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Integrated Services in Planning, Sustainability and Community Engagement

MEMORANDUM

DATE: August 3, 2016

TO: Jeffrey Stump and Chief Warren Brainard, Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians**;** John MacDonald, Oregon Department of Transportation

FROM: Kirstin Greene and Anais Mathez, Cogan Owens Greene; Jim Rapp, Parametrix
CC: Bonnie Gee Yosick, Bonnie Gee Yosick, LLC; Reah Flisakowski, DKS Associates; Crystal Shoji, Shoji Planning

RE: Coos Head Area Master Plan (CHAMP) Final Technical Memorandum #1: Existing and Planned Conditions

This project is partially funded by a grant from the Transportation and Growth Management ("TGM") Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development "DLCD"). This TGM grant is financed, in part, by deferral Fixing America's Surface Transportation Act (FAST Act), local government and the State of Oregon Funds.

INTRODUCTION

This Technical Memorandum #1 summarizes existing and planned conditions in and around the Coos Head Area ("CHA" or Study Area) to establish baseline assumptions and context for preparing the Coos Head Area Master Plan ("CHAMP"). This memorandum also defines goals and objectives and identifies those existing conditions and factors within the CHA that may impact or influence the CHAMP.

The following section begins by introducing the reasons and context for the CHAMP. The motivations for this project come from the goals and objectives of the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians (CTCLUSI) for CHA development, reflected in the 2015 update to the *Coos Head Land Use Concept Plan: A Vision for Seven Generations*. In this memo, we provide a summary of policies and plans that may impact the development of the CHAMP or conflict with the vision for the CHA. In addition, we have included descriptions of the existing land use, infrastructure, transportation, natural resources and demographics in the Study Area. Current market

conditions and trends within the CHA and greater Coos Bay area are included to provide an assessment of the Study Area's existing and future conditions for development. This memorandum concludes with baseline traffic and crash analyses around key CHA streets and intersections. The information in this memorandum is organized into the following sections, with a list of maps, figures and tables:

1 Goals and Objectives

1.1 Introduction and Problem Statement

The 43-acre Coos Head site, a panoramic site with ocean views and dramatic cliffs, was traditionally the homeland of the Miluk Coos Indian Tribe. In 1875, it was taken by the US government, where it remained until the Bureau of Indian Affairs deeded the property to the CTCLUSI in 2005.

From 1958 to 1995, Coos Head was a fully operational naval facility that contributed significantly to the economy of the Coos Bay region, supporting 12 officers, 95 enlisted and 15 civilians. Coos Head is surrounded by popular parks along the Oregon Coast, such as Sunset Beach, Shore Acres and Bastendorff Beach, and lies just west of the unincorporated community of Charleston. From an economic perspective, the Charleston area has been adversely effected. The redevelopment of this site for tourism and cultural activities, in close proximity to popular parks and the Oregon coast, will benefit both the Tribe and the broader community. According to the Oregon Solution's *Charleston Coast and Ocean Center Declaration of Cooperation*, summer time visitors increase the area's year round population of 6,000 to over 30,000 people. The development of Coos Head, the Oregon Coast Trail, Bastendorff Beach, Chicken Point and the supporting infrastructure is expected to benefit the Tribes and spark economic growth across the greater Bay area. These developments will build on the Port of Coos Bay's Charleston Marina Plan projects, such as the recently completed Charleston Boat Basin Drive improvements, and the Oregon Institute of Marine Biology's Marine Life Center on Boat Basin Drive.

Under U.S. Military ownership, Coos Head was not impacted by local zoning and development requirements. Now, however, the property is subject to these requirements. The site is currently zoned for forest use. In order to leverage the type of funding required to develop the commercial and cultural uses desired

by the CTCLUSI, Comprehensive Plan and zoning amendments through Coos County will be required.

1.2 Project Purpose

The purpose of the CHAMP is to guide and inform multimodal transportation access and other infrastructure and land use redevelopment for the CHA to serve, primarily, CTCLUSI's Coos Head property, plus supporting planning and improvements for the other properties in the CHA, including Tunnel Point, Coos Head Lookout/Chicken Point, Bastendorff Beach and University of Oregon (UO). From the TGM grant agreement with the state of Oregon, the project objectives for the CHAMP are listed below:

- Develop the conceptual CHAMP based on input of multiple agencies, citizen input and the Draft Coos Head Conceptual Master Plan developed by CTCLUSI.
- Develop conceptual multimodal roadway design plans for the intermodal transportation network supporting the land uses to be identified for the CHA. Conceptual roadway design plans will include cross-sections and cost estimates consistent with other transportation infrastructure requirements.
- Investigate the feasibility of extending required infrastructure to the CHA.
- Identify needed amendments to local, regional, state, and federal laws, policies, and rules.

1.3 Study Area

The CHAMP Study Area includes the CHA, land managed by the Bureau of Land Management (BLM) and land owned by the UO. The Study Area is bounded by Coos Bay to the north and the Pacific Ocean to the west. The eastern boundary of the UO parcel directly abuts the Unincorporated Community Boundary of Charleston, Oregon (Map A). Within the Study Area is the Project Area, which follows the boundary of the Coos Head naval site except for one remaining US Navy building that is still active but closed off within the site. For the purpose of this memorandum, Chicken Point, a BLM-managed parcel to the north of the Project Area, is included as an Additional Project Area pending further interagency coordination. The north end of this parcel (tract 37) is withdrawn for Coast Guard purposes.

Map A. Coos Head Study Area

1.4 Vision, Goals and Objectives

The CTCLUSI have been developing and clarifying a vision to provide economic benefit for their Tribal community, celebrate the natural environment and tell their story for several decades. To that end, the Tribes have carried out a variety of planning processes, including strategic planning, that reflect concepts that can be incorporated on the CHA.

Themes about the need for revenues for long term self-sufficiency, the desire to enhance both Tribal and public understanding of the rich heritage of the Tribes, and enhancing employment opportunities for Tribal members are well expressed in these plans. In addition, the Tribes have continued to express strong ties with the environment associated with their cultural heritage. The plans consistently reflect the Tribes desire for economic development, celebration of the Tribal heritage, and respect for the environment.

Coos Head Vision and Goals

In 2008, the Tribes worked with Shoji Planning, LLC and Crow/Clay & Associates Inc. of Coos Bay, Oregon to complete *Coos Head Land use Concept Plan: A Vision for Seven Generations* for the site. This vision element for the redevelopment of this site was the first part of a more comprehensive Integrated Resource Master Planning (IRMP) process that the Tribes were undertaking. The IRMP ties together decision-making that affect Tribal lands so that policies and priorities for land use reflect the merging of scientific data on natural resources with social and human values.

As part of that planning process, the following vision was developed from Tribal input:

Kweyeis Teixeu Quaimisich (Coos Head): Mountain Going Down to the Bar

A social and spiritual gathering place…
To foster Tribal unity among all generations,
To connect with the land and nature,
To experience our culture and heritage,
To honor and respect our ancestors,
And demonstrate pride in our rich heritage.

A place to demonstrate stewardship…
For the land, area and water,
And for all living things,
By leaving a soft footprint,
By respecting the sense of place.

The document identified 10 goals for developing the concept plan and to guide future planning and development. Those goals include:

1. Designate portions of Coos Head for Tribal Member Use (TMU) only.
2. Designate portions of Coos Head for Economic Development Use (EDU).
3. Provide mixed-use areas for TMU and EDU overlapping circles.
4. Provide a list of potential uses for the site.
5. Identify development priorities for all Circles of Use.
6. Utilize sustainable development practices to meet today's needs without compromising the site for future generations.
7. Acquire the Coos Head site in permanent Trust status for the Tribes.
8. Provide Infrastructure for future use and development of the site.
9. Provide for review of alternative sites in Tribal ownership when development is proposed.
10. Maintain a current and relevant vision and continue to plan for Coos Head as the site develops.

Coos Head Development Objectives

In 2015, the Tribes undertook a second phase of the IRMP, adopting the *Coos Head Phase 2: Alternatives Development Project*. Building upon the 2008 Plan and laying the groundwork for the development of the CHAMP, the document serves as a "bridge" for initiating discussion and decision-making about future uses to be developed on the Coos Head Site.

The vision that was developed in the 2008 Plan and carried over into the 2015 Plan prioritized the integration of the environment with Tribal cultural values, stressing the importance of managing natural resources at Coos Head in a manner that would provide protection of Tribal values and allow for economic return to the Tribes.

The 2015 Plan used the following considerations from the 2008 Plan that are pertinent to the selection of alternative uses:

- Tourist commercial uses will be enhanced by the higher elevations and views of the beaches and ocean.
- Tribal members would like an open gathering area or meadow.
- Tribal member use areas should have a variety of features.
- Views of Gregory Point and up the coast to Lower Umpqua and Siuslaw Tribal member homelands should be accessible from Tribal member use areas.
- Recreation areas, meeting areas and covered areas will benefit both economic development uses and Tribal member use

- Impacted forest areas with non-native vegetation and hazardous materials impacts may be most suitable for heavier industrial uses, and these uses could be accessed from the east.[1]
- The area along the bluff's edge is not suitable for development, but a pathway could be incorporated.
- The area that is being maintained by the U.S. Navy should be screened from other uses on the site.
- The portion of the site that has the Naval facility would be the most suitable area for any administrative offices that are moved to the site because of existing infrastructure such as roads and utilities, flat land, and potential for rehabilitation of existing buildings.[2]

The above considerations for development were used to guide the process for developing alternatives for site utilization.

1.5 Evaluation Criteria

The following criteria are proposed for selecting the preferred land use alternative subject to discussion with the Project Management Team:

- **Tribal Benefit.** Effect on Protected Communities under the Civil Rights Act of 1964. Title VI and Environmental Justice protected class populations include race, color, national origin, sex, disability, age and income. Facility design and siting promotes health, safety and social integration to provide a high quality of life for Title VI and Environmental Justice populations, including tribal members, elders and veterans.
- **Market Feasibility**. Development responds to a market need and generates revenues to help achieve long-term self-sufficiency for the Tribes. Costs are minimized without compromising quality, and reflect fiscal responsibility by accounting for the extension and upgrade of infrastructure. Development is well supported by policy and planning to increase the likelihood of funding.
- **Land Use.** Uses of the study area focuses on honoring the heritage of the Tribes and promoting economic development that is sensitive to the natural and cultural significance of the site.

[1] This refers to "impacted forest areas with non-native vegetation and hazardous materials," but the description is no longer accurate. The area described is no longer impacted because cleanup has been completed.

[2] This refers to the administrative offices of the U.S. Navy that no longer exist on the site. The 2015 update no longer recommends moving administrative offices to the area where the main buildings of the former naval facility were located. Instead, lodging and a cultural interpretive center are proposed.

- **Environmental Integrity.** Development utilizes best practices and protects watersheds, nearby estuaries, wildlife habitats and the cultural significance of Coos Head to the CTCLUSI. t areas
- **Transportation Choice.** Land use promotes transportation options by enhancing bicycle and pedestrian connectivity for improved mobility and accessibility. Development avoids congestion and traffic impacts by addressing deficiencies and meeting state performance targets such as volume-to-capacity ratio and level of service standards.
- **Safety**. Land use encourages community-oriented public safety services for Tribal members by providing access for emergency vehicles, responding to elements of the Federal Emergency Management Agency or FEMA-approved Hazard Mitigation Plan and protecting property and cultural sites through design that encourages intergenerational learning.

Existing Policies and Plans

2.1 Existing Plans and Policies

This section reviews federal, state and local plans and policies for their potential impact or influence on the development of the CHAMP. As a requirement of the CHAMP, the planning process must incorporate and comply with the following transportation planning rules:

- Oregon's Statewide Planning Goal 12, which seeks to provide and encourage a safe, convenient and economic transportation system.
- The measures of OAR 660-012-060 of DLCD's Transportation Planning Rule (TPR) and Land Use Regulation Amendments. Section 0060 is designed to keep land use and transportation plans in balance with one another by ensuring that new development is accommodated in a way that minimizes its traffic impacts.
- The Department of Transportation Highway Division State Access Management Rule OAR 734-051-000, which establishes procedures, standards, and approval criteria used by the department to govern highway approach permitting and access management.

The following table provides an inventory of existing policies and plans. Information from these plans and policies that are pertinent to the CHAMP is summarized below.

