SR 14 AND DOG MOUNTAIN CONGESTION AND SAFETY PLAN

Existing Conditions Chapter

Contract No. DTFH7015D00002, Task Order No. 69056720F000058:
WA DOT 14(4), Congestion and Safety Mitigation Plan
WA DOT 14(3), Dog Mountain Trailhead Study

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ABBREVIATIONS/ACRONYMS

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway Transportation Officials
ADA	Americans with Disabilities Act
BFE	Base Flood Elevation
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BN	Burlington Northern
BNSF	Burlington Northern Santa Fe
CAT	Columbia Area Transit
CFR	Code of Federal Regulations
CRGC	Columbia River Gorge Commission
CRGNSA	Columbia River Gorge National Scenic Area
DAHP	Department of Archaeology and Historic Preservation
DAR	Dial-A-Ride
DPS	Distinct Population Segment
EO	Executive Order
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FEMA	Federal Emergency Management Agency
FGTS	Freight and Good Transportation System
FHWA	Federal Highway Administration
FLAP	Federal Lands Access Program
FTA	Federal Transit Administration
GCR	general condition ratings
GIS	Geographical Information Systems
GMA	General Management Area
iPAC	Information, Planning, and Consultation System (USFWS)
KVA	Key Viewing Area
LE	Listed Endangered
LT	Listed Threatened
MATS	Mt. Adams Transportation Service
MBTA	Migratory Bird Treaty Act
MCEDD	Mid-Columbia Economic Development District
MP	Mile Post
MPO	Metropolitan Planning Organization
mph	Miles Per Hour
MUTCD	Manual for Uniform Traffic Control Devices
NBI	National Bridge Inventory
NEHRP	National Earthquake Hazards Reduction Program
NEMT	Non-Emergent Medical Transportation
NEPA	National Environmental Policy Act

NHS	National Highway System
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NSA	National Scenic Area
NWI	National Wetlands Inventory
ODOT	Oregon Department of Transportation
OR	Oregon
PCT	Pacific Crest Trail
PHS	Priority Habitats and Species
RIC	Recreation Intensity Class
RR	Railroad
RTC	Regional Transportation Council
RTP	Regional Transportation Plan
SCT	Skamania County Transit
SFHA	Special Flood Hazard Area
SMA	Special Management Area
SOC	Species of Concern
SR	State Route
SSD	Stopping Sight Distance
STF	Special Transportation Funds
STIF	Statewide Transportation Improvement Funds
USACE	United States Army Corps of Engineers
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMS	Variable Message Sign
VPD	Vehicles Per Day
WA	Washington
WDFW	Washington Department of Fish and Wildlife
WFLHD	Western Federal Lands Highway Division
WNHP	Washington Natural Heritage Program
WSDOT	Washington Department of Transportation

EXECUTIVE SUMMARY

The Federal Highway Administration (FHWA) is partnering with the United States Forest Service (USFS) and the Washington State Department of Transportation (WSDOT) to develop a congestion and safety plan for and 80-mile stretch of Washington State Route 14 (SR 14) and the Dog Mountain Trailhead.

This Existing Conditions Chapter identifies roadway conditions and areas of concern for the study area, including a "scan" of environmental resources. The analysis performed includes a review of previous studies, adopted plans and policies, and a desktop planning-level examination of the corridor based on available historic traffic data, collision history, field observations, aerial imagery, Geographical Information Systems (GIS), and input from project partners.

POLICY AND REGULATORY ENVIRONMENT

Because this portion of SR 14 runs through the Columbia River Gorge National Scenic Area (CRGNSA), any changes to the corridor will be subject to the CRGNSA Management Plan. The CRGNSA includes three distinct areas: General Management Areas (GMA), Special Management Areas (SMA), and Urban areas. The USFS is the principal landowner for special management areas, whose uses are more restricted than designated general management areas and are the focus of this planning process.

The CRGNSA Management Plan further designates policies and provisions related to development for four "recreation intensity classes" (RIC) in General Management Area (GMA) and Special Management Area (SMA) lands. The RIC dictates the allowable recreation uses. Specific to the development of the SR 14 and Dog Mountain Congestion and Safety Plan, the RIC of a recreation site will play an important role in alternatives development and selection as it will dictate the size and type of improvements that can be made.

KEY ISSUES

RECREATION SITES

The evaluation of existing conditions determined recreation sites within the study area that experience recurring instances of parking overflow that result in visitors parking on the shoulder of the adjacent county road or along SR 14. These locations that experience recurring parking overflow are:

- Cape Horn Viewpoint
- Cape Horn Trailhead / Salmon Falls Park and Ride
- Beacon Rock State Park
- Dog Mountain Trailhead
- Drano Lake Boat Ramp
- Swell City
- Coyote Wall Trailhead (Courtney Road and SR 14)
- Catherine Creek Trailhead
- Klickitat Spit

CONGESTION

Traffic volumes on SR 14 vary significantly along the length of the study corridor but remain within the capacity limits of SR 14. Congestion is most likely to happen in more urban locations during rush hour or in peak tourism seasons (typically spring and summer).

Parking lots at popular recreation sites fill up and overflow on weekends, particularly in peak seasons, which can create safety and congestion concerns as people park on the shoulders of adjacent roads. In areas like Dog Mountain, this has started to happen on Fridays and Mondays as well. Traffic and visitor use are expected to increase in the future, particularly at locations most accessible from urban areas.

SAFETY

Five years of crash data along SR 14 was analyzed to determine locations where the number of crashes exceed the average. The following highway segments were flagged for further review:

- West end of CRGNSA to Cape Horn Trailhead
- Doetsch Ranch Road to West Bonneville
- Wishram to east end of the CRGNSA

The most common types of crashes in the corridor were collisions with a guardrail, while rear-end collisions were the second most common. The most common contributing factors to crashes were drivers exceeding reasonable speeds and inattention. These crash types are consistent with SR 14's character as a scenic, winding highway with many cross streets, turnouts, access points, and trailheads.

Rockfall is also a hazard in the SR 14 corridor and must be mitigated to ensure greater public safety throughout the corridor.

GEOMETRIC ROADWAY CONDITIONS

Some existing vertical and horizontal alignments on SR 14 create curves that restrict visibility and pose safety hazards. Some road intersections have sight distance restrictions causing safety hazards.

Speed differentials between the various users of SR 14 can cause hazards and generate driver frustration. There is a need to reconcile geometrics, access, provision of consistent speeds throughout the corridor, and safety, with preservation of the corridor's rural character.

ENVIRONMENTAL SETTING

The environmental screening exercise is a scoping-level effort that includes information available through desktop studies and does not include site information verified through a site visit. If improvement options from the study are moved forward into project development, an analysis for compliance with the National Environmental Policy Act (NEPA) and other applicable federal and state regulations will be completed as part of the project development process. Information provided in this report may be used as guidance for the NEPA process at that time.

