side of the operator. The number of passengers of a UEV shall not exceed the manufacturer recommendations.

10.4 The operator of a UEV shall wear a seat belt during operation. It is the operator's responsibility to see that all UEV passengers are seat belted if equipped. All loads shall be secured prior to moving the vehicle.

10.5 No part of an employee's body shall extend beyond the running lines of the ATV or UEV while the vehicle is in motion.

10.6 When the UEV is unattended, the controls shall be in neutral, power shut off and brakes set.

10.7 The ATV or UEV's total carrying capacity shall not exceed the manufacturer's recommendations and the weight of cargo shall not exceed the manufacturer's recommendations.

10.8 Never ride under the influence of alcohol and/or controlled substances.

10.9 ATV and UEV operation requires protection for head, eyes, hands and feet against occasional spills, flying debris, or contact with foliage.

10.10 Employees should ride in pairs and carry radio and/or cell phone whenever patrolling lines or performing other patrol functions.

10.11 The machine should not be operated on public streets and roadways. However, if it is necessary to operate on public streets or roadways, extra caution and awareness of other public vehicles should be utilized and all applicable traffic laws shall be obeyed.

10.12 Extra precaution shall be taken when operating the machine during darkness by reducing speed and by the use of auxiliary lighting.

OFFICE SAFETY SECTION

O-1 Office Safety

1.1 Each person should keep his or her workplace neat and orderly.

1.2 Desk, cabinet and file doors/drawers should not be left open or unattended. Only one (1) file drawer should be opened at a time to prevent a drawer from tipping. Never rest your arm or weight on a file drawer that is open.

1.3 Chairs and other office furniture and equipment in need of repair shall be promptly reported to the supervisor.

1.4 All electrical cords that are frayed or broken should be removed and replaced.

1.5 Daisy-chaining of extension cords is prohibited.

1.6 Chairs, wastebaskets, cords, etc., shall not be left in aisles or anywhere they will constitute a tripping hazard.

1.7 Do not place broken glass or other sharp objects in a trash container without first wrapping the object(s) in heavy paper or cardboard. Dispose of the object(s) in a container approved for this purpose.

1.8 Handrails should be used when ascending or descending stairs.

1.9 Employees shall not run up or down stairways, in hallways, or around corners.

1.10 Paper clips, rubber bands, etc., shall not be thrown on floors, landings, or stairs. If observed, they should be picked up.

1.11 Extra care should be used when opening or closing doors with glass panels or when the door is locked at a blind corner.

1.12 Added caution is necessary when walking on highly polished floors or tiles, especially when they are in a damp or wet condition. Wet spots such as coffee spills, etc., should be wiped up immediately.

1.13 Only approved ladders or step stools should be used to gain access to high shelves or files. “Roll-around” stools shall be of the weight locking type to prevent skidding or other type movement.

1.14 Paper cutters or other type of office equipment that is equipped with a cutting edge shall have the blade in the down position, or otherwise rendered safe when not in use.

1.15 Materials shall not be stacked near windows where they may fall through and injure persons or property that may be below.

1.16 Materials shall not be stored near heating equipment or ducts where it will constitute a fire hazard.

1.17 Evacuation and emergency exit placards should be displayed in prominent areas.

1.18 Flammable items such as cleaning fluid, alcohol, etc., shall be stored in a clearly marked and combustible liquids cabinet.

1.19 All employees should report any unsafe condition that they may observe. Such conditions may be loose tiles, stair treads or railings, icy conditions, floor conditions, improperly operating equipment, electric hazards, improper lighting, broken or unsafe ladders, or furniture, etc. Remember Safety Depends on You.

HAZARDOUS MATERIALS SECTION

H-1 Purpose

1.1 This policy is provided to outline those practices deemed necessary to ensure the safety and well-being of all employees who are, or may be, exposed to toxic or hazardous substances in the performance of their daily activities.

H-2 Hazardous Materials Definition

2.1 "Hazardous Chemical" means any element, chemical compound, or mixture of elements and/or compounds which is a physical hazard or health hazard as defined by *OSHA Standard in 29 CFR Section 1910.1200(c) or 1910.1200(d).*

H-3 General

3.1 Many items common to everyday life are considered toxic when improperly used, e.g., lighter fluid, sprays, medications, pesticides, paint, bleach, etc. It is virtually impossible to list the hazardous characteristics of every compound or hazardous substance; therefore, care must be exercised in handling any toxic material. It is the responsibility of the District to inform employees as to the potential hazards that may be present or could exist due to handling, processing, or interaction with external materials.

3.2 All materials, substances, agents, or compounds utilized at District locations will have Safety Data Sheets (SDS) available through the online SDS program if the item contains toxic or hazardous ingredients or is classified as toxic or as hazardous.

3.3 SDS data shall be consistently maintained on the online SDS program and will be made available for review by the employee. Employee exposure surveys and measurements shall be conducted by qualified personnel when it is determined that employee exposures require such action. Employees, employee representatives, and other authorized persons or agencies shall have access to these records.

3.4 It is essential that adequate ventilation, appropriate hygienic practices, effective housekeeping, protective clothing and equipment, and pertinent training for safe handling of all toxic materials be provided to diminish or eliminate any hazard that might exist.

3.5 In all areas where a potential hazard might exist, the degree of hazard shall dictate the amount of precaution and employee protection required to provide safe working conditions.

3.6 Where situations warrant, the designated representative shall make an evaluation of hazards resulting from the use of toxic material and shall recommend remedial action on an individual case basis.

H-4 Specific Practices – Miscellaneous Compounds, Liquids or Agents

4.1 It can be safely assumed that most chemicals, petroleum by-products, resins, etc., are toxic to humans when exposure is not controlled or eliminated. There are also many other properties that constitute a hazard such as fire, explosion, long-term contamination, etc. In the interest of safety, the following practices generally can be applied to those substances that employees may work with in the course of their daily activities:

a) Be thoroughly familiar with any organic or inorganic substance that you intend to use. Read the instruction label and comply with any caution or warning notice that is evident.
b) Use good housekeeping and sanitary practices in the storage, transport, or utilization of any toxic material.
c) If accidental exposure should occur that may produce harmful results, report the details to your supervisor immediately.
d) When protective equipment is directed to be used, ensure that the fit or the coverage of exposed skin, face, or eye area is adequate and complies with the District's respiratory protection guidelines.
e) Be familiar with immediate first aid requirements in case of emergencies involving toxic substances.
f) Always ensure that adequate ventilation exists and a means of egress to fresh air is available when you are working in an enclosed area.
g) Ensure that appropriate type fire protection is readily available in case of emergency.

4.2 It is well to note that any toxic substance deserves respect for its degree of hazard or toxicity. Careful planning in the utilization of these substances can render them safe and allow their use. It cannot be over-emphasized that all employees must adhere to the principles of safety and the specific handling instructions for all toxic or hazardous materials.

H-5 Responsibility

Management and Safety Consultant

5.1 Prepare and update the written Hazard Communication Program, as needed.
5.2 Maintain the Safety Data Sheets (SDS) online inventory.
5.3 Monitor compliance with procedure.
5.4 Prepare Hazardous Material Information and Training Program and distribute to departments for implementation and maintain pertinent record of employee instruction.

Purchasing and Warehouse Department

5.5 Ensure that all containers are labeled in accordance with OSHA requirements and this procedure.
5.6 Ensure that all materials are properly used.

Supervisors

5.7 Ensure all employees are provided Hazardous Material Handling and Communication training. A record must be established for each employee when they receive training. This record must include employee name, date of training, and who instructed the employee. Supervisors will forward this record to the Human Resources Department.
5.8 Supervise employee handling of all hazardous materials, ensuring that the employee uses materials properly, exercises established precautions, and secures materials properly.
5.9 Supervisors will inform the Human Resources Department of any noncompliance infractions.

Employees

5.10 Employees shall participate fully in all Hazardous Material Handling and Communication training programs.

5.11 Employees shall comply with the Hazardous Material Handling and Communication Procedures and take precautions as outlined in SDS when dealing with hazardous materials.