Table 1. Inventory of Existing Policies and Plans

	Date
*Coos Head Land Use Concept Plan: Alternatives Development Project**	*2015*
Tribal Environmental Plan	2015
Comprehensive Economic Development Strategy 2014-2018	2013
CTCLUSI Strategic Plan	2012
Bastendorff Beach Cooperative Management Plan	2011
Coos County Transportation Systems Plan (TSP)	2011
City of Coos Bay Economic Opportunities Analysis	2009
City of Coos Bay Housing Needs Analysis	2009
Charleston Coast and Ocean Center – Declaration of Cooperation	2009
*Coos Head Land Use Concept Plan: A Vision for Seven Generations**	*2008*
Charleston Marina Complex Vision and Plan	2007
Feasibility Study for Coos Head Eco-Tourism Facilities	1998
Bal'diyaka: Master Plan for Bal'diyaka Interpretive Center	1992
Coos County Comprehensive Plan	1985
Coos County Comprehensive Plan: Coos Bay Estuary Management Plan	1985
Coos County Zoning and Subdivision ordinances/Street Standards	1985

** These documents, foundational to the development of the CHAMP, are reviewed in the previous chapter but are included in the inventory for consistency.*

1. *Tribal Environmental Plan.* (2015). CTCLUSI.

This Plan outlines long term goals to promote and encourage environmental protection consistent with Tribal values. The Plan identifies five-year environmental priorities and strategies to accomplish each priority. One of the priorities is to oversee remediation at Coos Head for future Tribal use and development. The environmental clean-up of the site was completed in 2016, meeting the Plan's benchmark for success and requiring no further action.

2. *Comprehensive Economic Development Strategy 2014-2018* (2013). Coos, Curry and Douglas (CCD) Business Development Corporation.

A five year strategic plan for Coos, Curry and Douglas (CCD) Counties, this document is intended to guide the policies and investments of the CCD Business Development Corporation to improve the regional economy. The planning efforts for Coos Head are highlighted to support the following economic development goals: (1) increasing living-wage jobs, (2) supporting infrastructure assistance, (3) partnering to improve workforce training and education, (4) supporting partnerships and regional collaboration and (5) promoting vibrant, livable communities.

3. *2011 Strategic Plan*. (2012). CTCLUSI.

In 2011, the Tribal government executed a strategic planning process to assist in protecting and honoring the Tribes Constitution and fully exercising their sovereign rights. Coos Head is identified as an important traditional site for the Tribes and critical economic development opportunity. Priorities include incorporating cultural considerations into Tribal operations, facilities planning and stakeholder outreach for Coos Head. The Plan calls for the Culture Committee Perspective to be formally included in site planning for Coos Head. This 2011 Strategic Plan provided groundwork for the 2015 Tribal Environmental Plan, and is also a nod to the Tribe's Ethnobotany study which contributes to the understanding of indigenous cultures of the area and reinforces cultural practices.

4. *Bastendorff Beach Cooperative Management Plan* (2012). Bureau of Land Management, Coos Bay District, Umpqua Field Office.

The Plan provides a framework for a cooperative land management strategy within the multi-jurisdictional Bastendorff Beach. The Plan notes that the BLM has agreed to work with the Tribes to accommodate their interest in acquiring the remaining BLM parcels on the headland.

Coos Head is highlighted as a possible area to extend the Oregon Coast Trail to connect the mile-wide gap between Bastendorff Beach and the Oregon Institute of Marine Biology. The route has been identified in the OPRD's 2010 Connections Strategy Plan for the Oregon Coast Trail, and a preliminary route has been identified by the BLM on the ground. The document notes that previous discussion has occurred between the Tribes and the BLM regarding the Tribes' acquisition of the remaining public domain lands on the headland. It is noted that the Tribes are willing to work on locating a trail across some part of this parcel in a manner that would meet both trail user and potential future needs. The Plan notes that potential funding for the trail could be obtained from federal and state sources, and construction and maintenance could be conducted through the Northwest Youth Corps and local volunteers. Further public scoping, planning and environmental analysis are identified as the next steps prior to project implementation.

5. *Coos County Transportation System Plan.* (2011). David Evans and Associates, Inc.

The Coos County Transportation System Plan (TSP) is intended to guide the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. The Plan highlights the following goals: mobility, multi-modality, livability, safety and funding. The TSP recommends the development of a cooperative multimodal management plan

for the CHA as part of a high-priority/short-term pedestrian and bicycle improvement plan, which formulates the basis of the CHAMP.

A short-term roadway safety project from Coos Head Road to Oceanview Road is proposed to improve sight distance. Other system improvements include constructing a new roadway connection between Cape Arago Highway and Beaver Hill Road with a scenic overlook on the north side of Big Devil Gulch, as well as improvements to South Slough/ Roosevelt Boulevard (Charleston) and Sunset Bay State Park State Wayside.

6. *City of Coos Bay Economic Opportunity Analysis.* (2009). Cogan Owens Cogan, LLC and Marketek, Inc.

The Economic Opportunity Analysis identifies six economic development goals, including "maximizing the use of Coos Bay's unique geographic and recreational assets and cultural heritage." In addition, policies include supporting brownfield remediation projects, encouraging expansion of recreational, cultural and eco-tourism industries by expanding amenities and infrastructure and promoting the development of walking and biking trails throughout the City to link with nearby areas.

7. *City of Coos Bay Housing Needs Analysis.* (2009). Cogan Owens Cogan, LLC and Marketek, Inc.

In 2009, the City of Coos Bay conducted an inventory of buildable land. The report concludes that Coos Bay has a significant surplus of land, though the current housing market does not adequately meet the needs of Coos Bay residents. Recommendations include partnering with developers to encourage the development of housing in price ranges and types that would be affordable to a wider range of residents, which includes Tribal members. A comparison of land supply and need by zoning designation concludes that overall there is a significant surplus of land overall and within each zoning designation. Relative to the other zoning designations, the R-2 zone has the greatest need (single-family detached).

8. *Charleston Coast and Ocean Center – Declaration of Cooperation*. (2009). Oregon Solutions.

In 2009, Oregon Solutions convened a group of community stakeholders representing interests in the Charleston area. The project created a vision and implementation plan for Coast and Ocean Center with the understanding that Charleston's future is closely linked to the viability of its key coastal and marine industries. The document identified objectives to achieve the vision including: support collaboration among organizations that sustain coastal and ocean recourses, increase coastal access and infrastructure and increase public

information and education opportunities. Strategic investments for the Coast and Ocean Center include indoor and outdoor meeting spaces, educational and lab facilities and office space. Whereas future development on Coos Head would provide a tribal lens on natural resource and cultural education, this project identifies Coos Head as complementary to the Center by further improving visitor access to the shoreline coastal features through trail development.

9. *Charleston Marina Complex Vision and Master Plan* (2007). Shoji Planning LLC.

In 2007, the Charleston Marina underwent a master plan to address its facilities and functions, the RV Park and the Shipyard. The goals and objectives of the Plan include enhancing infrastructure to encourage the "village concept," provide greater interaction with the natural environment and promote tourism. These strategies highlight the importance of coastal activities to promote economic development, supporting both local and more regional efforts across the area.

10. *Feasibility Study for Coos Head Eco-Tourism Facilities (Rep.). (1998). The Portico Group.*

Prior to the restoration of Coos Head to the Tribes, a feasibility study was conducted for eco-tourism facilities on the site. Three conceptual land use alternatives combine aspects of a community-based resource center, a coastal education and interpretive center and a modest lodging component. The uses are to be clustered around a central commons area and are sited to take advantage of the expansive views up and down the coast and estuary. The 1998 study proposes a 25 year phasing and implementation plan, emphasizing coordinated tourism promotion efforts.

11. *Bal'diyaka: Master Plan for Bal'diyaka Interpretive Center.* (1992). SMH Architecture, PC.

The 1992 Bal'diyaka Master Plan proposed the Coos Head site for a multi-faceted, nature-based, cultural heritage center in Coos Bay. The primary planning goals are to provide historic accuracy and authenticity, preservation and restoration of tribal cultural heritage, delivery of a memorable education-recreational experience and development of economic opportunities for the community. In addition to special events and programming in an auditorium and educational discovery room, other elements of the Bal'diyaka Interpretive Center include parking areas, an ethno-botanical interpretive trail and a re-created coastal Indian village along the cliffs. The interpretive center captures the Tribes' desire for cultural education, preservation and restoration.

12. Coos County Comprehensive Plan. (1985).

The Coos County 1985 Comprehensive Plan coordinates all planning activities within the County, including those of the cities, special districts and state agencies. Plan policies drive zoning regulations and development ordinances. Certain policies and ordinances that may be pertinent to the CHAMP include the following:

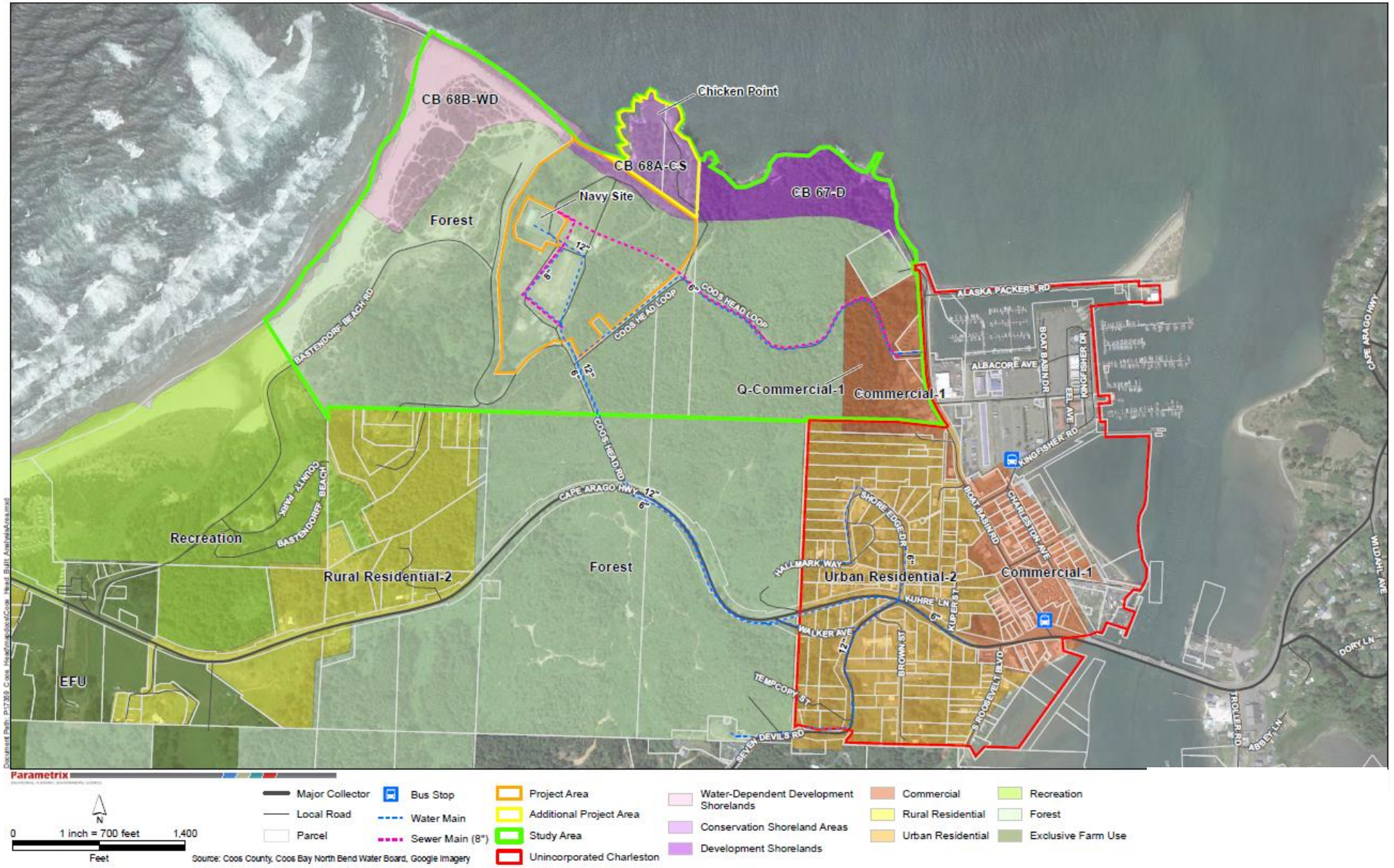
- The goal of Section 5.7 Historical, Cultural and Archaeological Resources, Natural Areas and Wilderness establishes the importance of preservation of significant cultural resources and heritage. As a means to preserve the integrity of these resources, the Plan deems cluster-type housing design as an appropriate measure to avoid sensitive areas. This supports the vision of a Tribal village on Coos Head.
- Whereas the Plan establishes the goal of encouraging orderly and efficient development of facilities to support rural and urban development, the Plan currently prohibits the extension of infrastructure to Coos Head because it is outside of the Charleston community boundary. Under certain conditions, the extension of services may be permitted where the provision is for industrial sites, publicly-owned parks, and "recreational" planned unit developments (PUD's), among others. Whereas recreational PUDs can encourage potential housing and recreational development on Coos Head, any qualifying sites for recreational PUDs must contain a minimum of 80 contiguous acres.
- As determined by the Zoning and Development Ordinance, the current zoning designation of the Coos Head site as Forest does not allow for any future development. Rezoning the land for potential commercial, recreational and housing use will require compliance with development and subdivision ordinances. As determined by the Comprehensive Plan, land uses in Coos Head will need to respond to policies that regulate development in areas subject to natural disasters and hazards, such as earthquakes and erosion. In addition, Section 4.1.450 determines that any development proposed within the immediate vicinity of the Coastal Shorelands Boundary shall refer to the criteria specified in the Coastal Shorelands goal and abide by any estuary management regulations embedded in the Comprehensive Plan.