The CRGNSA Management Plan contains specific protections, including avoidance buffers and mitigation measures, for natural resources. Proposed developments in the CRGNSA are required to inventory natural resources and prepare plans to protect, manage, and/or mitigate impacts to them in consultation with the appropriate state and federal agencies.

Resources with specific preservation directives in the CRGNSA Management Plan include the following:

- Wetlands, lakes, ponds
- Streams and riparian habitats
- Priority habitats and sensitive wildlife sites
- Rare plants and natural areas
- In the SMA, forest resources through the review of forest practices

CONTEXT

INTRODUCTION

The Federal Highway Administration (FHWA) is partnering with the United States Forest Service (USFS) and the Washington State Department of Transportation (WSDOT) to develop a congestion and safety plan for Washington State Route 14 (SR 14) and the Dog Mountain Trailhead.

This Existing Conditions Report identifies roadway conditions and areas of concern for the study area. The analysis performed includes a review of previous studies, adopted plans and policies, and a desktop planning-level examination of the corridor based on historic traffic data, collision history, field observations, aerial imagery, Geographical Information Systems (GIS), and input from project partners.

This report also includes a "scan" of environmental resources within the study area that may be affected by potential improvements arising from this SR 14 and Dog Mountain Congestion and Safety Plan (Plan). The planning-level environmental overview is based solely on a desktop research of data, reports and plan documents and may be used to support future environmental documentation required for any improvements forwarded from this planning process.

BACKGROUND

Washington State Route 14 (SR 14) serves the Washington side of the CRGNSA, connecting communities and recreational areas. An increased use of the trails and recreation sites along SR 14 has impacted user experiences, particularly on weekends and holidays between May and October. As the region population continues to grow, the number of people who use SR 14 to access Gorge recreation sites and pass through the corridor place a strain on the CRGNSA transportation facilities.

The high vehicular demand on the transportation system into and through the Gorge creates traffic delays and safety concerns for both motorists and other users, especially pedestrians and bicyclists utilizing the roadway to access recreational sites. Traffic volume and site data indicate trends for continued growth in user activity. To prevent further degradation of SR 14 and key CRGNSA access, strategies need to be developed to address crowding and congestion.

The intent of this Plan is to develop a comprehensive package of strategies to address the transportation and safety needs of those using SR 14 to access the CRGNSA. The study will help facilitate early coordination with local, state and federal agencies, the public, and other stakeholders; and to screen possible improvement options.

FEDERAL LANDS ACCESS PROGRAM

In 2018, there were two applications to the Federal Lands Access Program (FLAP) that resulted in funding for this Plan. The FLAP program was established to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The program supplements State and local resources for transportation facilities with an emphasis on high-use recreation sites and economic generators.

STUDY AREA

The study area (Figure 1) includes SR 14 within the CRGNSA and connecting access roads and parking lots, with emphasis on facilities that provide access to recreation sites. Within the study area, special focus will be given to the Dog Mountain Trailhead and its existing parking lot. The components of the study area are summarized below.

Figure 1. Study Area

SR 14

The study corridor is an 80-mile stretch of SR 14 beginning at mile post 18 near the eastern boundary of the city of Washougal in Clark County, and extending east through Skamania County to mile post 98 in Klickitat County, just west of the unincorporated community of Maryhill.

State Route 14 connects the Portland and Vancouver metro area at its west end with the Washington Gorge communities of North Bonneville, Stevenson, Home Valley, White Salmon, Bingen, Lyle, Dallesport and Wishram. The corridor is part of the Lewis and Clark Trail Scenic Byway, following the north bank of the Columbia River and providing access to dozens of recreational sites. The corridor has historically carried substantial tourism and recreational traffic and is a key economic link for the rural communities in the Gorge.

Lewis and Clark Trail Scenic Byway

The central portion of this 572-mile byway, which traces the route taken by Lewis and Clark's famous Corps of Discovery Expedition, runs through the CRGNSA. The byway follows the twists, turns, and hills of the Columbia River, offering glimpses of lush Oregon slopes and providing numerous roadside stops, including several historic markers.

DOG MOUNTAIN

The Dog Mountain and Augspurger Mountain Trail System (commonly referred to as Dog Mountain) is accessible from SR 14 at mile post 53.7 on the north side of the highway, approximately 10 miles east of the city of Stevenson (see Figure 2). The Dog Mountain focus area includes the existing gravel parking lot and adjacent USFS lands that could potentially serve as a site for trailhead and parking lot relocation.

Figure 2. Dog Mountain Focus Area

RELEVANT PLANS AND PROJECTS

This section summarizes the review and its relevance to the planning process.

GORGE REGIONAL TRANSIT STRATEGY

The Gorge Regional Transit Strategy is currently in Phase I of planning, which includes strengthening partnerships, completing foundational assessments of transit in the Gorge, and developing a regional vision. This is a bi-state effort and includes representatives from the Oregon Department of Transportation (ODOT), WSDOT, the Mid-Columbia Economic Development District (MCEDD) and Columbia Area Transit (CAT). Phase II (not currently funded) will focus on a more detailed implementation strategy and deeper operational assessments.

> **Relevance:** The Gorge Regional Transit Strategy encourages coordination between transit agencies in the CRGNSA. Transit is anticipated to be a component of any potential solution at Dog Mountain and an important tool for providing access and managing congestion at other recreation sites in the CRGNSA.

BEACON ROCK ENTRANCE ROAD REALIGNMENT PLANNING PROCESS

Washington State Parks and Recreation Commission is undergoing a planning process to renovate the main park entrance at Beacon Rock State Park. The project primarily addresses traffic and visitor safety where SR 14 intersects the entrance to Beacon Rock. The purpose of the project is to design safer parking, realign or relocate the vehicle entrance, and analyze how to best separate pedestrian and vehicle traffic. The current road alignment and campground entrance was designed in the 1930s. Park access improvements are needed to address an expected increase in park visitation, the volume and speed of SR 14 traffic, and improved separation of pedestrian and vehicle traffic entering and leaving the Park.

> **Relevance:** The preferred concept from the Beacon Rock planning process will be considered as part of the analysis of alternatives for this Plan.

SR 14 - WIND RIVER ROAD - INTERSECTION IMPROVEMENTS

In 2019, WSDOT worked with Skamania County to construct a roundabout at the intersection of SR 14 and Wind River Road. The roundabout was the preferred design to improve safety, traffic flow and access between Carson and SR 14.

> **Relevance:** Other intersections in the SR 14 corridor exhibit deficiencies like the historic intersection of SR 14 at Wind River Road.