5.12 Employees shall report to immediate supervisors any materials they use in their work that is considered to be hazardous, as defined by OSHA.

H-6 Container Labeling

6.1 All warehouse personnel will verify that all containers received will:

a) Be clearly labeled as to the contents.
b) Note appropriate hazard warnings.
c) List the name and address of the manufacturer.
d) Purchasing/Warehouse will maintain a supply of labels for use in the warehouses and by other departments for labeling hazardous materials.
e) See *Exhibit A* for OSHA requirements regarding labeling.

6.2 After receiving supervisor approval, any employee who purchases materials for use on the job will:

a) Ensure that containers are clearly labeled as to the contents in accordance with OSHA requirements.
b) Note appropriate hazard warnings.
c) List the name and address of the manufacturer.

H-7 Safety Data Sheets (SDS)

7.1 Copies of the SDS for all hazardous chemicals to which employees may be exposed will be maintained in the 3E Online-SDS program database (www.3EDistrict.com) or call 1-800-451-8346.

You will need the following information:

a) Product name and number.
b) Manufacturer name.
c) Manufacturer phone number.
d) UPC code.

7.2 See *Exhibit B* for SDS requirements.

H-8 Employee Training and Information

8.1 Each new employee will receive Hazardous Material Handling and Communication information which will include:

a) Chemicals and their hazards in the employee's work area.
b) How to lessen or prevent exposure to these hazardous chemicals.
c) What the District has done to lessen or prevent employee exposure to these chemicals.
d) Procedures to follow if they are exposed to these chemicals.
e) How to access the 3E online SDS system.

8.2 After receiving training, each employee will sign a form stating that they received a copy of the Hazardous Communication Program, as well as the appropriate safety training.

8.3 Before any new hazardous chemical is introduced to the work place, each employee will be given information in the same manner as during a safety class.

H-9 Hazardous Materials Non-Routine Tasks

9.1 It is District policy that no employee will begin work in any non-routine hazardous material task without first receiving a safety briefing from the supervisor.

H-10 Informing Contractors

10.1 It is the District's responsibility to ensure that the appropriate department provide on-site contractors and their employees with the following information:

a) Requested SDS sheets on hazardous chemicals to which they may be exposed while on the District facility job site

b) SDS for all hazardous chemicals is available through the 3E Online-SDS program

EXHIBIT A

OSHA LABELING OF CONTAINERS

All shipped containers of hazardous chemicals must be labeled in accordance with the following requirements:

1. 1910.1200(f)(1)(i)	Identity of the hazardous chemicals(s)
2. 1910.1200(f)(1)(ii)	Appropriate hazard warnings
3. 1910.1200(f)(1)(iii)	Name and address of the chemical manufacturer, importer, or other responsible party

All in-house containers of hazardous chemicals must be labeled in accordance with the following requirements:

1. 1910,1200(f)(5)(i)	Identity of the hazardous chemical(s)
2. 1910.1200(f)(5)(ii)	Appropriate hazard warnings

NOTE:
Portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer are not required to be labeled.

Labeling must not conflict with requirements of the Hazardous Materials Transportation Act, DOT regulations, or requirements of OSHA Substance-Specific Standards.

Labeling requirements do not apply to the following:

1) Pesticides covered by Federal Insecticide, Fungicide, and Rodenticide Act or the Environmental Protection Agency
2) Substances covered by regulations issued by the Food and Drug Administration
3) Alcoholic beverages covered by the Bureau of Alcohol, Tobacco and Firearms
4) Products covered by regulations of the Consumer Product Safety Commission

EXHIBIT B

OSHA REQUIREMENT/SAFETY DATA SHEET REQUIREMENTS

Chemical manufacturers, importers, and distributors are required to obtain or develop a Safety Data Sheet (SDS) for each hazardous chemical they import or produce.

Employers shall have a SDS for each hazardous chemical they use.

The following 13 elements must be included on each SDS:

1910.1200(g)(2)(i)	1) Identity/name and synonyms 2) Complete listing of hazardous components
1910.1200(g)(2)(ii)	Physical and chemical characteristics
1910.1200(g)(2)(iii)	Physical and chemical hazards
1910.1200(g)(2)(iv)	Health hazards and medical conditions that may be aggravated
1910.1200(g)(2)(v)	Primary routes of entry
1910.1200(g)(2)(vi)	Permissible Exposure Limits (PEL), Threshold Limit Values (TLV), or other appropriate exposure limits
1910.1200(g)(2)(vii)	Carcinogen indication
1910.1200(g)(2)(viii)	Precautions/safe handling
1910.1200(g)(2)(ix)	Control Measures
1910.1200(g)(2)(x)	Emergency/first aid procedures
1910.1200(g)(2)(xi)	Date of SDS preparation
1910.1200(g)(2)(xii)	Name, address, phone number of chemical manufacturer, importer or responsible party

None of the above items may be omitted from a SDS.

An entry must be made even if the entry is “Not Known” or “None.”

FIRST AID SECTION

F-1 General Directions

1.1 The following section reflects the current thinking of the recognized organizations in the emergency health care field and will be subject to change by the District as these concepts change. Most accidents are minor in nature and the first aid needed is obvious to a trained person. In case of serious injury, the procedures below are usually followed:

1.2 Survey the scene. Enter the area only when it is safe to do so.

1.3 Do a primary Patient Survey. Check the ABCs – Airway, Breathing & Circulation.

1.4 Request Emergency Help. Give as much information as possible.

1.5 Continue to administer first aid.

F-2 First-Aid Kits

2.1 All District first-aid kits, either on District vehicles or at a fixed facility, will be inspected once a month or restocked with required items.

2.2 The authorized first-aid kit "List of Contents" is available from *ANSI Z308.1-1998.*

Minimum Requirements

a) Absorbent compress, 32 square inch
b) 16 – Adhesive bandages, 1" by 3"
c) 1 – Adhesive tape, 5 yards long
d) 10 – Antiseptic, 0.14 fl. oz. applications
e) 6 – Burn treatment, 0.14 fl. oz. applications
f) 2 pair – Medical exam gloves
g) 4 – Sterile pads, 3" by 3"
h) 1 - Triangular bandage, 40" by 40"

Optional Contents

a) 4 – Bandage compress, 2" by 2"
b) 2 – Bandage compress, 3" by 3"
c) 1 – Bandage compress, 4" by 4"
d) 1 – Eye covering with means of attachment
e) 1 – Eye wash, 1 fl. oz.
f) 1 – Cold pack, 4" by 5"
g) 2 – Roller bandage, 2"
h) 1 – Roller bandage, 4"

F-3 Wounds and Control of Bleeding

3.1 Remember – control bleeding by:

a) Direct pressure over the wound, if possible.
b) Direct pressure on pressure points to the supplying vessel.
c) If an extremity is involved, elevate it, using pillows or substitutes.
d) Do not use a tourniquet to control bleeding.

3.2 Shock is present in all cases of serious bleeding and should be given attention as soon as the bleeding is controlled. Stimulants should not be used under any circumstances. It is recommended instead that the patient be given warm fluids, providing they are conscious and no immediate surgery is to follow.

F-4 Artificial Respiration

4.1 Remember – if the patient is not breathing, rescue breathing (mouth-to-mouth) to be effective must be started within three (3) or four (4) minutes after the patient has ceased to breathe. Therefore, start immediately.
4.2 Clear the mouth of foreign objects such as gum, toothpicks, dentures, partial plates, etc.
4.3 If victim is choking, use the Heimlich maneuver to clear the airway.
4.4 Tilt the head back so the chin is pointing upward and maintain this position, thus providing a clear passage for the air as well as the control of the tongue.
4.5 Treat for shock.
4.6 Keep the resuscitated person quiet.
4.7 Continue rescue breathing until the victim breathes independently or until a qualified physician takes charge. The person's chest must rise when the lungs are filled by your action. If the chest does not rise, your efforts are ineffective and you should again check to determine if obstructions are interfering.