13. Coos Bay Estuary Management Plan

Coos County has adopted an extensive set of Coos Bay estuary management regulations that are embedded in its Comprehensive Plan. The Comprehensive Plan's Volume II, Part 1, *Coos Bay Estuary Management Plan* defines 10 management unit categories. These include three Aquatic Management Unit categories (which are not applied to the Project Area or Study Area), and seven

Shoreland Management Unit categories. In total, over 70 specifically numbered and regulated sub-units are described and mapped in the Comprehensive Plan. Three of the Shoreland categories are applied within the Coos Head site (see Map B: Coos Head Master Plan Existing and Built Conditions). The County's Estuary Management Plan describes a management objective for each unit, as well as allowed and "special conditions" uses and activities.

- *Bastendorff Beach, Water-Dependent Development Shorelands (WD), Unit CB 68B-WD:* This BLM-managed beach is within the Study Area and includes the beach and foredune areas within 1,100 feet of the Coos Bay South Jetty. The rest of the BLM-managed beach within the Study Area is zoned Forest. The County's Estuary Plan states that the management object of Unit 68B-WD is to "allow uses and activities associated with jetty construction and maintenance, including road access and construction, unloading and storage facilities, and water-dependent recreational uses (page 78-79 of Plan). BLm manages the beach from the mean-high tide to the statutory vegetation line (dry sand) Oregon Parks and Recreation Department manages from the extreme low tide line to the mean high tide line (wet sand). The BLM is currently developing a new management plan for the area, for recreational use.
- *Chicken Point, Conservation Shoreland Areas (CS), Unit CB 68A-CS:* This BLM-managed area (named "Coast Guard Facility" in the County Plan) corresponds to the tract that is illustrated on CHAMP mapping as "Additional Project Area", though the northern point of the parcel (Tract 37) is withdrawn for Coast Guard use. The County's Estuary Plan states that the management object of Unit 68A-CS is to "maintain the riparian habitat and scenic qualities of this steep rugged bluff which overlooks the mouth of the estuary" (page 76-77 of Plan).
- *Shoreland between Chicken Point and Charleston, Development Shorelands (D), Unit CB 67-D:* This area is owned by the State of Oregon (University of Oregon). The County's Estuary Plan states that the management object of unit 67-D is to "maintain the existing uses and the riparian and scenic values of the steeper slopes in the area" (page 70-71 of Plan).



Map B. CHAMP: Existing and Built Conditions

3 Existing Conditions

3.1 Land Use

Currently, the Project Area (the Coos Head site) is zoned as Forest, and the Additional Project Area (Chicken Point) is zoned as a Conservation Shoreland Area. Existing land uses within the Study Area (CHA) also include Commercial, Water-Dependent Development Shorelands and Development Shorelands (see Map B CHAMP: Existing and Built Conditions for zoning and property lines). As stated in the Coos County Comprehensive Plan and Estuary Management Plan, the following zones are characterized as follows:

- **Forest**: These include all inventoried "forestlands".
- **Commercial:** This self-evidence designation is primarily intended for urban growth areas, but it is also appropriate for application in rural areas where commercial uses are already established (i.e., "committed" to commercial development). Limited infilling would be allowed.
- **Conservation Shorelands (CS)**: areas managed for uses and activities that directly depend on natural resources (such as farm and forest lands). While it is not intended that these areas remain in their natural condition, uses and activities occurring in these areas should be compatible with the natural resources of the areas. Conservation Shorelands include commercial forestlands, areas subject to severe flooding or other hazards, scenic recreation areas, specified public shorelines, and important habitat areas.
- **Development Shorelands (D)**: areas managed to maintain a mix of compatible uses, including non-dependent and non-related uses. Development areas include areas presently suitable for commercial, industrial, or recreational development. Development Shoreland areas are always located outside of urban growth boundaries and satisfy needs that cannot be met within urban growth boundaries.
- **Water-Dependent Development Shorelands (WD)**: areas managed for water-dependent uses and some of these areas are suited for water-dependent development. Water-related and other uses are restricted to specific instances prescribed in unit management objectives. Water-Dependent Development Shoreland areas are always located outside of urban growth boundaries, and satisfy needs that cannot be met within urban growth boundaries.

Table 2. CHA Parcel Information

Legal Subdivision	Official Acres		Total Area	Jurisdiction	Name
	Section 2	Section 3			
Lot 2		20.83	20.83	BLM	Tunnel Point
Tract 38		53.20	53.20	BLM	Bastendorff Beach
Tract 39	3.74	3.11	6.85	BLM	Chicken Point
Tract 40	3.71	39.28	42.99	CTCLUSI	Coos Head
Tract 42	7.99	17.73	25.72	BLM	
Tract 43		0.63	0.63	BLM	
Total Area Federal Interest Lands – 150.22					

Previous planning and policy analysis has identified the following actions for achieving the vision, goals and objectives for the CHA:

- Rezoning for the Confederated Tribes Property
- Expansion of the Urban Unincorporated Boundary of Charleston to all for public services
- Rezoning of surrounding properties
- Amendment to the Comprehensive Plan

Possible rezones to the properties within the CHA, including any nonconforming uses grandfathered within the Forest designation, include mixed recreational, commercial zone and controlled development.

Currently, several structures remain on the Coos Head property. Except for a newly constructed caretaker's residence located at the main entrance, all buildings are decommissioned and scheduled for demolition as part of ongoing environmental cleanup efforts. At the time of writing, the remaining structures awaiting demolition are located along the eastern and southern edge of the property. Other structures include several defunct power poles and utility boxes, a playground and tennis court. A partially paved road loops around the property, connecting to the main gated access point at the intersection of Coos Head Road and Bastendorff Beach Road. Although a second gateway is proposed off of Coos Head Loop Road, there is currently no maintained road or trails near this access point. More information about existing infrastructure, roads and access points are detailed in the following section.

While most of the property is forested, particularly along the perimeter, the site's location high atop a bluff overlooking the Pacific Ocean lends itself to dramatic views along the edge, past overgrown vegetation. View corridors exist at the

edge of the bluff southward, at Chicken Point looking westward, and atop a slope near the northern side. While the property has no official access to the waterfront due to the elevation of the cliffs, several unmaintained trails exist on the property, some of which drop steeply down the bluff towards the ocean.

See Map C. CHAMP: Site Analysis for a diagrammatic representation these elements.

Map C. CHAMP: Site Analysis

3.2 Infrastructure

Built Infrastructure

For this Existing Conditions analysis, built infrastructure is primarily defined as that sited within the Project Area. As noted previously, the US Navy continues to control a 2.43-acre inholding within the Project Area.

Some existing infrastructure entering the Project Area through the larger Study Area (BLM and University of Oregon lands) is also documented, and transportation features include all the roadways to which a Baseline Traffic Analysis was applied as part of the CHAMP).

Transportation

Existing Rights-of-Way

Current plans published by the Tribe call for reconstructing the Project Area's existing paved "P loop" that extends through the Project Area from the site's current south entrance at the intersection of Coos Head Road and Coos Head Loop. A new roadway internal to the Project Area is specified in the Tribe's published plans to extend from the "P loop" near the vicinity of the US Navy inholding to a planned new Project Area north entrance at the intersection of Coos Head Loop and Chicken Point Loop Road. There are also gravel roadways within the Project Area. Many of these gravel roads may be altered or removed as part of future site development.

The Cape Arago Highway (OR 540) passes just south of the Study Area and then through the south end of the unincorporated community of Charleston to the southeast of the Project Area. The typical cross-section of the highway in the Study Area is two 11-foot wide lanes (one in each direction) with a 2-7 foot wide shoulder on each side. The highway right-of-way ranges from 80 to 90 feet in the Study Area. While these are ideal right of way widths, the built condition on the ground may not be achieving that goal in all stretches of road.

Coos Head Road intersects with Cape Arago Highway just south of the Project Area's current south entrance, and also extends in the opposite direction to Bastendorff Beach and Bastendorff Beach Road.

The roadway into Bastendorff Beach runs along base of the bluff atop which most of the Project Area is located. This beach access road terminates in a parking lot at the Coos Bay South Jetty. This roadway and parking lot is the current point of physical access to the small portion of the Project Area that is at sea level. Physical access to the rest of the Project Area from the beach is

greatly constrained by topography (see Map D CHAMP: Natural and Existing Conditions and Map E: Topography and Slopes).

Coos Head Loop (sometimes labeled on maps as Chicken Point Loop or Coos Head Lookout Road) when entered through the planned new north entrance to the Project Area will provide for the most direct access from the Project Area to the community of Charleston (Charleston Boat Basin and the Oregon Institute of Marine Biology). A dead-end spur roadway off of Coos Head Loop Road also provides for access to the Chicken Point (Coos Head) US Coast Guard site. The present route from the Project Area's south entrance to Charleston is slightly longer and more circuitous, following Coos Head Road to Cape Arago Highway to the south end of this community.

All roadways with functional classifications are illustrated on Map B.

Roadway Functional Classification

- Cape Arago Hwy (OR 540) is under State jurisdiction and is classified as a District Highway by ODOT. Coos County classifies the highway as a Major Collector. Cape Arago Highway passes through the south end of Charleston and onto the City of Coos Bay, City of North Bend, and US 101.

- Seven Devils Road is also a Major Collector but is outside of the Study Area. This roadway passes areas south of the Study Area such as the South Slough National Estuarine Research Reserve and could therefore be a route used by residents and visitors to access future development in the Project Area. Seven Devils Road eventually reconnects with US 101.

- All other public roadways in the Study Area or providing direct access to the Project Area are managed by Coos County located within BLM-managed lands. The BLM has granted rights-of-way adjacent to (over, upon, under and through) these roads. They are classified as Local Roads in the Coos County Transportation System Plan (2011).

- Roadways within the Project Area are private and under the jurisdiction of the Tribe.

Public Transit

Coos County Area Transit provides scheduled Monday to Friday bus service to the unincorporated community of Charleston. There are two bus stops in Charleston with "loop" service five times a day. No plans or other information was found indicating a future extension of public transit service to the Project Area, although future site development may merit the extension of such service. See Map B for location of these two stops.

Bicycle and Pedestrian Facilities

Short segments of Cape Arago Highway are officially designated by ODOT for shared use, but there are no existing bicycle lanes, sidewalks or other pedestrian facilities, or off-road trails within the Project Area or Study Area. Currently bicyclists and pedestrians must share the road or use roadway shoulders. Available shoulder widths range from 0-7 feet wide on the Cape Arago Highway in the Study Area. Table 3 shows the State's standards for lane and shoulder width for highways like Cape Arago. Again, while these are ideal right of way widths, the built condition on the ground may not be achieving that goal in all stretches of road.

Table 3. ODOT Minimum 3R Lane and Shoulder Widths: Rural Non-Freeway *(Arterials, Collectors, Local Streets)*

Design Yr Volume (ADT)	Average Running Speed	Lane Width	Shoulder Width
Less Than 750 Vehicles	All Speeds	10′	2′
750 to 2000 Vehicles	Under 50 mph	11′	2′
	50 mph or Over	11′	3′
Over 2000 Vehicles	All Speeds	11′	4′

NOTE: A minimum 11 foot lane is required on all NHS Routes on ODOT jurisdiction roadways only. Local Agencies may use AASHTO standards for lane width on Local Agency jurisdiction roads.