1997 SR 14 CORRIDOR MANAGEMENT PLAN

In the mid-1990's, WSDOT worked with various stakeholders on the Washington side of the Columbia River Gorge to define and guide highway improvement projects through the CRGNSA. The SR 14 Corridor Management Plan (CMP) consists of three independent reports: the SR 14 Corridor Strategy and Action Plan, SR 14 Supplemental Highway Design Guidelines, and SR 14 Route Development Plan (RDP).

> **Relevance:** Much of the content of the SR 14 Corridor management Plan is still applicable today, especially the geometric and geologic conditions. The deficiencies and needs identified in the 1997 plan provided a starting point for the development of the existing conditions report.

GOALS AND OBJECTIVES

The goals and objectives provide a framework for shaping the Plan and will be the basis for the formation of evaluation criteria to determine which potential strategies, projects, programs, and pilot projects best meet the needs of the plan. Goals provide broad direction for what the Plan hopes to achieve; corresponding objectives provide more detail on how to achieve the goal or articulate desired specific outcomes related to the goal. These goals and objectives are summarized in Table 1.

Since this Plan includes two unique study areas, vision statements were developed that clarify the overall mission for each component of the plan:

SR 14 Vision

To promote safe access to high-use recreational areas in the Columbia River Gorge National Scenic Area through the identification of opportunities to address congestion and safety concerns while protecting scenic, natural, cultural, and recreational resources.

Dog Mountain Vision

To manage congestion at, and promote safe access to, the Dog Mountain Trailhead through the identification of design alternatives that are consistent with the CRGNSA Management Plan.

Table 1. Plan Goals and Objectives

Goals	Objectives
Safety Enhance safety for all transportation modes.	a. Reduce conflicts among highway and recreational site users. b. Address existing safety issues at locations with a history of fatal and severe injury vehicle, bicycle- and/or pedestrian-related crashes. c. Support technology applications that improve safety. d. Improve the visibility of transportation users in constrained areas, such as on hills and blind curves. e. Improve pedestrian safety at trailheads.
Congestion Management Reduce or mitigate congestion along the corridor.	a. Develop a program to systematically implement improvements for all modes that enhance mobility at designated high-priority locations. b. Reduce reliance on single-occupancy vehicle trips Improve travel reliability and efficiency of SR 14. c. Increase awareness of availability of park-and-ride opportunities. d. Identify opportunities to spread out visitation along the entire corridor.
Strategic Investment Develop a fiscally sustainable plan for the corridor through responsible stewardship of financial resources.	a. Prioritize improvements with a higher return on investment. b. Pursue grants and collaboration with other agencies to efficiently fund transportation improvements and supporting programs. c. Preserve and maintain existing assets to extend their useful life.
Access Maintain access to destinations within the corridor.	a. Preserve and maintain the existing transportation system in a state of good repair. b. Encourage intermodal transportation linkages within the highway corridor. c. Provide access to multiple modes and transportation options to the extent practicable through planning and design guidance and coordination. d. Provide clear and comprehensive information about transportation options programs, services, and modes. e. Enhance access to recreation sites for low-income and minority populations
Future Provide a plan that considers expected changes in future use.	a. Accommodate existing and future capacity demands. b. Reduce maintenance needs. c. Provide connectivity to residents, and regional users accessing recreational lands along the corridor. d. Improve accessibility to better distribute recreational use.
Resource Protection Protect the scenic, natural, cultural, and recreational features. *Note: Any potential solution must meet NSA goals.*	a. Ensure consistency with the Management Plan for the CRGNSA and state, regional and local planning rules, regulations, and standards. b. Avoid or minimize impacts to the scenic, natural and cultural resources. c. Coordinate proposed improvements with tribal governments to ensure that tribal treaty rights are protected.

POLICY AND REGULATORY ENVIRONMENT

COLUMBIA RIVER GORGE NATIONAL SCENIC AREA MANAGEMENT PLAN

The CRGNSA is the largest National Scenic Area in the United States. The Columbia River Gorge's preservation and growth is protected by the National Scenic Area Act, which was passed into law by Congress in 1986. Under the Act, the National Scenic Area Management Plan (CRGNSA Management Plan) was created to ensure that the land in the CRGNSA is used consistently with the purposes and standards of the National Scenic Area Act.

The Columbia River Gorge Commission approved the revised 2020 Management Plan for the CRGNSA on October 13, 2020, which will be transmitted to the USFS for concurrence. Following their review, the Gorge Commission will transmit the CRGNSA Management Plan to the counties in the National Scenic Area to incorporate into their respective county ordinances.

LAND USE

The Gorge Commission and counties within the CRGNSA grant land use approvals jointly according to uses outlined the CRGNSA Management Plan. The CRGNSA includes three distinct areas: General Management Areas, Special Management Areas, and Urban areas (see Figure 3). The 13 urban areas (9 in Washington and 4 in Oregon) are exempt from regulations that apply to the general and special management areas. The USFS is the principal landowner for special management areas, whose uses are more restricted than designated general management areas.

Land use varies throughout the study area, though is primarily classified as one of the following four land use designations:

1. Agriculture
2. Forest/Woodland
3. Open Space
4. Urban Area/Rural Center

Figure 4 shows the land use designations within the study area. Along the western segment of the study area, the primary land use designation is Forest/Woodland, managed by the USFS. Though the entire corridor sits within the CRGNSA, the western segment runs through Beacon Rock State Park as well. Nearer the center of the study area, around the cities of Stevenson and Carson, land use designations primarily include Urban Area/Rural Center and Commercial Forest classifications. East of the community of Lyle, land use designation becomes primarily Agriculture, with small towns along SR 14 classified as Rural Center and several allotments to the Bureau of Indian Affairs (BIA).