F-5 Cardiopulmonary Resuscitation

5.1 Important – This procedure must be started quickly when it is deemed necessary.
5.2 Place victim flat on their back on a hard surface.
5.3 If unconscious, open airway by using the head-tilt/chin-lift method.
5.4 If the victim is not breathing, begin rescue breathing – two (2) full breaths. If airway is blocked, perform abdominal thrusts until the airway is open.
5.5 Begin artificial circulation by depressing the breastbone one and one-half (1½) inches to two (2) inches. Make sure the heel of your hand is two (2) fingers width up from the bottom of the breastbone.
5.6 Rate of breathing/compressions.
    a) Thirty (30) compressions to two (2) breaths with eighty (80) compressions per minute.
5.7 Important – Continue cardiopulmonary resuscitation until the victim breathes and circulates blood independently, until advanced life support arrives or the victim reaches medical care.

F-6 Shock

6.1 Remember – shock is always present – treat for it.
6.2 Place patient in the best position as determined by his condition; lying down is preferred.
6.3 Cover over, if necessary, according to the temperature of the environment; insulate from the surface below if necessary.
6.4 Fluids have value in shock. The best fluid to give a patient, if indicated, is plain water, neither hot nor cold.

F-7 Fractures

7.1 If in doubt, treat the injury as a fracture.
7.2 Keep broken ends of bone still.
7.3 Immobilize the adjacent joints.
7.4 Treat for shock.

7.5 Provide proper transportation.

7.6 Simple and compound fractures offer identical problems. Do not attempt to "set" bones. In a compound fracture with bleeding present, the wound is to be treated as any other wound, in addition to treating the fracture.

F-8 Dislocations

8.1 No one except a doctor should attempt to reduce a dislocation of a major joint. Reduction of dislocations of the fingers, toes and jaw should also be done by a doctor.

8.2 Support the dislocated member in as comfortable a position as possible.

8.3 Transport to medical aid.

F-9 Sprains

9.1 Sprains are injuries to joints. Sprains are aggravated by treatment with hot water if it is applied immediately after the injury.

9.2 If the possibility of a fracture exists, immobilize the part as you would for a fracture.

9.3 Elevate injured part.

9.4 Apply cold applications or an ice bag during the first half hour after the injury, which may retard the swelling. Do not apply heat for at least 48 hours.

F-10 Strains

10.1 Strains are injuries to muscles. First aid consists of rest and warm applications using wet towels. With a back strain, the patient should lie on a hard surface such as the floor rather than a soft surface.

F-11 Burns

11.1 Electrical burns – make sure the victim has been removed from the electrical source; see that he or she is breathing and the heart has not stopped. If it has, begin cardiopulmonary resuscitation. Administer first aid for burns after the victim's breathing and heart rhythms have returned. Seek medical aid immediately.

11.2 Chemical burns – flush affected area with large quantities of water to remove the chemicals. Administer first aid for burns.

11.3 Thermal burns – remove the victim from the immediate danger area and administer first aid for burns.

11.4 Degrees of burns.

a) First degree – skin is reddened.
b) Second degree – blisters develop.
c) Third degree – skin is dark red, brown or black (damaged underlying cells).
d) First aid for burns:
    I. For first and second degree burns, immerse or cover the affected area with cool water as soon as possible and maintain treatment during transportation to medical aid.
    II. For third degree burns, cover affected area with a thick, dry sterile dressing or wrap the affected area with a thick uncontaminated cloth. The exclusion of air by the application of a thick dressing helps to relieve pain.
    III. Treat for shock.

F-12 Heat Stroke

12.1 Remember – this is a serious physical condition and medical care is urgently needed. The victim may have a headache, dry skin and rapid pulse. There may be dizziness and nausea. Unconsciousness occurs in severe cases. Temperature is elevated far above normal.
12.2 Get victim to shady area or indoors.
12.3 Cool the victim rapidly using whatever methods you can until body temperature drops to 101°-102°F.
12.4 Do not give the victim alcohol.
12.5 Seek medical assistance as soon as possible.
12.6 If emergency personnel are delayed, call hospital Emergency Department for further instructions.

F-13 Heat Exhaustion

13.1 This common condition may be mild or severe. In mild cases, the patient feels unusually tired and may have a headache and nausea. In severe cases, perspiration is profuse – weakness extreme – the skin pale and clammy – temperature usually normal.
13.2 Rest, in air-condition environment, if possible.
13.3 Cool shower, bath or sponge bath.
13.4 Seek medical help if: 1) symptoms are severe or, 2) the victim has heart problems or high blood pressure.

F-14 Animal Bites

14.1 Remember – there is no known cure for rabies. Prevention is most important. Medical attention is recommended in all cases where the skin is broken.
14.2 Wash wound and surrounding area thoroughly and immediately.
14.3 Apply antiseptic to wound and surrounding area.
14.4 Animal bites to face and head are most dangerous and should receive immediate medical attention.
14.5 All animal bites should be reported immediately to the County Animal Control Center to insure proper confinement and follow-up tests of the animal. The following information must be given to proper authorities as soon as possible.
a) Name and address of the owner of the animal.
b) General description of the animal.
c) Location where injury took place.
d) Extent of wounds.
e) Your name, address and physician.

F-15 Eye Injuries

15.1 Imbedded objects must not be removed except by a physician. Bandage both eyes of the victim loosely and take them to a doctor immediately.
15.2 If a foreign object is on the eye or eyelid, moderate efforts may be made to remove it. Use of the corner of a clean handkerchief may be appropriate.

15.3 If a chemical substance enters the eye, immediate washing with large quantities of clean water is mandatory and should be continued for at least 15 minutes before seeking medical attention.

F-16 Emergency Transportation

16.1 More harm is done through improper transportation than through any other measure associated with emergency assistance. Unless there is an unusual emergency, it is best to wait until an ambulance is available.

INJURY OR INCIDENT

A-1 Purpose

1.1 The purpose of an Injury/Incident Reporting and Investigating Protocol and Procedure is to make certain that injuries/incidents are investigated according to the injury, or injury potential of an event, in accordance with District protocol and Oregon OHSA and Oregon Workers' Compensation. This will help to control further losses of human and material resources by identifying and correcting unsafe acts and conditions that lead to an injury/incident. In addition, an Injury/Incident Investigation:

a) Prevents similar accidents/incidents.
b) Determines change or deviation which produces errors.
c) Directs attention to hazards.
d) Is a "fact finding" and not a "fault finding" endeavor.

A-2 Responsibilities

2.1 **Management** – A manager will investigate an injury/incident reported by a direct report. A manager will participate in an investigation of an injury/incident if the severity or potential severity requires action appropriate to the manager's authority. District Human Resources Department will notify Oregon Workers' Compensation of any reportable injuries/incidents, per Oregon OSHA and Oregon DOT rules.

2.2 **Employee** – It is the responsibility of an employee to report an injury/incident, unsafe condition or near miss to their supervisor immediately. Employees are required to complete a "Notice of Injury or Incident" form, and if an injury is involved a "Report of Job Injury or Illness" form (801).

2.3 **Supervisor** – A Supervisor must advise their employees of the requirement to report all injuries/incidents including near misses, and an annual reminder to all is recommended. A supervisor must investigate injury/incidents in a manner that is timely and appropriate to the circumstances and severity of the injury/incident. A supervisor's injury/incident review and signoff are a requirement.

2.4 **Lead Investigator** – The Lead Investigator is the keeper of any and all information, photos, and evidence. The lead investigator should have a good working knowledge of operating procedures.

2.5 **Safety Committee Members** – A Safety Committee member(s) should be included in an injury/incident investigation. If not available, another employee knowledgeable in the investigation process may be included in the investigation.

A-3 General Guidelines

3.1 The following types of accidents shall be reported to a Manager/Supervisor, Public Relations Manager, and the Safety Committee immediately by telephone:

a) Accidents involving serious injury to an employee.
b) Accidents involving extensive vehicle or property damage.
c) Serious injury to a member of the public.
d) Contractor accidents involving personal injury, property damage, or vehicle damage.
e) Accidents requiring first aid only.

f) Accidents involving any fatalities.