The officially designated Oregon Coast Bike Route does not follow any part of the Cape Arago Highway or other roadways in the Study Area. A potential Oregon Coast Trail is shown crossing through the Study Area on various plan maps (such as the 2011 Bastendorff Beach Cooperative Management Plan and the Tribe's 2008 Coos Head Land Use Concept Plan). Illustrated conceptual alignments are however highly variable, ranging from following the high bluff on the ocean side of the Project Area to being shown as sited south of Coos Head/Coos Head Loop Road on the opposite side of the Project Area.

Wastewater

Wastewater collection from the Project Area is provided by the Charleston Sanitary District. A new 6" sewer main has recently been built. The main extends from a new sanitary sewer lift station near the US Navy inholding to the planned new north entrance at the Coos Head Loop/Chicken Point Loop Road intersection, then continues along Coos Head Loop to connect to an existing District sewer main on Boat Basin Road in Charleston. Some of this line may cross BLM-managed lands. Sanitary District officials indicate that this is a private line,

but with sufficient capacity to accommodate the future development of the Project Area as they understand it. Interior to the Project Area, a series of sewer laterals are shown as serving the other areas within the site.

Wastewater treatment is provided by the City of Coos Bay. The City has a new waste water treatment plant under construction that will have an 8.0 million gallon per day capacity. This plant was designed to meet area growth over the next 20 years, including development in Charleston and the CHA. In commenting on this Technical Memo, BLM staff provided comment that if any new line crossed BLM-managed lands in order to connect, the manager of the line would need to apply for a right-of-way grant from the BLM.

See Map B for mains within and leading into the Project Area.

Water

Drinking water is supplied to the Project Area by the Coos Bay-North Bend Water Board. Recent Project Area improvements replaced deteriorated water lines within the site. These internal water system improvements connect to an existing Water Board-owned 12" diameter water main at the Project Area south entrance (intersection of Coos Head Road and Coos Head Loop). This 12" water main extends down Coos Head Road, then follows Cape Arago Highway into Charleston, and connecting to the Water Board's Charleston water storage tank.

The Project Area is also served by a 6" diameter looped main that goes from the north end of Boat Basin Road in Charleston up Coos Head Road (named Coos Head Lookout Road on Water Board maps) to the current south entrance of the site. This 6" water main then parallels the Coos Head Road 12" main to Cape Arago Highway where it connects to an existing 6" water main in the highway. BLM staff indicated that they do not have a record of water lines crossing through BLM-managed lands.

Water Board staff have indicated that an upgrade of the 6" main to a 12" diameter in the section called Coos Head Lookout Road (e.g.: Boat Basin Road to Project Area's south entrance) could provide more water to the Project Area, which is metered at this south entrance. Water Board staff indicated the cost to upgrade to 12" would fall between $0.75 million and $1.0 million. See Map B for existing mains within and leading to the Project Area.

Natural Gas

Natural gas is provided in the Coos Bay-area by Northwest Natural, an investor-owned utility. According to a search of the NW Natural website, natural gas

service is not available at Coos Head (this was confirmed with Tribal staff) or within the community of Charleston.

Electrical Power

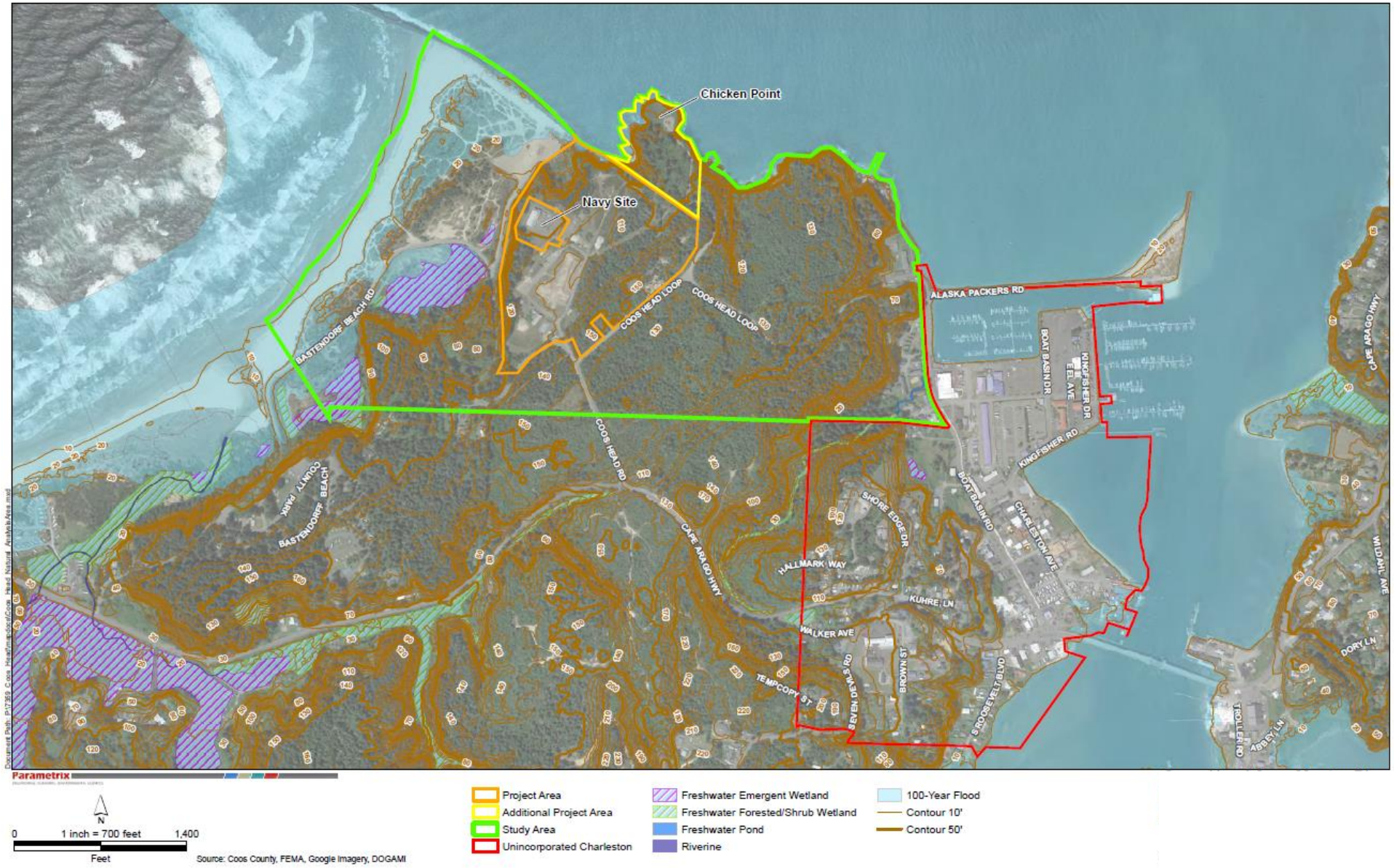
Electrical power is provided in the Coos Bay-area by Pacific Power, an investor-owned utility. Most of the electrical power infrastructure (poles/wires) within the Project Area was originally established to serve the various US Military operations on the site. After the Tribe assumed ownership in 2005, most of this electrical infrastructure was gradually decommissioned or removed as buildings were demolished. Depending on future site development, a new electrical power distribution system within the Project Area will have to be re-established.

Presently, electric power to the Project Area's south entrance has a 25kV capacity. This is considered a medium voltage service suitable for electrical power distribution in both urban and rural areas. There are no current plans for energy intensive uses in the Project Area (such as a casino) that would require an upgrade to sub-transmission levels (69kV or greater). As all Project Area concepts discussed to date (such as the Tribe's 2008 concept plan for the site) only contemplate low-density residential development, community buildings and event spaces, some tourist-oriented lodgings and resort facilities, and considerable open space, the current 25kV electrical service to the site is probably sufficient. If any new lines were planned, they would need to be authorized through the BLM right-of-way granting process while under BLM jurisdiction.

Storm Water

Storm water management within the Project Area and along roadways accessing the site is provided through sheet flows, open ditch drainage, and cross culverts as is the conventional practice in rural areas. Future site development, or improvements to Study Area access roads to a redeveloped Project Area, could require alterations and upgrades to the storm water management system.

See Map E for local topography.



Map D. CHAMP: Natural and Existing Conditions

Natural and Cultural Resources

Goal 5 Natural Resources

Statewide Planning Goal 5: *Natural Resources, Scenic and Historic Area, and Open Spaces* requires local governments to adopt programs that will protect such resources. The following Goal 5 resources are not documented or designated within the Project Area or Study Area: Riparian Corridors, Federal Wild and Scenic Rivers, State Scenic Waterways, Approved Oregon Recreation Trails, Natural Areas, Wilderness Areas, Mineral and Aggregate Resources, or Energy Sources.

The Oregon Water Resources Department (OWRD) does document the Project Area as a groundwater "place of use" indicating that at some point groundwater sourced elsewhere was used on the site. There are no State-permitted Project Area or Study Area ground water wells documented in OWRD records.

Wetlands and Wildlife Habitat are present in the Study Area, as is one designated Open Space - Bastendorff State Beach. Historic and Cultural Areas and Resources may also be present (see below).

The current County Comprehensive Plan includes policies for Mineral and Aggregate Resources, Fish and Wildlife Habitats (six specific bird species are identified, see "Endangered Species" below), Historic, Cultural and Archeological Resources, Natural Areas and Wilderness, Water Resources, Unique Scenic Resources, Natural Hazards, Dunes, and Ocean and Coastal Lake Shorelines.

Wetlands and Non-wetland Waters

Wetlands are illustrated on Map D. There are no documented wetlands within the Project Area. Marine wetlands are present below the Coos Head bluff at the entrance to Coos Bay, and there are some wetlands behind Bastendorff Beach dunes, particularly at the west end of the Study Area.

Endangered Species Act and Oregon-listed Species

According to a US Fish and Wildlife Service database, there are potentially five non-marine federally listed or proposed endangered or threatened species that may occur in the CHA. Bird species include Marbled Murrelet, Western Snowy Plover, and Northern Spotted Owl, plus one plant species - Western Lily - and one mammal - Fisher. This is based on general criteria and historic habitat, not actual documentation. For instance, Bastendorff Beach currently has no

Western Snowy Plover populations due to heavy recreational use and dune habitat alterations. Another six endangered or threatened marine bird or turtle species could also be present along the ocean shore.

State of Oregon listed species are not documented in a form that can be tied specifically to the CHA. The Coos County Comprehensive Plan identifies six bird species of concern, and specifically lists probable habitat areas by tax lot information for Bald Eagle, Great Blue Heron, and Band-tailed Pigeon. None of the identified areas are on Coos Head.

Known Historic, Cultural and Archeological Resources and Sites

Coos Head is the traditional homeland of the Miluk Coos Indians. However between 1875 and 2005, the Project Area was owned by the US Government and occupied at various times by the US Army, US Navy, and the Oregon Air National Guard. The area was returned to the Tribe in 2005, and for the last 10 years a program of building demolition and removal, and environmental cleanup, has been underway. As of 2016, the cleanup is completed and monitoring systems are being shut down.

As an outcome of this cleanup, and 130 years of occupation by the US Military, all known historic, cultural and archeological resources and site have been removed or destroyed. This current site condition was confirmed by Tribal leadership in March 2016.

Known Hazardous Material Sites

As noted in the preceding section, the Project Area has undergone a 10 year process of environment cleanup. All know hazardous materials have been removed or mitigated.

Floodplain

There are no flood areas within the Project Area, although much of the Bastendorff Beach dune areas are subject to flooding (see Map D).