SR 14 AND DOG MOUNTAIN CONGESTION AND SAFETY PLAN
EXISTING CONDITIONS REPORT

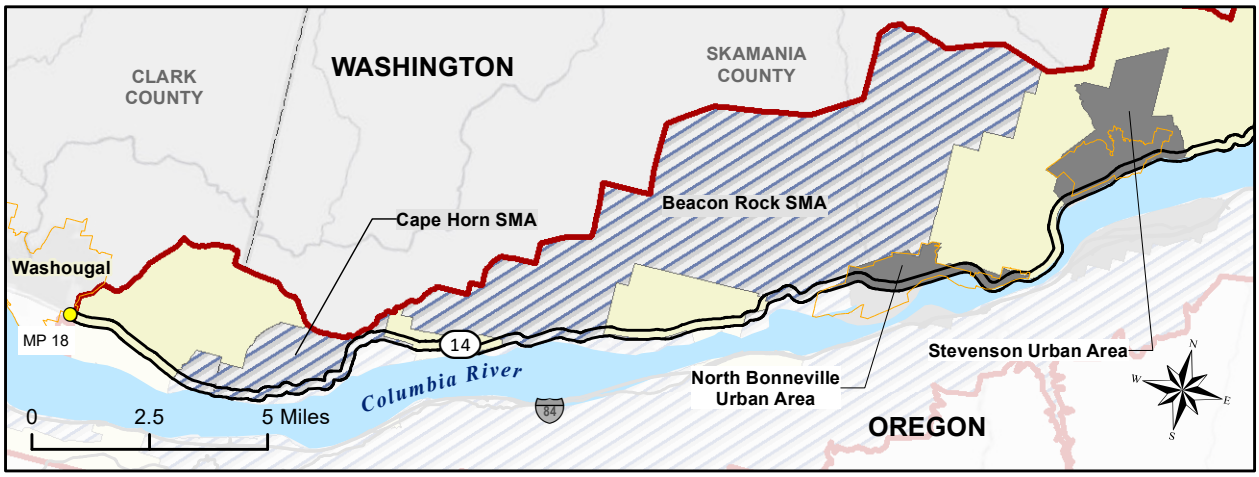
Figure 3

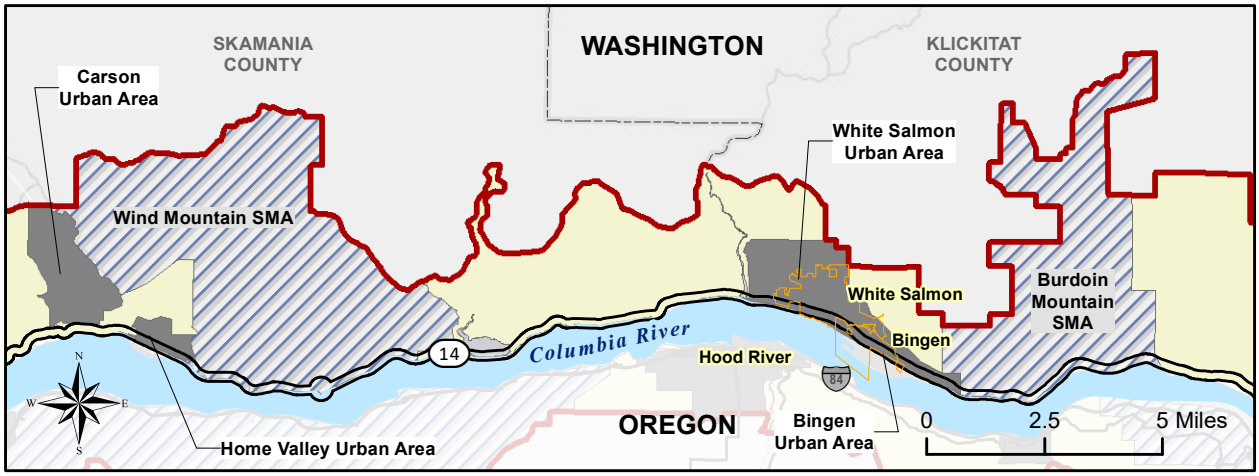
General Management and Special Management Area Designations in the Columbia River Gorge

Legend

- Columbia River Gorge National Scenic Area (CRGNSA)
- Columbia River Gorge General Management Area (GMA)
- Special Management Area (SMA)
- Urban Area
- Study Area
- City Limits

Data Source(s): Gorge Commission





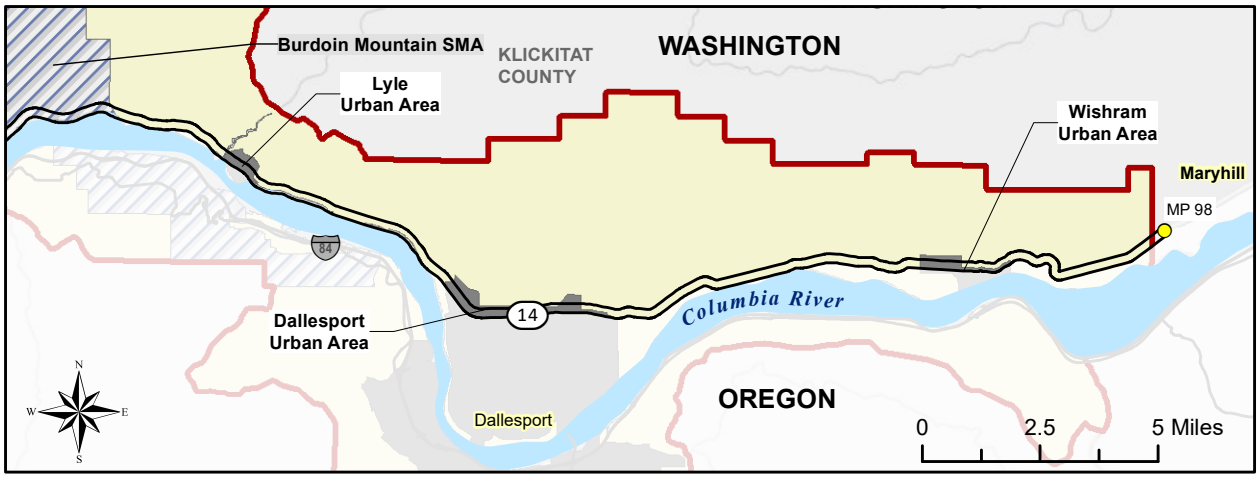


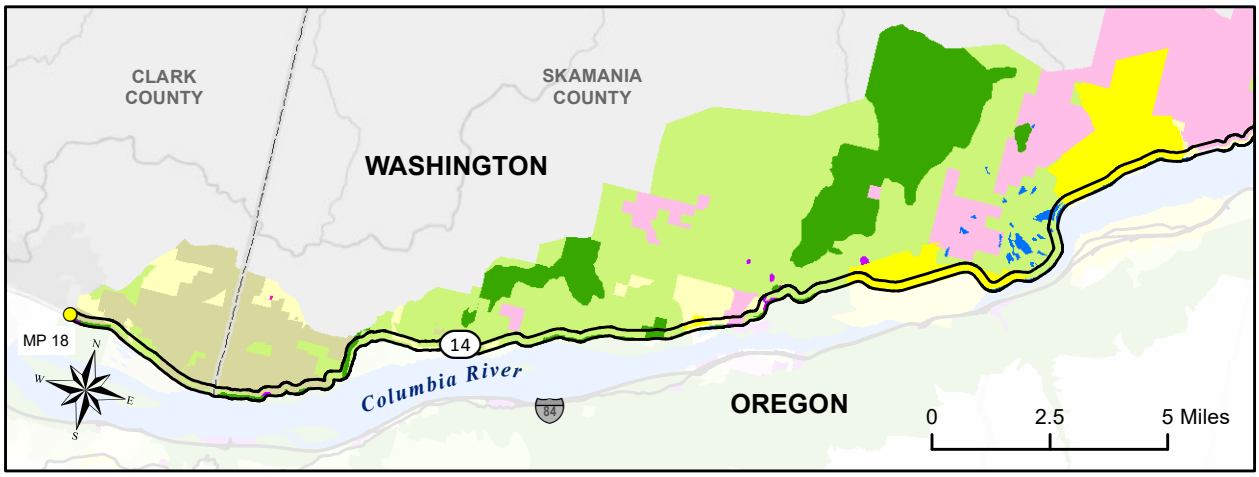
Figure 4
Land Uses in the Columbia River Gorge