3.2 Telephone Reports – In some cases of serious injuries or extensive vehicle or property damage, the following telephone reports will be made:

a) Employee – The employee will immediately notify their supervisor by telephone/radio.
b) Supervisor – The supervisor will notify their manager and the Human Resources Department.
c) Human Resources – The Human Resources Department will notify the General Manager.

A-4 Written Reports/Forms

4.1 The following describes types of accidents and the associated forms required. Each form is to be completed totally and accurately and in accordance with the instructions.

4.2 If confusion exists as to what forms should be completed and under what circumstances, contact the Human Resources Department for clarification.

Report of Job Injury or Illness (Form 801, Exhibit C)
Notice of Injury or Incident Reporting Form (Exhibit D)

Whether an employee seeks treatment or not, all employees sustaining work-related injuries/illnesses must complete Form 801 (top section) and Notice of Injury or Incident Investigation form. Completed forms are to be due no later than the next scheduled work day after they incur the injury or are aware of the illness and turned into their manager/supervisor. **** Do not sign the Form 801 unless seeking treatment.**

a) In the event that an employee is unable to complete the forms, their immediate supervisor becomes responsible for completing the forms.
b) All employees who are injured on the job and have lost time are required to have a written release from a physician BEFORE they will be allowed to return to work.
c) **The Human Resources Department** must be notified immediately of an employee's return to work and the supervisor will submit a copy of the physician's release.
d) Light Duty Work: When an employee is unable to perform regular duties as a result of a work injury, the District **may** assign "light duty." All light duty assignments need to be pre-approved by the General Manager. The supervisor will provide a detailed description of the work assignment, including length or amount of standing, sitting, bending, reaching, lifting, and length of shift to the physician who will decide if the employee should be released to perform this work. It is the responsibility of the supervisor to ensure that an injured employee is only performing duties that fall under the status as directed by the physician.
e) An employee may not return to Regular Duty until a written release is provided by the attending physician.
f) ALL documentation prepared by both District and physician that are related to an injured employee shall be sent to the Human Resources Department.

g) Form 801: If an employee seeks medical care for a work-related illness:
   I. The physician (health care provider) will complete the "Physician's" section and forward report copies to the District and the District's insurance carrier.
   II. Form 801 will be used by the Safety Committee for the basis of reporting injury/incident information to the District's insurance carrier.

Motor Vehicle Accidents

a) "Notice of Injury or Incident Investigation" form is to be used in the event of any accident involving District-owned or leased vehicles.
b) Supervisors are responsible for initiating a prompt investigation, ensuring that the "Notice of Injury or Incident Investigation" form is completed, signed and a copy is sent to the Safety Committee no later than the next scheduled work day.
c) Please refer to the Motor Vehicle *Ref. M-4* for guidelines regarding the scene of an accident.
d) Motor Vehicle Accident Definition – A motor vehicle accident is defined as any occurrence involving owned or leased motor vehicles which results in injury, death, or property damage regardless of the cause. The load on a motor vehicle is considered part of the vehicle.

Property Damage and Public Liability Accidents

a) "Notice of Injury or Incident Investigation" form is to be used in the event of District Property Damage or Public Liability.
   I. Supervisors are responsible for initiating a prompt investigation, ensuring that the appropriate form is completed, signed and a copy is sent to the Safety Committee no later than the next scheduled work day. *Severe accidents must be reported immediately by telephone*.
b) Public Liability (personal injury and property) – A public liability accident is an injury to the public, either personal or property, occurring on District property or as a result of District operations. This type of accident is a non-vehicle accident and involves personal injury or property damage.
c) Damaged utility facilities shall be considered public liability accidents and should be reported as such.
d) District Property Damage (caused by employees and others) – District property damage occurs as a result of accidents involving District non-vehicle property. The damage may be caused by District employees or the general public.
e) Responsibility of Employees:
   I. Employees involved in a public liability, personal injury, or property damage accident will protect the scene from further damage, render first aid only to the extent qualified, summon aid, and notify their supervisor immediately. The injured should not be moved unless absolutely necessary because of fire or similar hazard.

II. An employee should not accept responsibility or discuss the accident with anyone except the Safety Committee, Human Resources, their supervisor, or a properly identified law enforcement officer.
III. The employee will gather information at the scene such as claimant's name, address, extent of injury or property damage, where injured was taken, and witness information.
IV. The employee should not leave the scene until the investigation has been completed.

f) Responsibility of Supervisors:
   I. It is the responsibility of the supervisor to investigate all reports of property damage immediately and prepare appropriate written reports to be submitted to the Safety Committee no later than the next scheduled work day, except for severe accidents which must be reported immediately by telephone. A Safety Committee representative will be available to assist in the investigation.
   II. The supervisor will refer all damage claims to the Safety Committee for reporting purposes, copying the Finance Department for claims purposes.
   III. The supervisor will evaluate the accident, identify causative factors and, together with the Safety Committee and upper management, implement corrective action as required.
g) District Management – All claims resulting from Public Liability accidents will be referred to the local District Management. The claim will be reviewed by the District's Third Party Administrator.
h) Safety Committee – The Safety Committee will review the accident reports, evaluate the causes, and provide recommendations to prevent future occurrences. This information will be provided to upper management and the Human Resources Department for distribution and communication to the department managers.
i) Department Managers – The department manager will review the accident reports, conduct further investigations as required, and will direct corrective action.
j) Property Loss (Theft and Vandalism)
   I. Property loss through theft and vandalism will be handled in the same manner as District Property Damage.
   II. When theft is discovered, the employee will notify the supervisor and the supervisor will contact the police.
   III. The supervisor will conduct an investigation and will assist the police in their investigation. A safety committee representative will be available to assist in the accident investigation.

Exhibit C

SDIS - SELF-INSURED EMPLOYERS GROUP
P.O. Box 23879
Tigard, OR 97281-3879
(503) 670-7066 / 1-800-305-1735
Fax (503) 620-6217 - E-mail: wc@sdao.com

Report of Job Injury or Illness

Workers' compensation claim

Worker

To make a claim for a work-related injury or illness, fill out the worker portion of this form and give it to your employer. If you do not intend to file a workers' compensation claim with the insurance company, do not sign the signature line. Your employer will give you a copy.

Date of injury or illness:	Date you left work:	Time you began work on day of injury: ○ a.m. ○ p.m.	Regularly scheduled days off:	DEPT USE: Emp:
Time of injury or illness: ○ a.m. ○ p.m.	Time you left work: ○ a.m. ○ p.m.	☐ Check here if you are employed by more than one employer.	☐M ☐T ☐W ☐T ☐F ☒S ☒S	Ins: Occ: Nat: Part: Ev: Src: Juris:
What is your illness or injury? What part of the body? Which side? (Example: sprained right foot)				○ Left ○ Right
What caused it? What were you doing? Include vehicle, machinery, or tool used. (Example: fell 10 feet when climbing an extension ladder carrying a 40 pound box of roofing materials)				
Have you previously filed or sought treatment for this body part? ○ Yes ○ No				

Information ABOVE this line; date of death, if death occurred; and OR-OSHA case log number must be released to an authorized worker representative upon request.

Your legal name:	Language preference:	Birthdate:	Gender: ○ M ○ F
Your mailing address:	City State Zip	Home phone:	
E-mail:		Mobile phone:	
SSN (see form 3253):	Dept. & job title:	Work phone:	
Names of Witnesses:	If medical treatment was not with your primary care physician, print name and address of facility:		
Name of your primary care physician:			
Were you hospitalized overnight as an inpatient? ○ Yes ○ No	Name and phone number of your health insurance company:		
Were you treated in the emergency room? ○ Yes ○ No			

By my signature, I am making a claim for workers' compensation benefits. The above information is true to the best of my knowledge and belief. I authorize health care providers and other custodians of claim records to release relevant medical records to the workers' compensation insurer, self-insured employer, claim administrator, and the Oregon Department of Consumer and Business Services. Notice: Relevant medical records include records of prior treatment for the same conditions or of injuries to the same area of the body. A HIPAA authorization is not required (45 CFR 164.512(l)). Release of HIV/AIDS records, certain drug and alcohol treatment records, and other records protected by state and federal law requires separate authorization. **I certify, as attested by my signature and under penalty of law, that all information I have given is true and contains no false statements and/or misrepresentations.**

Worker signature:	Completed by (please print):	Date:

Employer

Complete the rest of this form and give a copy of the form to the worker. Notify your workers' compensation insurance company within five days of knowledge of the claim. Even if the worker does not want to file a claim, maintain a copy of this form.