Tsunami Inundation Zones

Tribal staff and leaders indicate that Coos Head and the Project Area was where Tribal members historically sought refuge from flood and tsunami events. Based on a review of Oregon Department of Geology and Mineral Resources (DOGAMI) mapping, the entire Project Area, except for a small beach-elevation subarea at the base of the bluff along Bastendorff Beach, is outside of all tsunami inundation zones. Within the Study Area, only Bastendorff Beach and

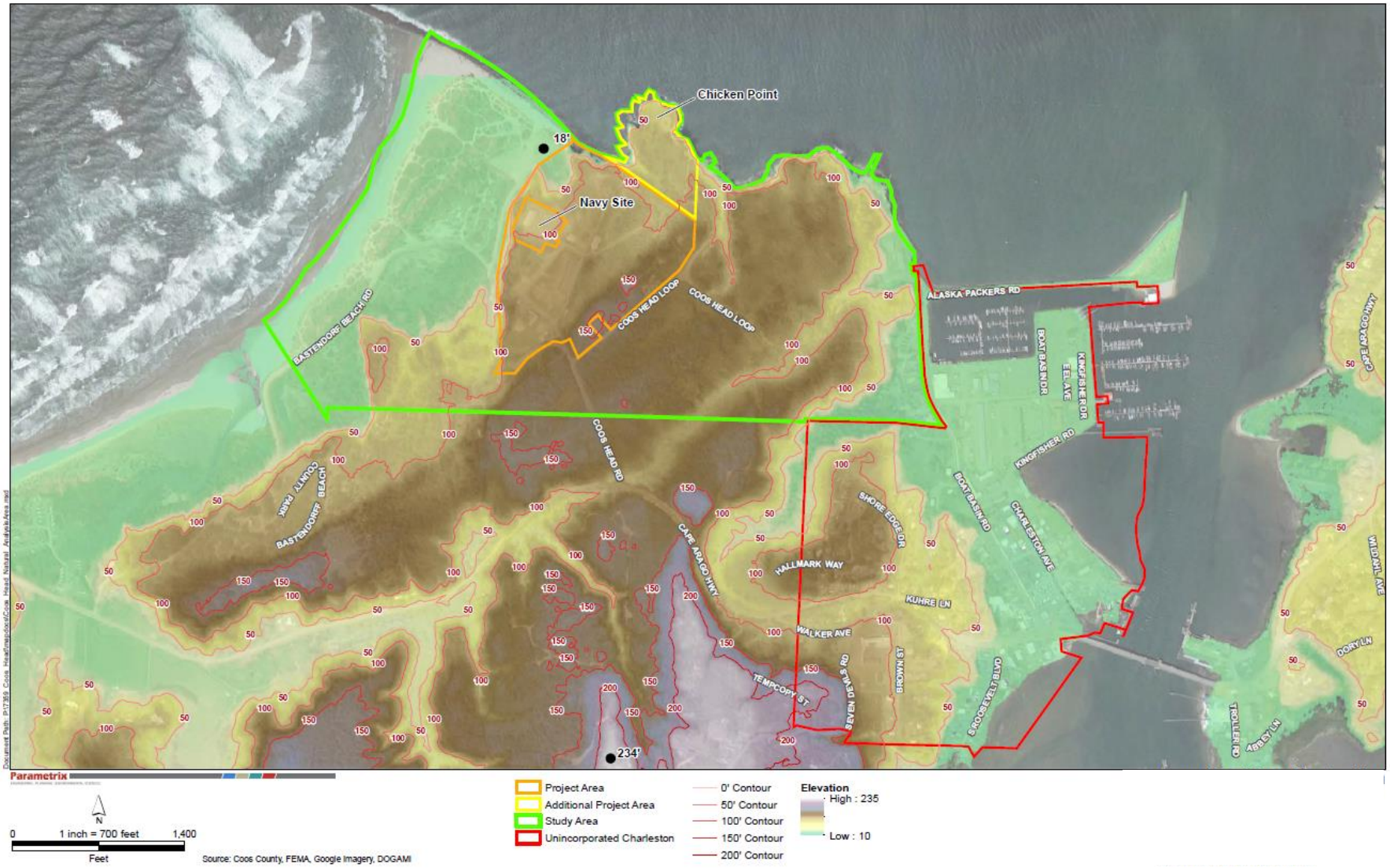
the area at the base of the Coos Head bluff overlooking the entry to Coos Bay are within inundation zones.

Steep and Unstable Slopes

DOGAMI landslide inventory mapping shows no historic or recent landslides within the Study Area. The steep bluffs along Bastendorff Beach are however mapped as having moderate landslide potential, as are the highpoints of the ridge along the south east side of the Project Area.

Topographic Information

Topographic Information for the entire Study Area is shown on Map E. Maximum elevation across the entire Study Area is approximately 150 feet, consisting of four small points of land atop the ridge along the southwest edge of the Project Area. The lowest elevation, excepting beach and shoreline areas, is along the bluff that looks out over the ocean and estuary. This elevation is approximately 50 feet. The small "cove" on the northwest side of the Project Area near to the south jetty is approximately 20 feet in elevation.



Map E. CHAMP: Topography and Slopes

3.3 Demographics

To understand current demographic trends in and around the CHA, data from the US Census is gleaned from the City of Coos Bay and Coos County to provide a snapshot of the area.

In general, the median household income in the City of Coos Bay is slightly less than that of Coos County and significantly less than the state median household income. The median household income decreased at a greater rate than experienced by the County and State between 2010 and 2014. More people in Coos County are living below the poverty line compared with the population of the State. Furthermore, the population of the City and County are generally older than that of Oregon, with one in five people over the age of 65 years of age. In addition, the City and County both have populations with nearly twice as many people living with a disability under the age of 65 as compared with the State population (Table 4).

Table 4. Median Household Income, 2014

	City of Coos Bay	Coos County	State of Oregon
Median Household Income			
1990	$21,334	$22,146	$27,250
2000	$31,240	$31,629	$40,947
2010	$39,637	$40,692	$52,474
2014	$36,360	$39,193	$50,521
% change (90'-00')	46.40%	42.80%	50.30%
% change (00'-10')	26.90%	28.70%	28.20%
% change (10'-14')	-8.27%	-3.68%	-3.72%
Below Poverty Line	21.6%	19.2%	16.6%
With a disability under age 65	15.8%	17.1%	8.5%

Source: US Census 2014 Estimates

Approximately one in six people living in the City of Coos Bay is a race other than White. The largest minority population in the City is Hispanic people. American Indian and Alaska Native populations within the County and the City of Coos Bay are significantly greater when compared with the State of Oregon. The City also has Black or African American, Asian and Native Hawaiian or Pacific Islander populations that are slightly larger than the surrounding County, though significantly fewer than the state (Table 5). Almost 50% of the residents in the City and County are married, though the City of Coos Bay has a larger portion of the population that is unmarried (Table 5). Finally, approximately 20% of the residents of the City of Coos Bay and the surrounding County have a four-year degree, 10% fewer than the State population.

Table 5. Demographic Summary, City of Coos Bay, Coos County and State of Oregon, 2014.

	City of Coos Bay	Coos County	State of Oregon
Population			
1990	15,312	60,441	2,842,621
2000	15,336	62,668	3,421,399
2010	15,973	63,043	3,831,073
2014	16,039	62,475	3,970,239
% change (90'-00')	**0.2%**	**3.7%**	**20.4%**
% change (00'-10')	**4.2%**	**0.6%**	**12.0%**
% change (10'-14')	**4.1%**	**-0.9%**	**3.6%**
Education			
Four Year Degree +	20.8%	18.8%	30.1%
Associate Degree	8.2%	8.1%	8.2%
Race			
White	83.4%	87.0%	63.7%
Black or African American	0.6%	0.4%	12.6%
American Indian and Alaska Native	3.9%	3.1%	1.2%
Hispanic	7.6%	5.4%	16.3%
Asian	1.4%	1.0%	4.8%
Two or More Races	5.2%	4.3%	2.9%
Native Hawaiian or Pacific Islander	0.3%	0.2%	0.2%
Median Age (2010)			
Persons under 18 years	20.3%	18.9%	24.0%
Between 18-65 years	60.6%	59.7%	63.0%
Persons 65 years and over	19.1%	21.4%	13.0%
Marital Status			
Married	49.6%	49.4%	43.8%
Widow	5.5%	9.2%	10.0%
Divorced	13.2%	16.4%	18.1%
Separated	1.8%	2.2%	2.3%
Never Married	29.8%	22.8%	25.8%

Source: US Census 2010 and 2014 Estimates

These demographic trends in the area indicate that there is a significant presence of protected classes under the Civil Rights Act, including Title VI and Environmental Justice populations. The CHAMP evaluation criteria outlined in Chapter 1 provide particular attention to the classes of race, color, national origin, sex, disability, age and income, which cover tribal members, elders and veterans. Project Management Team members agree the primary community of concern and benefit are the Native American members of the CTCLUSI.

Market Feasibility

This chapter provides a market overview and insight into existing supply and potential demand for likely programmed land uses. These findings reflect current development conditions; as planning efforts progress, further review of economic and demographic conditions for the region and surrounding areas as well as comparables will provide a better understanding of emerging trends.

3.4 Sources and Other Documents

This overview builds off of a review of the City's Economic Opportunities Analysis (EOA), Housing Needs Analysis (HNA) and local population projections to understand the implications for commercial and residential development in the Coos Bay Area. Though the EOA and HNA were conducted in 2009, population and employment growth will continue to drive development opportunities in the medium to long-term, so the themes and findings of the EOA and HNA are still relevant today. In addition, relevant background information and other comparable analyses were gleaned from the inventory of plans and policies presented in Chapter 2, including the Bal'diyaka Master Plan, the Feasibility Study for Eco-tourism Facilities, and the Coos Head Land Use concept Plan: *A Vision for Seven Generations*.

Other sources of information include the US Census Bureau for data from the 2000 and 2010 Censuses, the American Community Survey, Economic Census, and other Census surveys and programs, the Portland State University Center for Population Research and Census for annual population estimates, the State of Oregon Office of Economic Analysis for long-range population forecasts and the tribes' own data on tribal housing and other information.

3.5 Population Trends

From 1990, the Coos Bay Area has experienced slower growth than the State of Oregon average. Combined with the recent recession, the City of Coos Bay's population growth averaged just 0.3 percent growth from 2000 to 2014, though Coos County's annual average growth actually declined slightly for the same period. Coming out of the recession, the State of Oregon Office of Economic Analysis expects statewide annual growth of 1.11 percent.

As noted in the analysis of demographics in the previous chapter, the Coos Bay Area also has a lower percentage of residents with a bachelor's degree or higher and a lower median household income (estimated at $36,300 in 2014 for the City of Coos Bay and $39,193 for Coos County) than the State (estimated at $50,521).

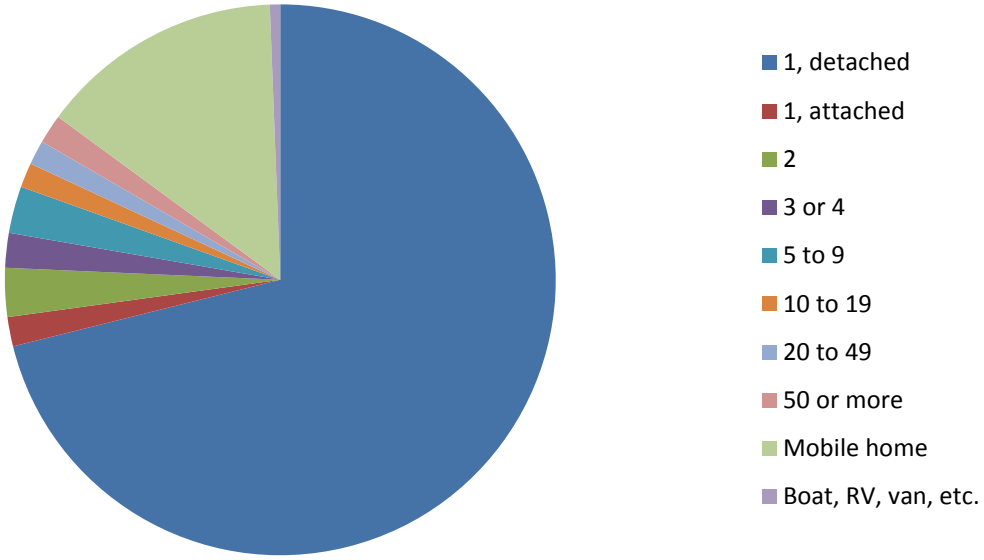
One reason for the lower household income is the industry distribution of employment in the Coos Bay Area. A higher proportion of Coos Bay Area employees work in the relatively lower-paying industries of retail trade and agriculture, forestry, fishing, and hunting, whereas a smaller proportion work in the relatively higher-paying industries of finance and insurance, and real estate and rental and leasing, professional/technical services, educational services, and health care and social assistance.[3]

3.6 Market Conditions

Housing

In Coos County and the rest of the State, most of the housing stock is single-family housing, though there is a range of attached and multi-family housing and mobile homes as well, as shown in Figure 1 on the next page.