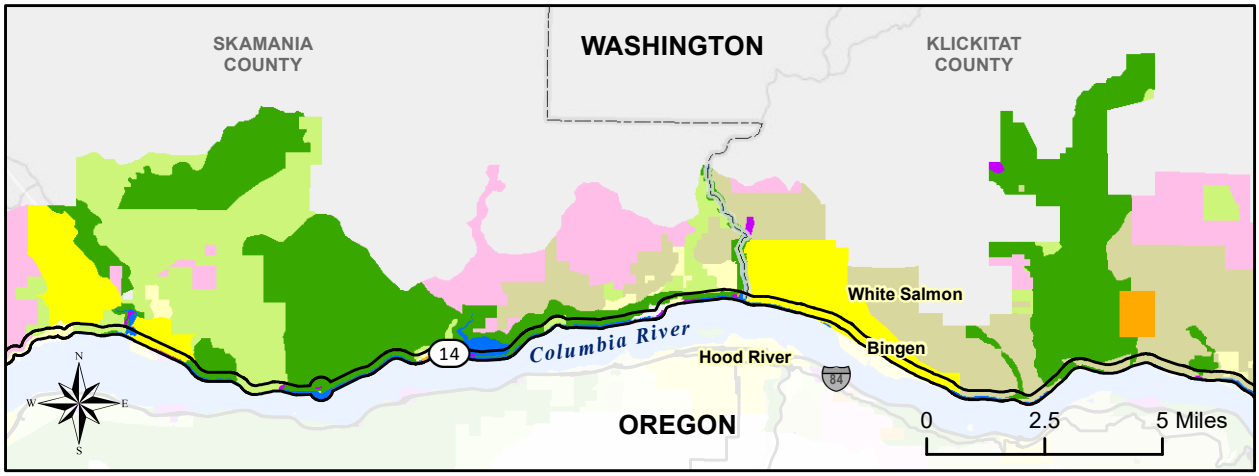
Legend

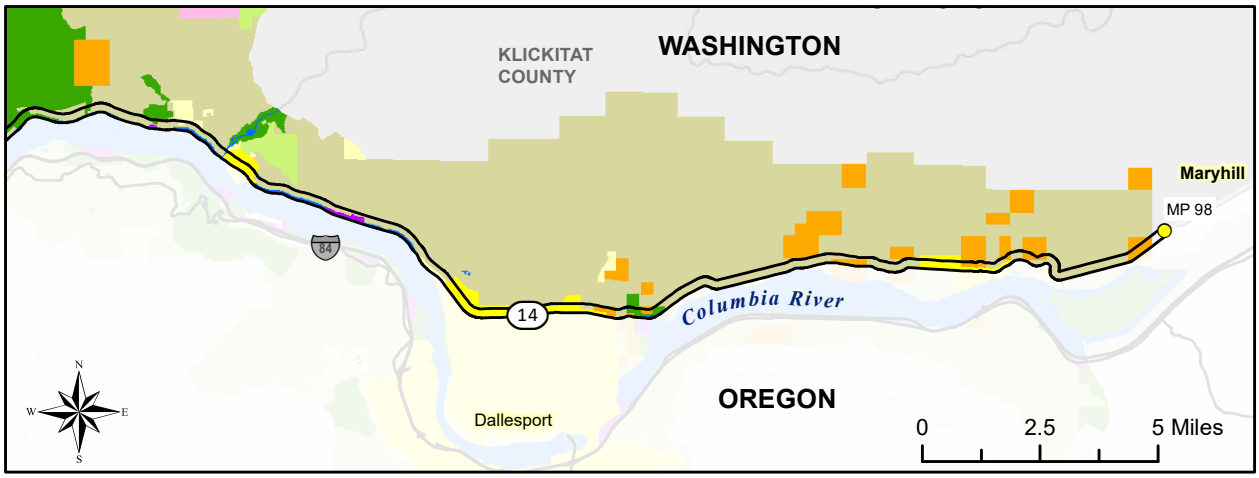
Landuse Designation

- Public Recreation
- Commercial
- Commercial Forest
- Urban Area/Rural Center
- Residential
- Bureau of Indian Affairs
- Open Space
- Forest/Woodland
- Agriculture
- Water
- County Line

Data Source(s): USFS, Columbia River Gorge Commission







POLICY AND REGULATIONS RELATED TO TRANSPORTATION FACILITIES

The CRGNSA Management Plan further designates policies and provisions related to development for four "recreation intensity classes" (RIC) in General Management Area and Special Management Area lands. The RIC dictates the allowable recreation uses. A RIC of 1 indicates the area is suitable for very low intensity recreation and has more stringent guidelines than a RIC of 4, which indicates the area is suitable for high intensity recreation. Related to the development of the SR 14 and Dog Mountain Congestion and Safety Plan, the RIC of a recreation site will play an important role in alternatives development and selection. Parking provisions for each recreation intensity class are described in Table 2.

Table 2. Special Management Area and General Management Area Parking Provisions

	Class 1 (Very Low Intensity)	Class 2 (Low Intensity)	Class 3 (Moderate Intensity)	Class 4 (High Intensity)
General Management Area Lands	• Parking for maximum of 10 vehicles • Mass transit accommodations should be considered (e.g., bus parking)	• Parking for maximum of 25 vehicles • Mass transit accommodations should be considered (e.g., bus parking)	• Parking for maximum of 75 vehicles • Mass transit accommodation is required (e.g., bus parking)	• Parking for maximum of 250 vehicles • Mass transit accommodation is required (e.g., bus parking)
Special Management Area Lands	Parking for maximum of 10 vehicles	Parking for maximum of 25 vehicles	• Parking for maximum of 50 vehicles (Parking for 75 vehicles may be provided with enhanced mitigation) • Mass transit accommodation is required (e.g., bus parking)	• Parking for maximum of 200 vehicles (Parking for 250 vehicles may be provided with enhanced mitigation) • Mass transit accommodation is required (e.g., bus parking)

Source: Draft Management Plan for the Columbia River Gorge National Scenic Area, September 2020

Other parking requirements included in the CRGNSA include:

- Parking areas must be designed to fit existing topography to the extent possible.
- Parking areas over 50 spaces must be divided into discrete, landscaped parking islands.
- Landscape buffers are required, with a greater buffer for larger parking lots.
- Parking areas must be set back from the Columbia River and major tributaries by at least 100 feet.
- Vehicles must display a winter recreational pass in parking areas between November 15th and April 30th where designated by the Oregon Transportation Commission.