Employer legal business name: Tillamook People's Utility District		Phone: 503-815-8637	FEIN: 93-6001985
Worker's shift at day of injury: (from) ○ a.m. ○ p.m. (to) ○ a.m. ○ p.m.			
Worker's weekly wage: Per ○ Hr. ○ Day ○ Wk ○ Mo. ○ Yr. $ _____	Give usual weekly wage and explain if wage prior to injury varied or included other earnings (tips, room and board, commission, etc.). Attach 52 weeks of payroll records.		
Return-to-work status: ○ Not returned ○ Regular Date: _____ ○ Modified Date: _____	If returned to modified work, ○ Yes ○ No is it at regular hours and wages?		
Address of principal place of business (no P.O. box): Address City State Zip			Insurance policy no.: 339402864-205
Street address from which worker is/was supervised: Address City State Zip			Nature of business in which worker is/was supervised: Electric Company
Address where event occurred: Address City State Zip			
Was injury caused by failure of a machine or product, or by a person other than the injured worker? ○ Yes ○ No			NCCI code:
Were other workers injured? ○ Yes ○ No		OSHA 301 log case #:	
Date employer knew of claim:	Person claim reported to:	Date worker hired:	If fatal, date of death:
Employer signature:	Name and title (please print): Terri Elliott, Human Resources Director		Date:

Doc. PIC Location Code: _____
Dept. Code: _____

OSHA requirements: On-the-job fatalities and catastrophes must be reported to Oregon OSHA within eight hours. Report any accident that results in overnight hospitalization within 24 hours to Oregon OSHA. Call (800) 922-2689, (503) 378-3272, or Oregon Emergency Response, (800) 452-0311, on nights and weekends.

801

COMPLETE BACK SIDE

Exhibit C

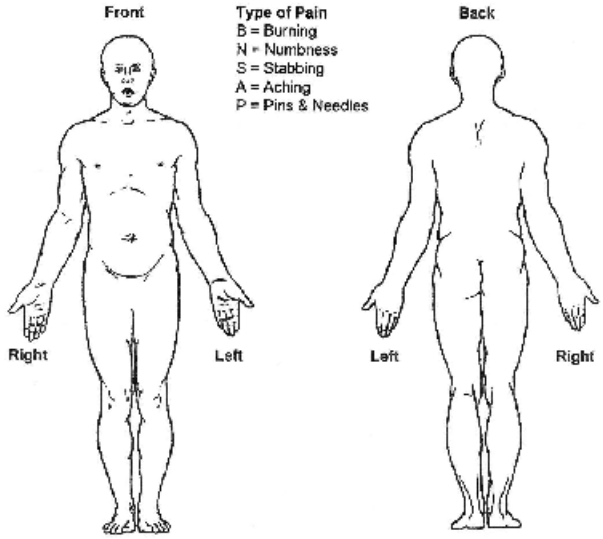
Pain Diagram

Please complete the Pain Diagram and submit along with the completed Incident Report or Form 801, or both. Retain a copy for your records and mail the completed originals to SDIS, PO Box 23879, Tigard, OR 97281.

Please Note: Completion of the Pain Diagram is voluntary and is not required to apply for workers' compensation benefits.

Name:_____ Employer: Tillamook People's Utility District

Please mark the area of injury or discomfort on the chart below using the appropriate symbols:



Pain Scale

0 = No Pain ——— *10 = Severe Pain*

Check one: ○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

Please use the space below to describe your condition further, if needed:

I certify, as attested by my signature below, that all information I have given is true and contains no false statements and/or misrepresentations.

Print Worker's Name: _____

Worker's Signature: _____ Date: _____

Special Districts Association of Oregon PO Box 23879 | Tigard OR 97281
Toll-free: 800 285-1736 | Phone: 503-670-7366 | | Fax: 503-620-6217 | E-mail: wc@sdao.com

Exhibit D

TILLAMOOK PEOPLE'S UTILITY DISTRICT

Injury or Incident - Employee Reporting Form

***** PART A: To be filled out by employee and submitted to supervisor *****

Personal Injury ☐ *(801 Form Required)* Property Damage ☐ Near Miss or Other ☐ *(Can Report Anonymously)*

Employee _____ Date/Time Occurred _____ A.M./P.M.

Dept/Job Title _____ Date/Time Reported _____ A.M./P.M.

Location where injury/incident occurred:

Vehicle # or equipment involved:

Engaged in what work when injury/incident occurred:

Description of accident/incident:

Nature and extent of injury:

List any medical assistance given (if applicable):

Witnesses:

What suggestion(s) do you have to prevent reoccurrence?

Employee Signature *(optional if reporting a Near Miss)* Date

M:\COMMON\Safety\Forms\Injury and Incident Reporting Form, Jan 2016

Exhibit D

TILLAMOOK PEOPLE'S UTILITY DISTRICT

Injury or Incident - **Supervisor** Investigation Form

*** **PART B: To be filled out by supervisor** ***

Were witnesses interviewed?

Analysis - What was/were the immediate root cause(s) of the accident/incident? (Unsafe mechanical or physical conditions, unsafe act by injured person or other(s), or combination of both, etc.) Please explain:

What is/are the reason(s) the immediate cause(s) existed?

Prevention - I have done the following to prevent a similar accident/incident:

I suggest the following policy, procedure or physical changes to help prevent similar occurrence(s):