Figure 1. Housing Units in Structure Coos Bay Area



Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

In most regions, population and employment growth drive development opportunities in the medium to long-term. As noted in the Housing Needs Analysis, there is a need for housing affordable to households with lower income levels. Based on income levels and housing price points, it is likely that a large proportion of total households and particularly renter households are cost burdened at the prevailing prices. With modest population and income growth

[3] State of Oregon Employment Department.

expected, a balanced mix of housing will help ensure a range of housing choices available across the income spectrum.

For internal tribal needs, the tribe maintains a waiting list for housing, which currently includes unmet demand for 4 or more units of senior housing and perhaps 8 units of multi-family housing, perhaps in the one- and two-bedroom configurations. Though much of the housing stock in the Coos Bay Area is single-family housing, these tribal data support general population and demographic analysis that a mix of housing types will be most welcome in the Coos Bay Area.

Several strategies may help to provide adequate housing for Coos Bay Area and tribal members. Some of those recommendations include:

- Increasing allowing housing density through a range of strategies, including:
    - Reducing minimum lot sizes;
    - Allowing accessory dwelling units in single-family zones; and
    - Increasing land zoned for multifamily residential development.
- Reducing SDCs for multifamily residential units.
- Fast-track permitting for affordable units.

Commercial/Industrial

A Buildable Land Inventory was conducted in 2009 as part of the EOA and HNA. The result of the analysis suggested a shortage of land zoned commercial and industrial to satisfy the region's development needs. For industrial uses, it was estimated that the region would need at least one large, two standard-sized, and up to 12 small industrial parcels within five years to accommodate market demand; while for commercial land, it was estimated a near-term need for one large, 8 standard-sized, and up to 22 small parcels of commercial land. Accommodating near-term demand for large parcels is particularly significant as Coos Bay seeks to attract larger-sized commercial retailers to satisfy and better localize demand for goods. Without access to such available buildable lands, it is likely that the region would lose out on potential industrial development and associated jobs.

Conference Center/Cultural Center

Numerous planning efforts have expressed a persistent interest to explore developing a plan to utilize this site with a conference/cultural center. As noted in the review of the 1992 Bal'diyaka Master Plan in Chapter 2, the following comparable interpretive facilities were identified for its market analysis and projections:

- Hatfield Marine Science Center, Newport, OR
- Yaquina Head Natural Area, Newport, OR
- Cape Perpetua Visitors Center, Yachats, OR
- Fort Clatsop National Recreation Area Visitor Center, Reedsport, OR
- Oregon High Desert Museum, Bend, OR
- Coos County Historical Museum, North Bend, OR
- Lava Beds National Monument, Tutelake, CA

Based on visitor data from these comparable facilities, that plan includes a comprehensive market analysis and economic impact analysis. These market analyses include estimated annual visitor volume and analysis of visitor segments, such as school groups, the local market, and a more regional market.

The 1998 *Feasibility Study for Coos Head Eco-tourism Facilities* included an appendix focusing on market analysis and market segmentation for the proposed facility, noting demographic trends and trends in travel, trends in state park attendance, and traffic counts along the Coast Highway, all factors that will be relevant for potential Eco-Tourism at the Coos Head site.

Additional Education and Conference Centers reviews by this study include:

- Asilomar National Historic Landmark, Pacific Grove, CA
- Fort Worden Washington State Park, Port Townsend, WA
- Hatfield Marine Science Center, Newport, OR
- Marin Headlands, Marin County Peninsula, CA
- Malheur Field Station, Malheur Field Station, Malheur County, OR
- Olympic Park Institute, Olympic National Park, WA
- Salish Lodge, Snoqualmie, WA
- Sitka Center for Art and Ecology, Otis, OR
- Skamania Lodge, Stevenson, WA
- Cascade Mountain Range, Leavenworth, WA
- Teton Science School, Jackson Hole, WY

These Education and Conference Centers were compared to a proposed facility at the Coos Head site in terms of site size in acres, scale of accommodations (number of guest rooms), scope of meeting space, ownership/operational structure, and distance from major metropolitan areas. In addition, additional research and narrative was provided on the examples thought to be most useful for development of the Coos Head site, with overviews of the facilities, an exploration of the characteristics of each that pertain to development opportunities at Coos Head. Those examples include:

- Asilomar Conference Center, Pacific Grove, CA
- Fort Baker, Golden Gate National Recreation Area, CA

- Fort Ord, Marina, CA
- Fort Worden State Park Conference Center, Port Townsend, WA
- Sand Point Operations, Seattle, WA
- Tamastslikt Cultural Institute, Umatilla Indian Reservation, Pendleton, OR

In addition to the comparables identified in these previous studies, other developments which incorporate the Tribal development experiences are reviewed briefly below:

Asilomar, Pacific Grove, CA

Asilomar State Beach and Conference Grounds is owned by California State Parks. Originally designed by Julia Morgan for the YWCA beginning in 1913, Asilomar was declared a National Historic Landmark in 1987. It encompasses 107 acres of protected coastal State Park land with 30 separate buildings containing a total of 313 guestrooms and 65,000 square feet of meeting, event, and banquet space.

Squaxin Island Tribe, Shelton, WA

The Squaxin Island Tribe is a Native American tribal government in western Washington made up of several Lushootseed clans. They own and operate the Little Creek Casino Resort in Kamilche and a 13,000-square-foot Museum Library and Research Center built in 2002. The Museum Library and Research Center is set up as a separate 501(c)(3) and is open Wednesdays through Sundays, plus Tuesdays by appointment.

Confederated Tribes of Warm Springs, OR

The 26,000-square-foot Museum at Warm Springs opened in 1993 as the first tribal museum in the state of Oregon. Its mission is to preserve the culture, history, and traditions of the three tribes which comprise The Confederated Tribes of Warm Springs. Its purpose is to educate the public as well as provide a safe conservatory for the traditional treasures of the Tribes. It is open Tuesday through Saturday. The Indian Head Casino is located directly across Highway 26 from the Museum, offering 500 slot machines and 8 blackjack tables. Kah-Nee-Ta Resort & Spa is approximately 12 miles away on the Warm Springs River, offering 15,000 square feet of events space, and 139 guest rooms.

Quil Ceda Village, WA

Quil Ceda Village is a municipality within the Tulalip Indian Reservation. The Quil Ceda Village Business Park, developed and operated by the Tulalip Tribes, includes the 370-room Tulalip Resort Casino, the 125-store open-air Seattle Premium Outlets, and destination retailers Cabela's, Walmart, and Home Depot.

In addition to the 370 guest rooms and suites, the resort includes 192,000 square feet of gaming space, seven restaurants, and 30,000 square feet of flexible meeting space.

Although Quil Ceda is an interesting example of tribal economic development, the urban nature of Quil Ceda makes it inherently different from something that might be proposed for the CHA.

Tamastslikt Cultural Institute, Umatilla Indian Reservation, Pendleton, OR

Built in 1998, the Tamastslikt Cultural Institute is a 45,000-square-foot building with 15,000 square feet of exhibit space and five meeting areas. It is dedicated to the culture of the Cayuse, Umatilla, and Walla Walla Native American tribes with exhibits and research center open Monday through Saturday. It is located on the campus of the Wildhorse Resort & Spa and Wildhorse Casino, which has been open since 1994 and expanded significantly several times since then, with the latest expansion in 2010. The Wildhorse Resort now offers over 14,000 square feet of flexible meeting space, an 18-hole golf course, and a 202-room 10-story tower hotel.

Olympic National Park, Quinault, WA

Olympic National Park offers visitors four lodging options within the Olympic National Park and Forest. Built in 1926, Lake Quinault Lodge in the Olympic National Park has 91 rooms and was featured in the "Great Lodges of the National Parks" on PBS in 2008. Sol Duc Hot Springs Resort offers cabins surrounded by evergreens and convenient access to hot spring pools. Lake Crescent Lodge and Log Cabin Resort was built in 1915 and offers 55 rooms along the shores of Lake Crescent, including historic lakeside Roosevelt Cabins.

3.7 Development Opportunities

Keeping consistent with the goals outlined in the Coos Head Land Use Concept Plan: *A Vision for Seven Generations* (2008), and based on its current situation, the CHA enjoys many strengths, including:

- Abundant natural features and adjacency to the ocean, affording views which future development could utilize.
- Location adjacent to existing development supportive of destination conference center use (such as the OIMB Marine Science Center)
- Location adjacent to existing recreation (including Bastendorff Beach)

However, the area also faces some unique challenges:

- Housing affordability (for tribal members and nontribal members).

- Economic reliance on resource extraction.
- Transportation network is constrained, with site access via Coos Head Loop to the Cape Arago Highway, then connecting to Highway 101.

Recent developments pose some unique opportunities for the CHA at this time:

- New development offers opportunities for local-serving retail and personal services.
- Aging population (tribal and non-tribal) requires increased services for seniors (medical, assisted living, AOA, continuum of care)

Past planning work suggests that a conference/cultural center could work with other tourism opportunities to carve out a significant role in the next phase of opportunities for the Coos Bay Area. But the area faces competition from the rest of the Oregon coast for tourism opportunities, especially given the area's uncertainty regarding air service, perceived limited range of accommodations, and depth of entertainment opportunities.

3.8 Potential Development

The background planning efforts and general market for development in the Coos Bay Area suggest that a mix of residential types plus local-serving commercial, along with an accompanying conference/cultural space with areas for tribal and nontribal members would best serve the area.

Residential development suitable for a range of incomes requires housing opportunities across a range of types and densities. With a relatively tight rental market, the market for workforce rental housing is particularly strong. A combination of duplex, townhouse, and other attached housing could be combined with more standard multi-family units along with senior housing to create a mix of housing types with a variety of price points.

Similarly, with little commercial and industrial property available, potential development is limited. In addition to commercial development to serve residents and visitors to the area, there is the opportunity to leverage off regional uses (OIMB) to create destination conference space in the area. And the tribe has the opportunity to leverage that development to include tribal-serving cultural space.

For the private sector, developers commit capital into real estate development for financial gain from rents paid by tenants. Several factors that the surrounding municipality (Coos Bay/Charleston) and tribal leadership can influence can affect those private real estate development decisions:

- **Market conditions:** While the public sector has little influence over factors such as rent levels, land values, or vacancy rates, nearby communities can assist with the availability of financing, public investment in infrastructure, and other public investments;

- **Regulatory framework:** By creating and adopting this Plan, Coos County is taking a critical step toward the implementing the type of development desired for the area. Next steps include designating land for its appropriate uses, planning the public infrastructure to shape development plans for the area, and marketing those plans and resulting development opportunities as the market continues to gain strength.

- **The availability/suitability of land**: While Coos County is not able to influence the availability of private landowners' parcels, the County is able to assist where appropriate with baseline analysis of soil conditions, coordination among property owners, and other preliminary planning work, as is the case with this planning effort.

Actions area municipalities might take to encourage redevelopment differ according to various properties and projects and their relative feasibilities. As such, these partners will need to work with the with the Tribe, along with the real estate investment and development community, using its range of regulatory tools and incentives to improve development feasibility for the types of development desired for the CHA.

4 Traffic Conditions and Impacts

In relation to the development opportunities and constraints for the CHA, the following chapter presents an overview of the multimodal transportation system and an analysis of traffic conditions and impacts. Included is an inventory of the existing transportation facilities, a safety evaluation of the roadways and intersections, a qualitative review of the pedestrian and bicycle networks, and a motor vehicle operational analysis of study intersections

4.1 Study Area

Seven intersections have been identified for study and analysis within the CHA:

1. Cape Arago Highway/ Boat Basin Road
2. Cape Arago Highway/ Coos Head Road
3. Cape Arago Highway/ Bastendorff Beach Road
4. Bastendorff Beach Road/ County Park entrance
5. Coos Head Loop/ Coos Head Road

6. Coos Head Loop/ Chicken Loop Road
7. Boat Basin Road/ Chicken Loop Road

All study intersections are currently un-signalized, with stop sign control on the side street approaches.

4.2 Existing Transportation Infrastructure

Much of the land within the CHA is rural, with the exception of land surrounding Boat Basin Road through the community of Charleston. As a result, many roadways are not constructed to urban standards. Evaluating the transportation impacts of rezoning the land requires an understanding of the current transportation facilities in this area. The following provides a description of existing infrastructure to serve pedestrian, bicycle, transit and motor vehicle modes of travel in the immediate Study Area.

Roadway System

Located between the Pacific Ocean and the mouth of Coos Bay, the Study Area is characterized by rural streets that wind down from the top of the bluff. The streets approach sea level near Bastendorff Beach at the west end of the Study Area, and near the Charleston community at the east end of the Study Area.