Additional relevant transportation policies and provisions include:

- Alternate forms of transportation, such as transit, are strongly encouraged.
- New development and reconstruction of scenic routes must include provisions for bicycle lanes.

RECREATIONAL SETTING

The Columbia River Gorge is a valuable resource to residents and tourists of the Portland and Vancouver metropolitan areas and communities in the Gorge. The area has become a popular tourism destination that attracts both national and international visitors. The National Scenic Trail, known as the Pacific Crest Trail (PCT), runs from Mexico all the way north to Canada and crosses the Columbia River Gorge at the Bridge of the Gods, which is one of the many attractions throughout the area. On the Washington side, SR 14 provides access to recreational activities such as hiking, mountain biking, fishing, wind surfing, bird watching, picnicking, and sightseeing. The landscape along SR 14 and throughout the Gorge is dramatic and varying with mountains, fields, wildflowers, marshlands, wildlife refuges, and the Columbia River Gorge itself.

Dog Mountain Trail Spring Wildflowers

As the Columbia River Gorge continues to gain national and international recognition as a popular recreation and tourism destination, and as the surrounding metropolitan areas continue to grow, it is expected that the Gorge will continue to see an increase in recreation and tourism visitors, activities, and services.

RECREATION SITES

Within the study area along SR 14, there are various recreation activities. Though overnight camping areas exist along the corridor and overnight camping is a popular activity throughout the Gorge, the trailheads within the study area primarily accommodate day-use recreational activities, and may include paved parking, picnic areas, water, restrooms, and other day-use amenities.

Given the rural location of most of the trailheads, the primary mode of transportation is a personal vehicle, maintaining a need for adequate trailhead parking or accommodation of shuttle service vehicles. Parking area capacity and conditions vary depending on the trailhead location, ranging from gravel surfaced, shoulder parking with limited amenities, to an asphalt paved parking lot with covered picnic areas and abundant day-use amenities. Regardless of the capacity and conditions, most trailhead parking areas reach maximum capacity on the weekend throughout the summer season, with an increasing number of days in which little to no parking may be available most of the day.

Table 3 summarizes the popular recreation sites accessible within the study area, access location along SR 14, the operating Agency, parking details and important land use information.

Table 3. Study Area Recreation Sites

Site	SR 14 MP	County	Operated By	Fee/Parking	RIC[1]	Land Use	Parking Overflow[2]
Steigerwald National Wildlife Refuge	18.2	Clark	USFWS	No fee/Paved parking area	3	GMA	No
Ozone Climbing	23.8	Skamania	Informal	No fee/Park on SR 14 shoulder	1/2	SMA	Yes
Cape Horn Lookout (Viewpoint)	25	Skamania	WSDOT	No fee/Park on SR 14 shoulder	1	SMA	Yes
Cape Horn Trailhead / Salmon Falls Park and Ride	26.4	Skamania	USFS / Skamania County	No fee/Paved parking area	2	GMA	Yes
St. Cloud	29.9	Skamania	USFS	Fee/Paved parking area	2	SMA	No
Franz Lake Overlook	31.5	Skamania	USFWS	No fee/Park on SR 14 shoulder	1	GMA	No
Sams Walker Day Use	32.9	Skamania	USFS	Fee/Gravel parking area	2	SMA	No
Doetsch Ranch Day Use Area	34.1	Skamania	WA State Parks	Fee/Paved parking area	4	SMA	No
Beacon Rock State Park (Kueffler Rd)	34.8	Skamania	WA State Parks	Fee/Gravel parking area	4	SMA	Yes
Beacon Rock Trailhead/Hamilton Mountain Access	34.9	Skamania	WA State Parks	Fee/Gravel and paved parking areas	3-4	SMA	Yes
Bonneville Discovery Trails	37.6	Skamania	Bonneville Trails Foundation	No fee/Paved parking areas	N/A	UA	No
Ft. Cascades Trailhead	38.6	Skamania	USACE	No fee/Paved parking area	N/A	UA	No
Bonneville Trailhead	39.8	Skamania	USFS	Fee/Paved parking area	N/A	UA	No
Pacific Crest Trail	41.5	Skamania	USFS	None	1	GMA	No
Bridge of the Gods Historical Marker	41.6	Skamania	USACE	No fee/Paved parking area	1	GMA	No
Home Valley Park/Campground	50.1	Skamania	Skamania County	Fee/Paved parking areas	4	SMA	No
Dog Mountain Trail	53.7	Skamania	USFS	Fee & Seasonal Permit/Gravel parking area	1/2/4	SMA	Yes
Dog Creek Falls	55	Skamania	USFS	No Fee/Gravel parking area	1/2	SMA	No
Little White Salmon National Fish Hatchery	56.9	Skamania	USFWS	No fee/Paved parking area	1	GMA	No
Drano Lake Boat Ramp	57.3	Skamania	Skamania County	Fee/Paved parking areas	2/4	GMA	Yes
Swell City	61.1	Skamania	Private/ WSDOT	No fee/Paved parking area	4	GMA	Yes
Spring Creek Fish Hatchery State Park	61.4	Skamania	WA State Parks	Fee/Paved parking area	4	GMA	No

Site	SR 14 MP	County	Operated By	Fee/Parking	RIC[1]	Land Use	Parking Overflow[2]
Coyote Wall Trailhead	69.7	Klickitat	USFS	No fee/Paved parking area	2	SMA	Yes
East Syncline Trail / Rowland Lake	70.9	Klickitat	USFS	No fee/Gravel shoulder	1/2	SMA	Yes
Catherine Creek (Old Hwy 8)	N/A	Klickitat	USFS	No fee/Gravel parking area	2	SMA	Yes
Chamberlain Lake Safety Rest Area	74	Klickitat	WSDOT	No fee/Paved parking area	1	GMA	No
Balfour-Klickitat Trailhead (Old Hwy 8)	N/A	Klickitat	USFS	No fee/Paved parking area	2	GMA	No
Klickitat Spit	75.7	Klickitat	Informal	No fee/Gravel shoulder	2	GMA	Yes
Lyle Trailhead	75.9	Klickitat	USFS	No fee/Paved parking area	N/A	UA	No
Lyle Cherry Orchard Trailhead	77.2	Klickitat	Friends of the Columbia River Gorge	No fee/Gravel parking area	1	GMA	No
Doug's Beach State Park	78.6	Klickitat	WA State Parks	Fee/Gravel parking area	4	GMA	No
Columbia Hills Historical State Park	85.1	Klickitat	WA State Parks	Fee/Paved and gravel parking areas	4	GMA	No
Horsethief Butte Trailhead	86.4	Klickitat	WA State Parks	Fee/Paved parking area	2	GMA	No
Crawford Oaks Trailhead	87.2	Klickitat	WA State Parks	Fee/Paved parking area	2	GMA	No
Avery Recreation (State Park) Boat Launch	89.6	Klickitat	USACE	No fee/Gravel parking area	BIA	GMA	No