** **Please attach a drawing of the event if applicable and photo(s) if available**

Supervisor Signature — Date

Reviewed by Safety Committee — Date

Original: HR Copy: Supervisor, Employee, ESD

M:\COMMON\Safety\Forms\Injury or Incident Reporting Form, Jan 2016

BEFORE THE

PUBLIC UTILITY COMMISSION OF OREGON

DOCKET PCN-2

EXHIBIT 212

TO THE TESTIMONY OFF KC FAGEN

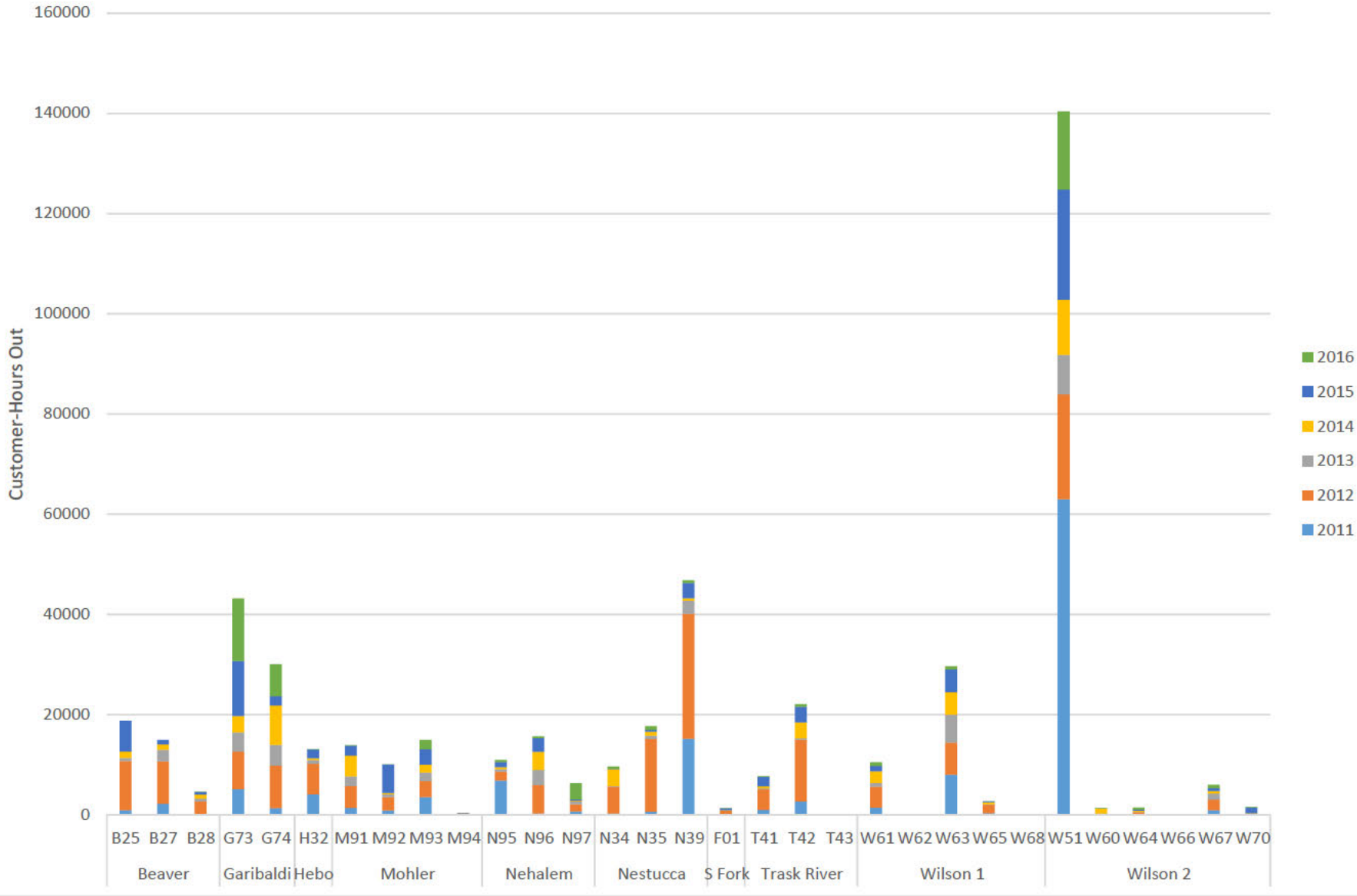
ON BEHALF OF

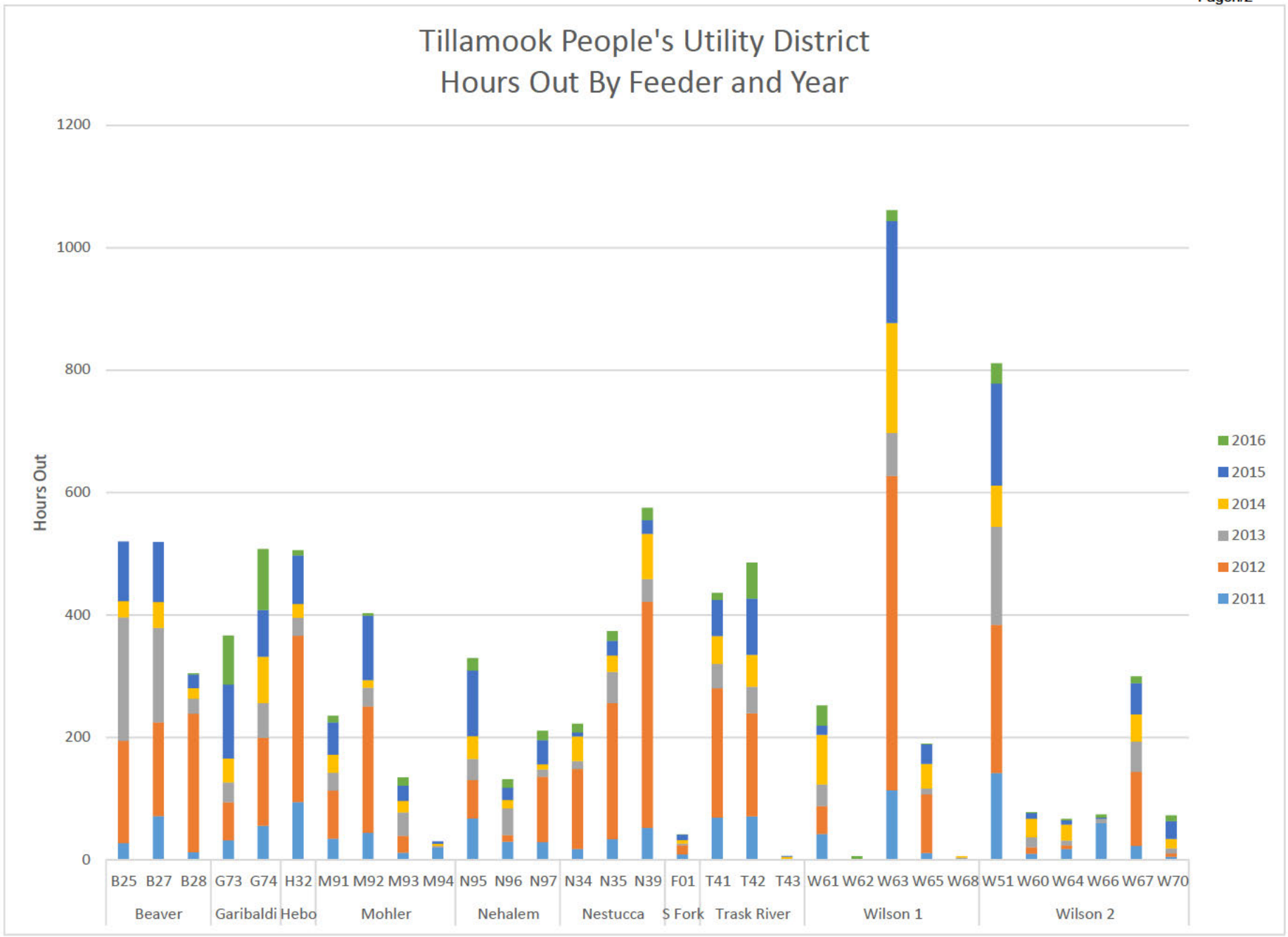
TILLAMOOK PEOPLE'S UTILITY DISTRICT

OUTAGE SUMMARY

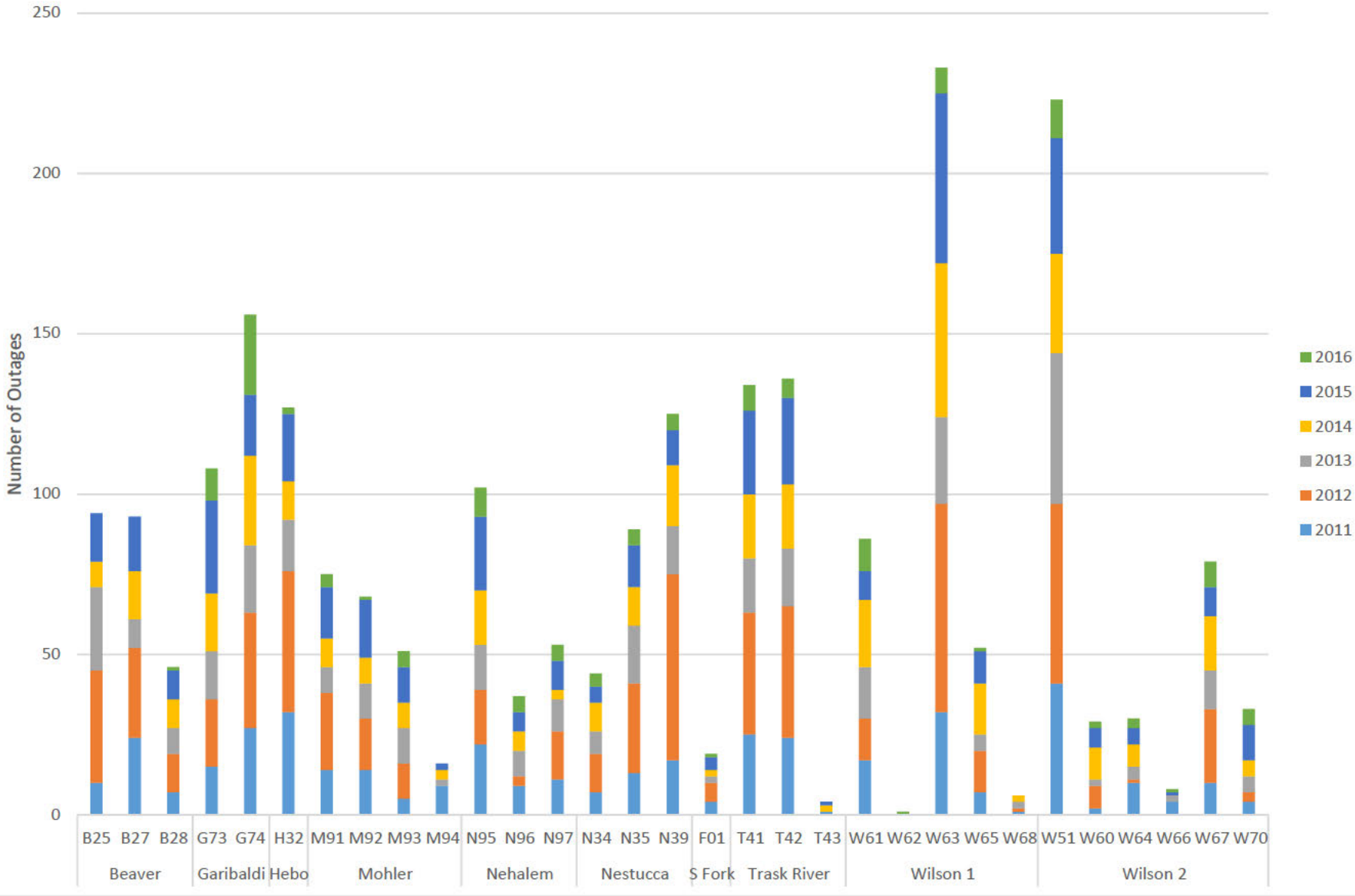
October 6, 2017

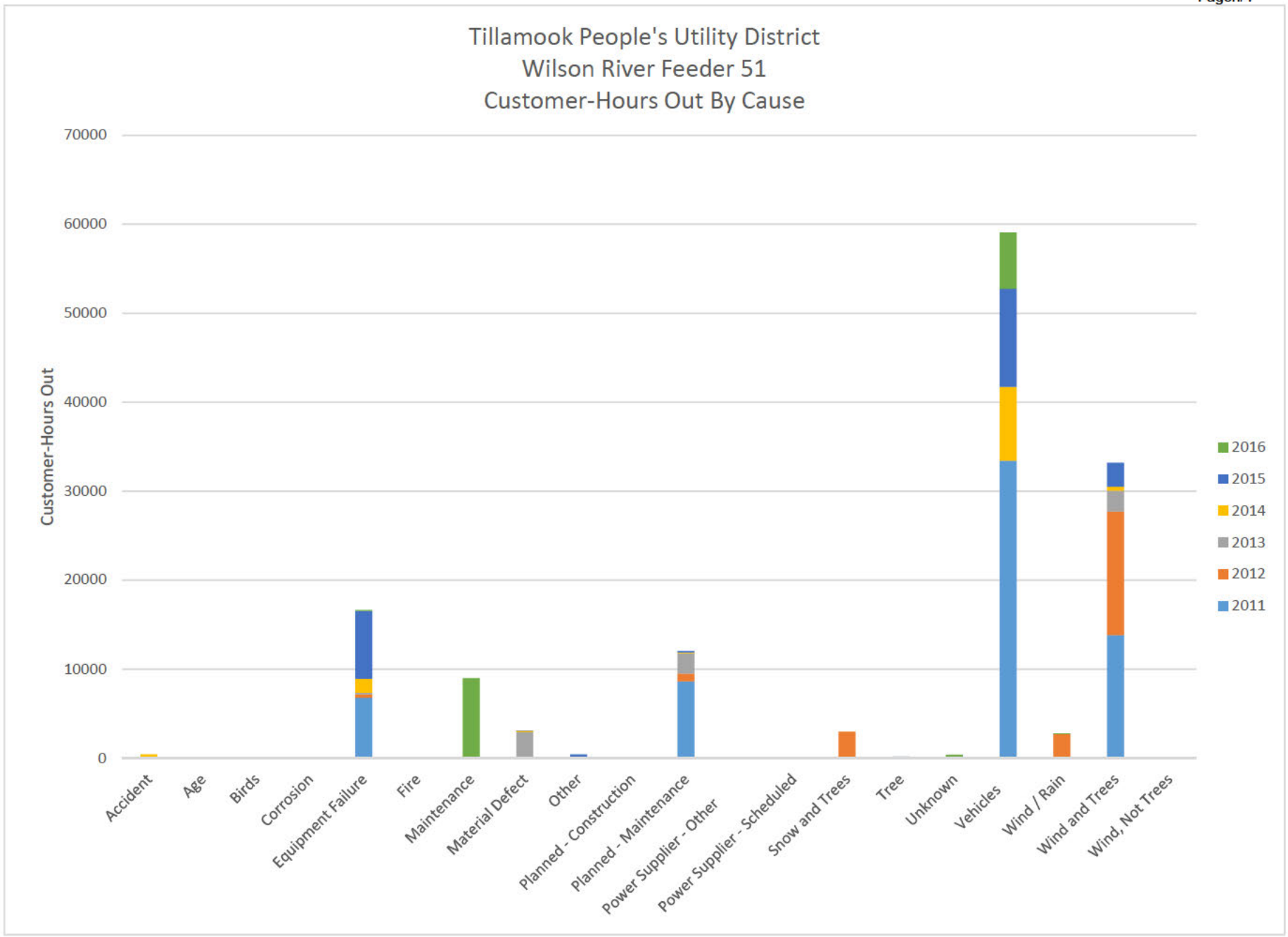
Tillamook People's Utility District
Customer-Hours Out By Feeder and Year