The only street providing for higher capacity motor vehicle movement through the Study Area is Cape Arago Highway, which is classified by the state as a District Highway. The highway runs east-to-west, and maintains a two-lane cross-section (i.e., one through lane in each direction) through the Study Area. Posted speeds along the highway in the Study Area range between 35 miles per hour (east of Shore Edge Drive) and 45 miles per hour (west of Shore Edge Drive).

Boat Basin Road runs north-to-south through the Charleston community, connecting Cape Arago Highway with the Charleston Marina. It serves the highest volume of traffic off Cape Arago highway in the Study Area, and is abutted primarily by commercial land uses.

All other roadways in the Study Area are rural local streets, and primarily serve as recreational routes connecting Cape Arago Highway and Boat Basin Road to the area parks and beaches. These streets, including Bastendorff Beach Road, Coos Head Road, Coos Head Loop, and Chicken Loop Road, generally have lower vehicle-carrying capacity than Cape Arago Highway.

The major characteristics of the roadways in the Study Area are summarized in Table 6, with lane configurations and traffic controls for study intersections illustrated in Map F: *Existing 2016 and Forecasted Baseline 2036 Traffic Volumes (Saturday Afternoon Peak Hour)*.

Table 6. Roadway Width and Estimated Right-of-way

Roadway (limits)	Functional Classification	Estimated Roadway Width	Estimated Right-of-Way	Cross section	Roadway Surface
Cape Arago Highway (Boat Basin Road to Seven Devils Road)	District Highway	30-38 feet	50-100 feet	2 lanes	Paved
Cape Arago Highway (Seven Devils Road to Bastendorff Beach Road)	District Highway	28-32 feet	80-100 feet	2 lanes	Paved
Boat Basin Road (Cape Arago Highway to Chicken Loop Road)	Local Street	22 feet	60 feet	2 lanes	Paved
Coos Head Road (Cape Arago Highway to Bastendorff Beach Road)	Local Street	20 feet	60+ feet	2 lanes	Paved
Bastendorff Beach Road (Cape Arago Highway to Coos Head Road)	Local Street	22 feet	60+ feet	2 lanes	Paved
Coos Head Loop (Coos Head Road to Chicken Loop Road)	Local Street	20 feet	60+ feet	2 lanes	Gravel
Chicken Loop Road (Coos Head Loop to Boat Basin Road)	Local Street	20 feet	60+ feet	2 lanes	Gravel

Source: Oregon Highway Plan; Coos County Transportation System Plan, March 2011.

Access Management

ODOT provides guidelines for managing access to the state's highway facilities in order to maintain highway function, operations, safety, and the preservation of public investment. Access spacing standards are set for driveways and approaches to state highways.[4] The standards are based on roadway classification and differ based on posted speed. Classified as a District Highway by ODOT, Cape Arago Highway (OR 540) requires 360-foot spacing within a 45 mile per hour speed zone and 250-foot spacing within a 35 mile per hour speed zone. The spacing of public roadway intersections along Cape Arago Highway meets ODOT spacing standards within the Study Area. The closest intersections are Kuper Street and Roosevelt Road, approximately 390-feet apart.

[4] ODOT Access Management Standards (Appendix C): http://www.oregon.gov/ODOT/TD/TP/orhwyplan.shtml

Pedestrian and Bicycle System

Table 7 shows the roadways with pedestrian and bicycle facilities. Many of the Study Area roadways connect to popular park, recreational and waterfront destinations, including Bastendorff Beach, Bastendorff Beach County Park, the Charleston community, and the nearby Cape Arago, Shore Acres, and Sunset Bay State Parks. Due to the rural nature of the abutting land uses, most streets have not been improved to urban standards and generally lack accommodation for pedestrian and bicycle users. The exception being a segment of Boat Basin Road, which provides a sidewalk on one side of the street for pedestrians and shared lane markings for bicycle travel between Cape Arago Highway and Chicken Loop Road, through the Charleston community.

Those walking or biking in the Study Area typically have to walk or bike along the edge of a street. While motor vehicle traffic volumes along these local streets, like Bastendorff Beach Road, Coos Head Road, Coos Head Loop and Chicken Loop Road, are not very high (up to 2,700 vehicles per day during the summer), the posted speeds range up to 45 miles per hour and the roadways at times have steep grades and sharp curves. These conditions are generally not conducive to comfortable shared walking and biking travel conditions.

Cape Arago Highway east of Seven Devils Road, and portions of Boat Basin Road, Chicken Loop Road, Coos Head Loop, Coos Head Road and Bastendorff Beach Road between the Charleston community and Bastendorff Beach are designated as part of the Oregon Coast Trail. Much of this route lacks accommodations for pedestrians.

Cape Arago Highway, as an east-to-west through street traversing reasonably flat terrain, is an important connection for bicycle travel in the Study Area. It provides a link for bicyclists to Cape Arago, Shore Acres, and Sunset Bay State Parks, and other key routes in the region, including Seven Devils Road. It lacks

bike lanes, although a shoulder of varying width (four to seven feet) is provided. Seven Devils Road and the segment of Cape Arago Highway, east of Seven Devils Road, are designated as part of the Oregon Coast Bike Route.

Table 7: Existing Pedestrian and Bicycle Characteristics

Roadway (limits)	Pedestrian Facilities	Bike Facilities
Cape Arago Highway (Boat Basin Road to Seven Devils Road)	Shoulder	Shoulder
Cape Arago Highway (Seven Devils Road to Coos Head Road)	Shoulder	Shoulder
Cape Arago Highway (Coos Head Road to Bastendorff Beach Road)	Shoulder	Shoulder
Boat Basin Road (Cape Arago Highway to Guano Rock Lane)	Sidewalk on east side	Shared Lane Markings
Boat Basin Road (Guano Rock Lane to Chicken Loop Road)	Sidewalk on west side	Shared Lane Markings
Coos Head Road (Cape Arago Highway to Coos Head Loop)	None	None
Coos Head Road (Coos Head Loop to Bastendorff Beach Road)	None	None
Bastendorff Beach Road (Cape Arago Highway to County Park entrance)	None	None
Bastendorff Beach Road (County Park entrance to Coos Head Road)	None	None
Coos Head Loop (Coos Head Road to Chicken Loop Road)	None	None
Chicken Loop Road (Coos Head Loop to Boat Basin Road)	None	None

TAC members report that the built condition of Seven Devils Road and Cape Arago Highway are below standard. That is, the pedestrian and bike facility "shoulder" is not present for much of the stretch of these facilities in the study area, creating a highly unsafe condition for bicyclists and pedestrians.

Transit

While transit service is not provided in much of the Study Area, it is provided in the Charleston community and other nearby cities by Coos County Area Transit via several fixed bus routes, and an Americans with Disabilities Act (ADA) paratransit service.

Bus stops in the area are located off Boat Basin Road, at the Charleston Marina RV Park and at Davey Jones Locker Grocery. Transit users in the CHAMP Study Area are generally more than one mile from the closest bus stop in the

Charleston community (greater than the typical trip length for the average walking or biking trip).

4.3 Existing Transportation System Performance

The transportation infrastructure in the Study Area was evaluated with a variety of measures in order to document the existing deficiencies of the transportation system. Information reviewed included safety of the roadways and intersections, a qualitative review of the pedestrian and bicycle networks, and motor vehicle operations.

Safety Evaluation

Safety of the roadways and intersections in the Study Area was assessed through historic collision data to identify deficiencies. The data along the roadways and intersections was reviewed to identify potential patterns for motor vehicle, pedestrian, and bicyclist collisions.

Collision data from the past five years (January 2011 through December 2015) was obtained from ODOT for all roadways within the CHAMP Study Area. Over the past five years, 18 collisions, or an average of about four per year, were identified along Study Area roadways. A majority of these collisions (13 of the 18) involved drivers running into fixed objects or rear-ending another vehicle.

The severity of the collisions was generally low, with most (12 of the 18 collisions) involving either property damage only (no injuries) or minor injuries. There was one collision involving major injuries, four involving moderate injuries, and one fatality over the past five years. The fatality occurred along Boat Basin Road, just north of Cape Arago Highway, when a driver backed over a pedestrian when exiting a driveway. The collision involving a serious injury occurred along Cape Arago Highway, east of Oceanview Road, when a driver left the roadway and collided with a fixed object.

<u>Intersection Collisions</u>

The total number of collisions experienced at an intersection is typically proportional to the number of vehicles entering it. Therefore, a collision rate describing the frequency of collisions per million entering vehicles (MEV) is used to evaluate the intersection. This collision rate (referred to as the observed crash rate) is compared to the critical crash rate, which is unique to each intersection and is a factor of collision rates at similar study intersections, and traffic volumes. The observed crash rates at study intersection were also compared to the 90th percentile collision rates published by ODOT. The 90th percentile collision rate compares an intersection's collision history to that of other similar intersections

across Oregon. Intersections with an observed crash rate greater than either of these thresholds warrant further review.

The collision rates calculated (based on the past five years of collision data) for the study intersections can be seen in Table 8. None of the study intersection collision rates were high when compared to other similar intersections in the Study Area or across Oregon.

Table 8: Study Intersection Collision Analysis

Intersection		Total Collisions (2011 to 2015)	Collision Severity		Observed Crash Rate (per MEV)	Critical Crash Rate (per MEV)	Over Critical Crash Rate	90th Percentile Rate (per MEV)	Over 90th Percentile Rate
			Property Damage Only	*Injury*					
1	Cape Arago Highway/ Boat Basin Road	2	1	1	0.16	0.31	No	0.48	No
2	Cape Arago Highway/ Coos Head Road	0	0	0	0.00	0.46	No	0.48	No
3	Cape Arago Highway/ Bastendorff Beach Road	1	0	1	0.20	0.46	No	0.48	No
4	Bastendorff Beach Road/ County Park entrance	0	0	0	0.00	0.80	No	0.48	No
5	Coos Head Loop/ Coos Head Road	0	0	0	0.00	1.16	No	0.48	No
6	Coos Head Loop/ Chicken Loop Road	0	0	0	0.00	3.00	No	0.48	No
7	Boat Basin Road/ Chicken Loop Road	0	0	0	0.00	1.59	No	0.48	No

Roadway Segment Safety

Segment collision rates along Cape Arago Highway were calculated to complement the intersection-based analysis and provide a more complete picture of roadway safety. Segment collision rates are determined by dividing the number of collisions along the segment by the total vehicle traffic along the segment, and are reported in crashes per million vehicle miles traveled (MVMT). Cape Arago Highway was split into two segments through the Study Area and crash rates were compared to the five-year average of state highway crash rates published in Table II of the 2014 ODOT Crash Rate Book.

The collision rates calculated (based on the past five years of collision data) for the highway segments can be seen in Table 9. None of the segment collision

rates were identified as high when compared to other similar highway segments across Oregon.

Table 9 Highway Segment Collision Analysis

Roadway (limits)	Distance (miles)	Total Collisions (2011 to 2015)	Observed Crash Rate (per MVMT)	Statewide Collison Rate (per MVMT)	Over Statewide Collison Rate
Cape Arago Highway (Boat Basin Road to Walker Lane)	0.65	10	1.40	1.60	No
Cape Arago Highway (Walker Lane to Bastendorff Beach Road)	1.24	3	0.60	1.35	No

Safety Priority Index System (SPIS) Assessment

The Safety Priority Index System (SPIS) is a method developed by ODOT for identifying hazardous locations. The score for each 0.10-mile segment of highway is based on three years of crash data, considering collision frequency, rate, and severity. SPIS then ranks all segments throughout the state by score, and identifies segments ranking in the top ten percent.

According to the ODOT 2014 SPIS ratings (data reported between 2011 and 2013), 2013 SPIS ratings (data reported between 2010 and 2012), and 2012 SPIS ratings (data reported between 2009 and 2011), no locations in the Study Area rank among the most hazardous sections of highways in Oregon.

Pedestrian and Bicycle Network Conditions

To assess the pedestrian and bicycle network conditions within the Study Area, a high-level qualitative evaluation was conducted based on the ODOT Multimodal Analysis Methodology.[5] The quality and availability of various characteristics are rated system-wide as "Excellent", "Good", "Fair", or "Poor". The intent of the analysis is to show the extent to which the pedestrian and bicycle network provides a level of comfort and safety for users. The analysis will be used to inform, create, and confirm recommendations for pedestrian and bicycle projects.