Acronyms: USFWS = United States Fish and Wildlife; USFS = United States Forest Service; WSDOT = Washington Department of Transportation; USACE = United States Army Corps of Engineers; SMA = Special Management Area; GMA = General Management Area; UA = Urban Area; BIA = Bureau of Indian Affairs

Notes:

1. RIC is identified for the parking area; the RIC of the recreational area may be different.
2. Indicates recurring parking lot overflow resulting in parking on shoulder of adjacent county roads or SR 14.

RECURRING CONGESTION

Of the recreation sites summarized in Table 3, several experience recurring instances of parking overflow that result in visitors parking on the shoulder of the adjacent county road or along SR 14. These locations are described in further detail below.

Looking east from Cape Horn Lookout

Cape Horn Lookout

Recreation:

The Cape Horn Lookout provides panoramic views of the Columbia River Gorge from the south

shoulder of SR 14 near mile post 25. There is space for approximately eight vehicles to park in the shoulder, adjacent to eastbound SR 14 traffic. There is no physical barrier between highway traffic and vehicles parked in the shoulder. People often exit their vehicles to take photos. A guardrail provides the only barrier between the roadway shoulder and the sheer drop below.

Existing Conditions:
The lookout at Cape Horn Lookout is accessed from SR 14 and is within WSDOT right of way. The stretch of highway leading to and from the lookout contains steep grades and curves that limit sight distance. Where vehicles park in the shoulder and pedestrians move about to take photos, the shoulder width varies between approximately 10 feet and 15 feet. There is no advanced signage to indicate vehicles may be suddenly entering and leaving the highway. In addition to congestion at the lookout, freight vehicles traveling westbound may slow due to the grade and the area is known for rockfalls that may land and remain on the roadway.

Cape Horn Trailhead / Salmon Falls Park and Ride

Recreation:
The Cape Horn Trail system provides approximately eight miles of moderate hiking on both sides of SR 14 through a forest of coniferous and deciduous trees, with spring wildflowers, autumn foliage, and breathtaking views of the Columbia Gorge. The trailhead is developed, and parking is shared with the Salmon Falls Park and Ride. The parking lot is managed by Skamania County and includes 25 paved parking spaces and two dedicated ADA spaces. There is a gravel area that can accommodate approximately six additional vehicles. An information kiosk and restrooms are provided for visitors' use.

Existing Conditions:
The main parking lot is accessed from two roads that are owned and maintained by Skamania County: Salmon Falls Road and Canyon Creek Road. The trail is extremely popular year-round, and the parking lot frequently fills up by mid-morning. When this occurs, vehicles will park on the shoulder of both Salmon Falls Road and Canyon Creek Road. This creates a situation where trail users must walk in the roadway, potentially in conflict with vehicles. On the busiest days, dozens of cars will line the county roads, hindering through-traffic and degrading the visitor and neighborhood experience. Due to the COVID-19 pandemic, other nearby trails have been closed and the Cape Horn Trailhead has experienced additional use.

Salmon Falls Park and Ride / Cape Horn Trailhead parking
Source: USFS

The existing parking lot is in a GMA with a RIC of 2. This limits the ability to expand the existing parking lot beyond its present size in the current location. The 2009 Cape Horn Trail Recreation Plan Environmental Assessment identified opportunities to provide additional parking.

Beacon Rock State Park / Beacon Rock Trailhead

Recreation:
Beacon Rock State Park is a 4,458-acre, year-round park near its namesake attraction, Beacon Rock. The rock is the core of an ancient volcano, rising over 800 feet over the Columbia River, detached from the

surrounding rocks. The State Park provides opportunities for camping, hiking, wildlife viewing, picnicking, boating, biking, equestrian, fishing, and rock climbing. The trailhead of the popular hike to the top of Beacon Rock is primarily accessed from a paved parking lot located just off SR 14's south shoulder. There are 27 striped parking spaces and two dedicated ADA spaces, public restrooms, an information kiosk, picnic tables, and a water station for visitors' use. A secondary parking lot is just west of the paved lot along the SR 14 shoulder with approximately 25 informal, unpaved parking spaces and shoulder access to the main parking lot and trailhead. A day pass or annual Discovery Pass is required for parking.

Existing Conditions:
Though there are many popular areas within Beacon Rock State Park, the most significant congestion is at the base of Beacon Rock along SR 14 between mile posts 34.7 and 35. In addition to the recreational activities on the south side of SR 14, the north side provides access to the Ranger Station and popular Hamilton Mountain trails. When the parking lots along SR 14 fill up, cars may find places to park on the shoulder of the highway. The existing alignment of the roads limit the sight lines of pedestrians crossing the highway and of vehicles traveling in the area where the posted speed is 55 mph on SR 14. The accesses to SR 14 are undefined in many areas, making it difficult for vehicles on SR 14 to anticipate traffic entering and exiting the highway.

Looking west from south shoulder of SR 14 near Beacon Rock Trailhead depicts potential visibility concerns.

Staff from Washington State Parks and Skamania County note that some park visitors mistakenly use Guptil Road while trying to locate the Hamilton Mountain Trailhead due to errors in cell phone navigation. Guptil Road is a gravel road not suited for heavy vehicle traffic. A small sign has been installed on Guptil Road near SR 14 to direct travelers back toward Beacon Rock.

The existing parking lot is in a SMA with a RIC of 4 and adjacent to RIC 3. Washington State Parks has been undergoing a planning process to renovate the main park entrance at Beacon Rock State Park to address traffic and visitor safety. Some potential solutions from that process include improvements to the intersection of SR 14 at Kueffler Road and the intersection of SR 14 at Hamilton Mountain Road, additional signage, and improvements to the parking areas. The preferred alternative from the Washington State Parks Beacon Rock Entrance Road Realignment project will be included as an alternative as part of this planning process.

Dog Mountain Trail

Recreation:
Dog Mountain has become one of the most popular hikes in the CRGNSA. Dramatic wildflower displays and views of the Gorge draw hikers from around the region and beyond to this moderately difficult hike. Currently the parking is an undeveloped gravel lot immediately adjacent to SR 14. Vault toilets are located a short walk up a hill and an information kiosk are also present for visitors' use.