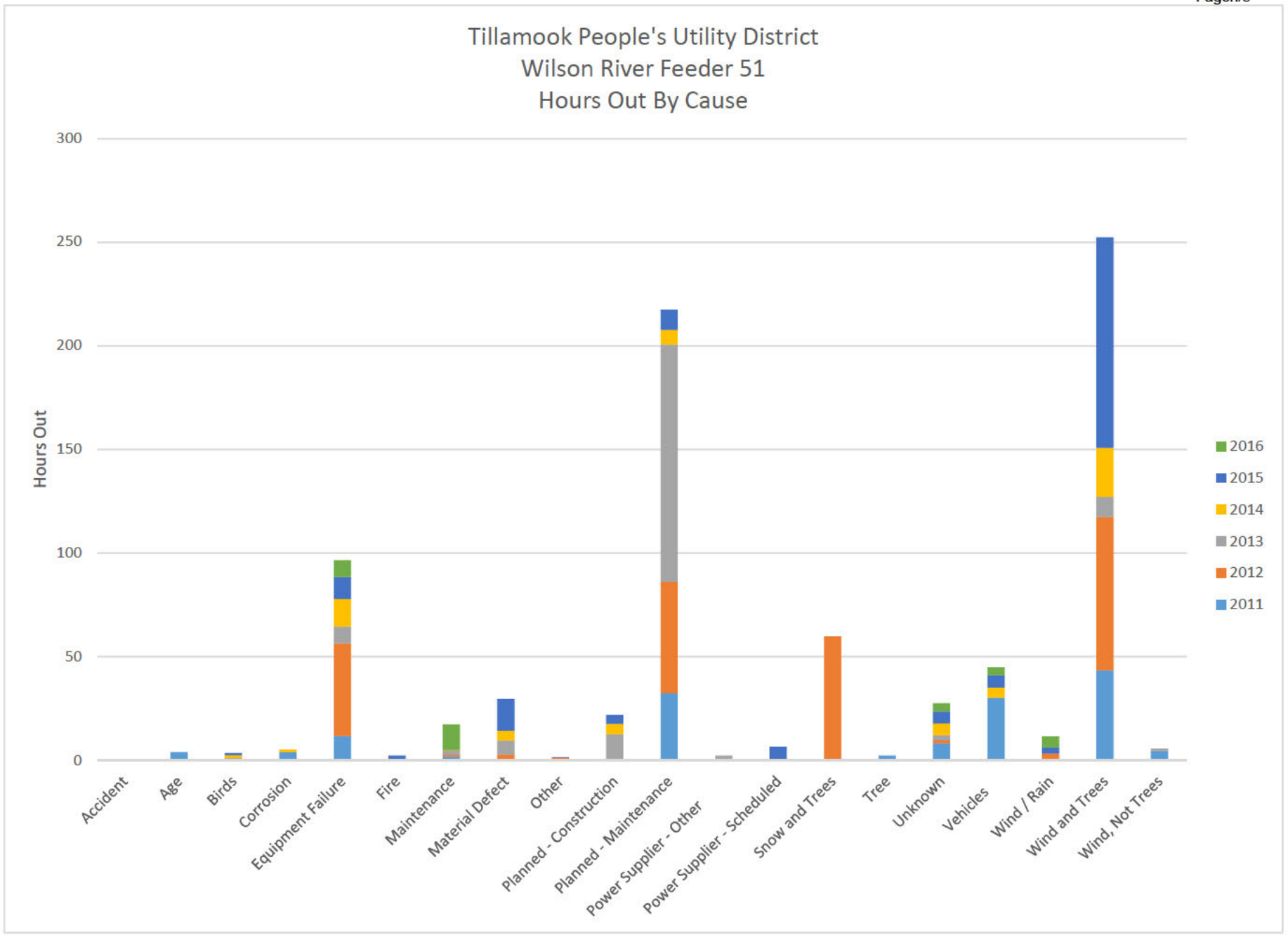


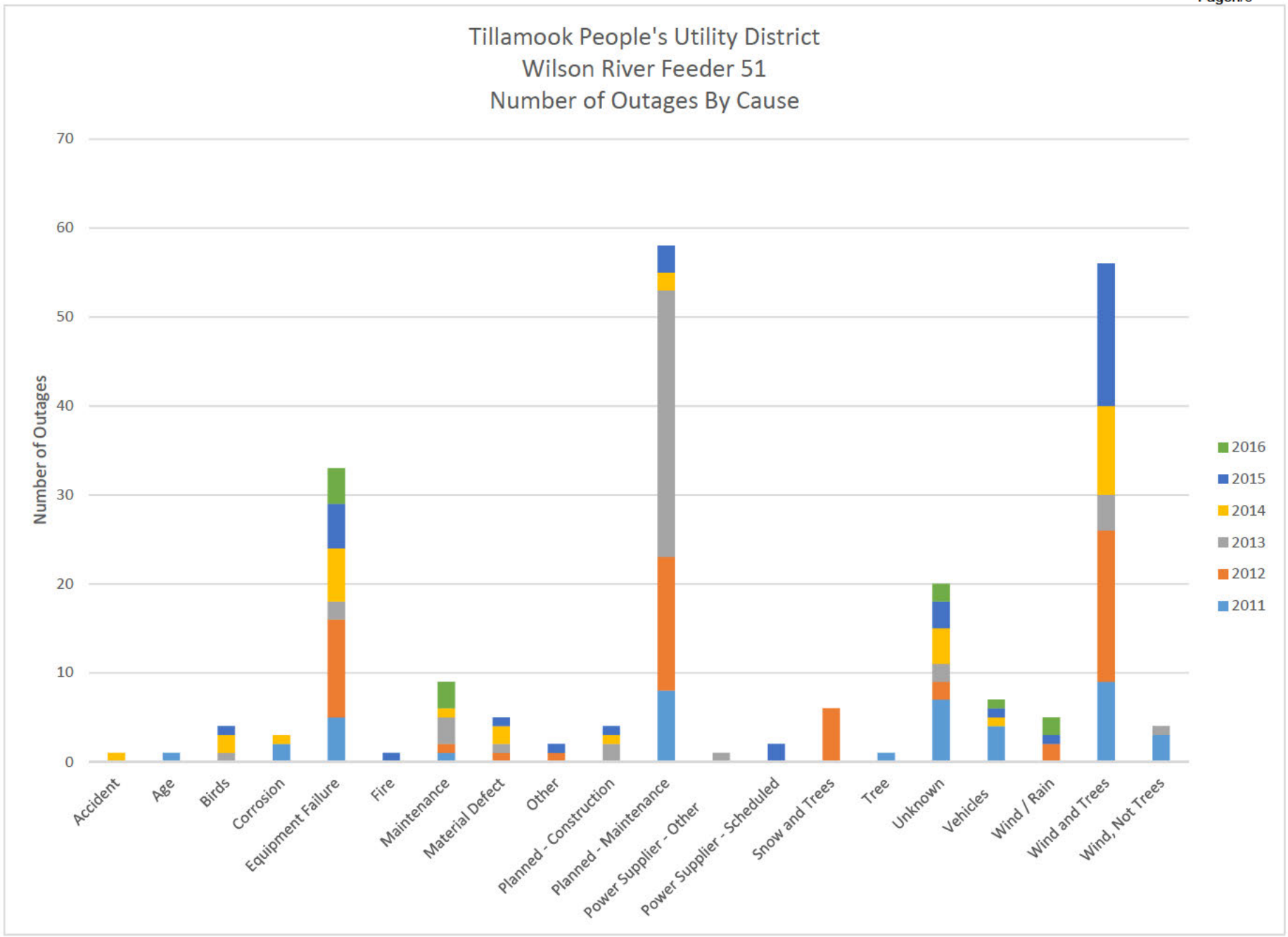

Tillamook People's Utility District
Hours Out By Feeder and Year
Hours Out
1200
1000
800
600
400
200
0
2016
2015
2014
2013
2012
2011
B25 B27 B28 G73 G74 H32 M91 M92 M93 M94 N95 N96 N97 N34 N35 N39 F01 T41 T42 T43 W61 W62 W63 W65 W68 W51 W60 W64 W66 W67 W70
Beaver
Garibaldi
Hebo
Mohler
Nehalem
Nestucca
S Fork
Trask River
Wilson 1
Wilson 2

Tillamook People's Utility District
Number of Outages By Feeder and Year




Tillamook People's Utility District
Wilson River Feeder 51
Customer-Hours Out By Cause
Customer-Hours Out
70000
60000
50000
40000
30000
20000
10000
0
Accident
Age
Birds
Corrosion
Equipment Failure
Fire
Maintenance
Material Defect
Other
Planned - Construction
Planned - Maintenance
Power Supplier - Other
Power Supplier - Scheduled
Snow and Trees
Tree
Unknown
Vehicles
Wind / Rain
Wind and Trees
Wind, Not Trees
2016
2015
2014
2013
2012
2011


Tillamook People's Utility District
Wilson River Feeder 51
Hours Out By Cause
Hours Out
300
250
200
150
100
50
0
Accident
Age
Birds
Corrosion
Equipment Failure
Fire
Maintenance
Material Defect
Other
Planned - Construction
Planned - Maintenance
Power Supplier - Other
Power Supplier - Scheduled
Snow and Trees
Tree
Unknown
Vehicles
Wind / Rain
Wind and Trees
Wind, Not Trees
2016
2015
2014
2013
2012
2011


Tillamook People's Utility District
Wilson River Feeder 51
Number of Outages By Cause
Number of Outages
70
60
50
40
30
20
10
0
Accident
Age
Birds
Corrosion
Equipment Failure
Fire
Maintenance
Material Defect
Other
Planned - Construction
Planned - Maintenance
Power Supplier - Other
Power Supplier - Scheduled
Snow and Trees
Tree
Unknown
Vehicles
Wind / Rain
Wind and Trees
Wind, Not Trees
2016
2015
2014
2013
2012
2011