Pedestrian Network Conditions

For the pedestrian network evaluation, consideration is given to the presence of a sidewalk or path, a buffer zone (i.e., bike lane, shoulder, landscape strip or on-

[5] Analysis Procedures Manual Version 2, Oregon Department of Transportation, March 2016.

street parking) and street lighting, and the number of travel lanes and travel speeds along the adjacent roadway. In the Study Area, an "Excellent" rating requires sidewalks on both sides of the roadway, along with a landscape buffer. A "Good" rating requires a sidewalk on at least one side of the roadway, along with a landscape buffer. A "Fair" rating is given to a roadway with a sidewalk on at least one side, but without a landscape buffer. A "Poor" rating denotes gaps within the sidewalks along that corridor.

Table 10 summarizes the pedestrian network conditions in the Study Area. Overall, the network rates poorly in the Study Area. This result is not surprising given the rural nature of much of the area. The segment of Boat Basin Road between Cape Arago Highway and Guano Rock Lane rated as "Good" since it has a sidewalk on one side of the roadway, along with a landscape buffer, while the segment between Guano Rock Lane and Chicken Loop Road rated as "Fair" since it has a curb-tight sidewalk

Bicycle Network Conditions

For the bicycle network evaluation, consideration is given to the presence and width of bike facilities (i.e., bike lane, shoulder, path, shared lane markings), grade and pavement conditions of the roadway, and the number of travel lanes, motor vehicle volumes, and travel speeds along the adjacent roadway. For the bicycle network evaluation of the Study Area, an "Excellent" rating requires separated bicycle facilities. A "Good" rating requires adequate bicycle facilities and width given the segment characteristics. A "Fair" rating is given to a roadway with bicycle facilities, but without the preferred facility type or width. A "Poor" rating denotes gaps within the bike network along that corridor.

Table 10 also summarizes the bicycle network conditions in the Study Area. Boat Basin Road rated as "Good" since it has shared lane markings, coupled with a level roadway, low traffic volumes, and slow motor vehicle travel speeds. Cape Arago Highway rated as "Fair" since it has a shoulder for bike travel, but it narrows at times to as little as four feet. All other roadway segments rated as "Poor".

Table 10: Pedestrian and Bicycle Network Evaluation

Roadway (limits)	Pedestrian Rating	Bicycle Rating
Cape Arago Highway (Boat Basin Road to Seven Devils Road)	Poor	Fair
Cape Arago Highway (Seven Devils Road to Coos Head Road)	Poor	Fair
Cape Arago Highway (Coos Head Road to Bastendorff Beach Road)	Poor	Fair
Boat Basin Road (Cape Arago Highway to Guano Rock Lane)	Good	Good
Boat Basin Road (Guano Rock Lane to Chicken Loop Road)	Fair	Good
Coos Head Road (Cape Arago Highway to Coos Head Loop)	Poor	Poor
Coos Head Road (Coos Head Loop to Bastendorff Beach Road)	Poor	Poor
Bastendorff Beach Road (Cape Arago Highway to County Park	Poor	Poor
Bastendorff Beach Road (County Park entrance to Coos Head Road)	Poor	Poor
Coos Head Loop (Coos Head Road to Chicken Loop Road)	Poor	Poor
Chicken Loop Road (Coos Head Loop to Boat Basin Road)	Poor	Poor

Motor Vehicle Conditions

Motor vehicle operations were evaluated by analyzing the performance of the study intersections.

Intersection Mobility Targets

The study intersections are monitored through mobility targets intended to maintain a minimum level of efficiency for motor vehicle travel. Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

- Volume-to-capacity (V/C) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays. ODOT and Coos County mobility targets for intersections are based on v/c ratios.

- Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and

C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested. Coos County uses LOS as a secondary measure.

All study intersections must operate at or below adopted performance measures or mitigation could be necessary to support future growth. All intersections under state jurisdiction must comply with the v/c ratios in the Oregon Highway Plan (OHP). For the Cape Arago Highway/ Boat Basin Road intersection within the Charleston unincorporated community, the mobility target is a 0.80 v/c ratio. For the Cape Arago Highway/ Coos Head Road and Cape Arago Highway/ Bastendorff Beach Road intersections, the mobility target is a 0.75 v/c ratio. A 0.85 v/c ratio is the minimum performance target for all non-highway intersections under Coos County jurisdiction.

Motor Vehicle Volumes

Motor vehicle traffic volumes at study intersections were collected during the afternoon and evening (12:00 p.m. to 6:00 p.m.) in the summer of 2015.[6] Additionally, tube counts were collected along Study Area streets between a Friday afternoon and Sunday morning in the summer of 2015.[7] The count data obtained suggests that system-wide peak volumes occur at most of the study intersections on Saturday, between 2:00pm and 3:00pm, which therefore will be applied as the peak hour of traffic to compare to ODOT and Coos County mobility targets for current and future conditions. The intersection count data was adjusted to the Saturday peak based on the adjustment factors summarized in the Traffic Methodology and Assumptions Memorandum included in Appendix A.

The existing peak hour volumes at the study intersections were adjusted to represent the 30th highest annual hour of traffic (30 HV) volumes, based on the methodology summarized in the Traffic Methodology and Assumptions Memorandum included in Appendix A. The factors resulted in up to an 11 percent increase to the counts to adjust for seasonal variations in traffic, replicating 30 HV conditions. The final existing 30 HV peak hour traffic volumes for the study intersections are displayed in Map F.

Future 2036 baseline traffic volumes were forecasted at the study intersections based on the traffic impact analysis level cumulative analysis approach.[8] The cumulative analysis approach is used to estimate new traffic growth, which

[6] Based on counts conducted June 25th, June 26th, July 10th, and July 24th, 2015 by ODOT.

[7] Based on tube counts conducted June 26th to June 28th, 2015 by ODOT.

[8] Analysis Procedures Manual, ODOT, Transportation Planning Analysis Unit.

when added to existing traffic volumes, provides estimates of future traffic demand. Projected 2036 baseline motor vehicle volumes at study intersections will be the sum of the existing traffic volumes and background traffic volume growth (as documented in the Traffic Methodology and Assumptions Memorandum included in the Appendix). The 2036 volumes were the basis for assessing future baseline study intersection operations without any added traffic from the proposed CHAMP scenario. The final forecasted baseline 2036 peak hour traffic volumes for the study intersections are displayed in Map F.

Intersection Operations

The motor vehicle performance evaluation utilized 2010 Highway Capacity Manual methodology for un- signalized intersections.[9] During the Saturday afternoon peak hour, all study intersections operate within the adopted mobility targets (see Table 11), with the exception of the Cape Arago Highway/ Boat Basin Road intersection.

The side street at this intersection (Boat Basin Road) generally experiences high delay due to steady volumes on the uncontrolled roadway (Cape Arago Highway). This approach typically requires more time for an acceptable gap in traffic to make a left turn onto the mainline, therefore, the delay of the side street is high and capacity is reduced.

Despite the forecasted increase in motor vehicle trips through 2036, most study intersections are expected to operate well within the adopted mobility targets. The exception is the Cape Arago Highway/ Boat Basin Road intersection, which will continue to exceed the adopted mobility target for the intersection in 2036 with a 1.28 volume to capacity ratio for the side street approach.

[9] *2010 Highway Capacity Manual*, Transportation Research Board, Washington DC, 2010

Map F. Existing 2016 and Forecasted Baseline 2036 Traffic Volumes (Saturday Afternoon Peak Hour)

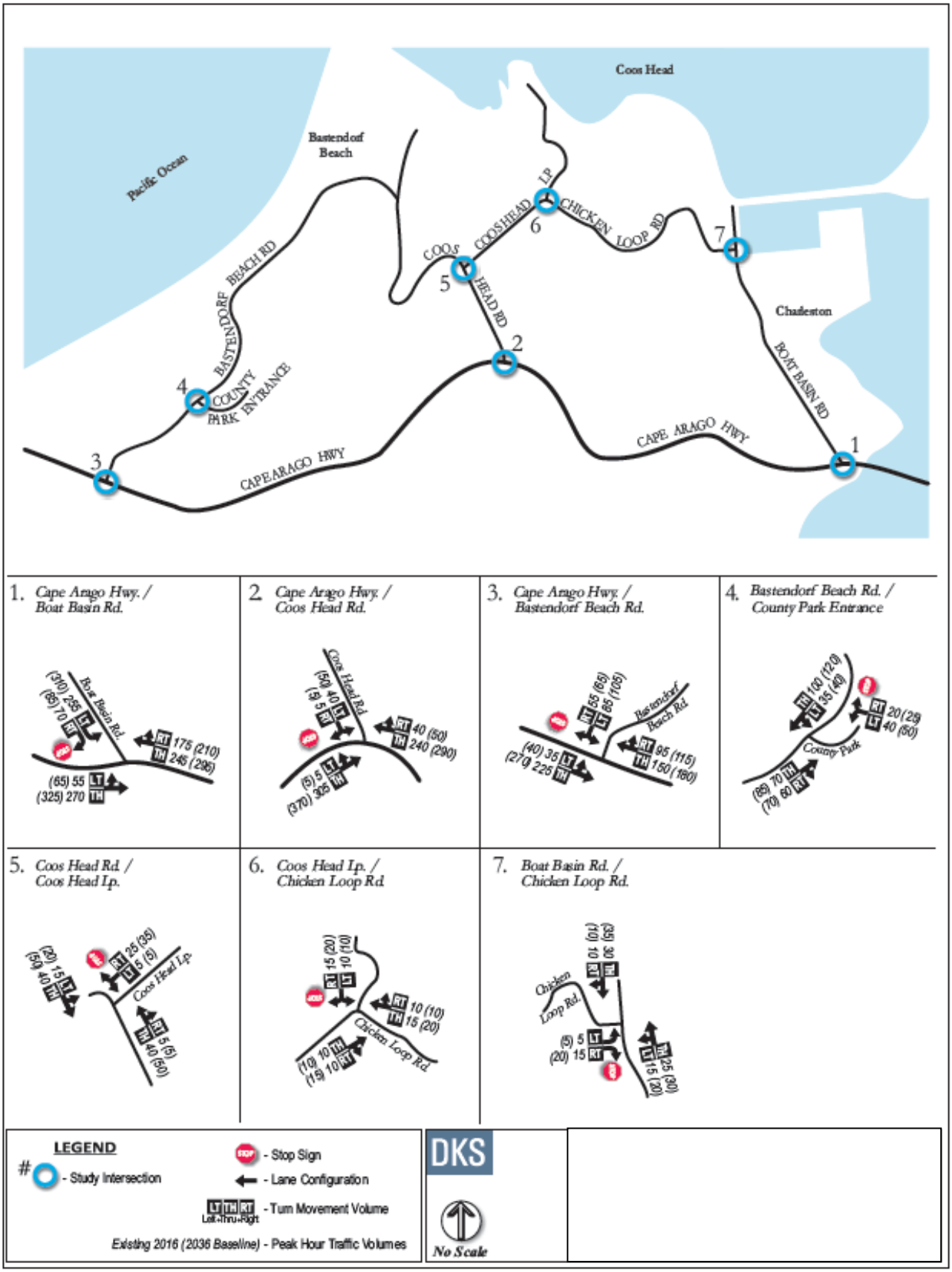


Table 11: Study Intersection Traffic Operational Analysis (Saturday Afternoon Peak Hour)

	Intersection	Mobility Target	Existing Conditions (2016)			Forecasted Baseline 2036 Conditions		
			Volume/ Capacity*	Delay (seconds)*	Level of Service*	Volume/ Capacity*	Delay (seconds)*	Level of Service*
1	Cape Arago Highway/ Boat Basin Road	0.80 v/c	0.92	71.5	F	1.28	192.0	F
2	Cape Arago Highway/ Coos Head Road	0.75 v/c	0.16	16.2	C	0.18	17.2	C
3	Cape Arago Highway/ Bastendorff Beach Road	0.75 v/c	0.27	13.5	B	0.37	16.2	C
4	Bastendorff Beach Road/ County Park entrance	0.85 v/c	0.09	10.3	B	0.12	10.9	B
5	Coos Head Loop/ Coos Head Road	0.85 v/c	0.04	8.8	A	0.05	8.9	A
6	Coos Head Loop/ Chicken Loop Road	0.85 v/c	0.03	8.7	A	0.04	8.7	A
7	Boat Basin Road/ Chicken Loop Road	0.85 v/c	0.02	8.7	A	0.03	8.8	A

Bolded red values *indicate intersection exceeds v/c mobility target.*

*Note: * At un-signalized locations, the V/C ratio, LOS and delay reported as worst stop controlled approach.*