Existing Conditions:

Over the years WSDOT and the USFS have worked together to mitigate congestion and highway safety-related issues associated with the trailhead by developing a parking scheme that is used by USFS on-site staff to manage parking during peak visitation. The parking scheme was intended to handle about 120 cars. While initially effective, it proved to be inadequate with the increasing use the site has experienced. Overflow parking has spilled onto the narrow shoulder of SR 14 and parking lot congestion has negatively impacted the egress, ingress and flow of traffic in the parking lot.

SR 14 Dog Mountain parking lot
Source: USFS

When parking overflows onto the shoulder of SR 14, recreationists walk along the narrow shoulder of SR 14 and BNSF railroad corridor to access the trailhead.

Vehicles parked along SR 14 near Dog Mountain Trailhead
Source: USFS

In 2015 during peak visitation it was not uncommon to count over 200 cars at any one time at this general parking area. This overwhelming situation may have contributed to several motor vehicle accidents (one fatal) along this stretch of the highway. This situation prompted the Skamania County Sheriff's Office to convene a meeting of interagency partners to explore safety mitigation measures which included: early warning signs, no parking signs, law enforcement, parking lot reconfiguration to 70-80 cars, shuttle bus to reduce congestion and Variable Message Signs (VMS) directing visitors to use the shuttle. Skamania County applied for and received an extension to their FLAP West End Transit Project which included additional funding to implement the above measures.

While this interagency effort improved the situation, recreation use has increased to the point where it now has overwhelmed the measures that have already been implemented. Despite the enforcement of no parking signs and towing and increasing ridership of the shuttle bus, unauthorized parking along SR 14 up to a mile from the trailhead continued. This prompted the USFS to implement an entry permit program to reduce the number of cars that can access the site. The permit system requires each hiker carry a permit or digital proof of permit each year on Saturdays and Sundays during peak spring wildflower season (typically mid-April to mid-June). The permit system has been well received, but it not expected to meet the long-term needs of the site.

The existing parking lot is in a SMA spanning RICs of 1, 2 or 4, which may limit the ability to improve the area in its current location and still maintain current capacity. The land that serves the parking lot also spans three separate owners: WSDOT, USFS and BNFS.

Drano Lake Boat Ramp

Recreation:

Drano Lake is located where the Little White Salmon River flows into the Columbia River and is bordered on its south bank by SR 14. Drano Lake is a popular trolling fishery for Chinook salmon and steelhead trout. Skamania County manages the Drano Lake Boat launch, which is accessed from the parking lot off SR 14. The parking lot is paved and has 45 striped spaces and 3 dedicated ADA spaces, as well as public restrooms. The parking lot is exclusively designated for tow vehicle and boat trailer combinations; single vehicles are not allowed to park in the lot unless a valid handicap permit is displayed.

Existing Conditions:

The Drano Lake parking lot is the only location to launch boats. During peak fishing seasons, the parking lot can fill up and vehicles will park on the south shoulder of SR 14, resulting in pedestrians crossing the highway. The existing parking lot is in a GMA with the majority classified as RIC 4. There is a section of the parking area on the east edge that is classified as RIC 2, which is the same classification as the lake.

Swell City to Spring Creek Hatchery

Recreation:

Swell City to the Hatchery is a popular windsurfing location in the Gorge. Windsurfers and spectators flock to this area, particularly on strong west wind days and weekends. There is privately owned parking at Swell City for approximately 400 feet along the south side of SR 14 near mile post 61.1. There is a daily fee per person, and there are portable toilets and a small seating/picnic area available for viewing. Just east of Swell City is another launch area for windsurfing, with less parking and no amenities or fees. This location is also on private land along the south side of SR 14. There is more parking for river activities off of Spring Creek Hatchery Road on the south side of SR 14 near mile post 61.4. This site is managed by Washington State Parks and there is a fee to park. There are also pit toilets and picnic tables at this site.

Existing Conditions:

On windy days and particularly weekends, parking fills up quickly. Vehicles will park wherever they can find space and people are continually entering and exiting the highway. If parking fills up at the Hatchery parking area, visitors have been observed to park on the north side of SR 14 in a gravel area opposite Spring Creek Hatchery Road, resulting in pedestrians crossing the highway. The existing parking lots are in a GMA and classified as RIC 4.

Coyote Wall and Syncline Trail

Recreation:

Coyote Wall is a spectacular diagonal band of cliffs in the Columbia River Gorge east of the city of Bingen, also known around the Gorge as “The Syncline”. Coyote Wall trailhead provides mountain bikers and hikers with access to over 30 miles of trails with panoramic views of the Gorge and connects to the Catherine Creek trail system. There are no fees to visit and the main trailhead provides a small, paved parking lot with approximately 25 striped parking spaces. A vault toilet and an information kiosk are also present at the trailhead for visitors’ use.

Coyote Wall can also be accessed from a trailhead approximately 1-mile to the east at the junction of SR 14 and Old Highway 8. This trailhead is known as the Syncline Trail East Trailhead. Informal parking is available on the gravel shoulder. There are no other amenities at this site.

Existing Conditions:

The parking lot to Coyote Wall Trailhead is accessed from Courtney Road, which intersects with SR 14 near Look Lake. Courtney Road is maintained by Klickitat County. The trail is extremely popular, especially in the spring. The parking lot frequently fills up and when this occurs, vehicles will park on the shoulder of Courtney Road. This creates a situation where trail users must walk in the roadway, potentially in conflict with vehicles. Courtney Road is narrow and winding, and when vehicles are parked on the shoulder, freight trucks have difficulty navigating the road.

Courtney Road near the Coyote Wall Trailhead parking lot.

Gravel shoulder at Syncline Trail East Trailhead

The existing parking lot is in a SMA with a RIC of 2. This and the existing topography limit the ability to expand the existing parking lot beyond its present size in the current location.

The Syncline Trail East Trailhead is becoming more popular as a bypass to the Coyote Wall Trailhead parking. The proximity to SR 14 and Old Highway 8 and the lack of delineation could result in future safety issues if the location continues to grow in popularity. This informal parking area is within a SMA and classified mostly as RIC 2 but transitions to RIC 1 on the northern corner.

Conversations with USFS staff indicate that there have been instances where visitors unfamiliar with the area have parked in the SR 14 shoulder between Courtney Road and Old Highway 8 trying to access the Coyote Wall trail system. Visitors follow cell phone GPS falsely assuming there is a trailhead accessible from the side of the highway.

Catherine Creek Day Use Area

Recreation:

Connected to Coyote Wall, the Catherine Creek Trail System is one of the best areas in the eastern Columbia River Gorge for spring wildflower viewing and includes a network of multi-use trails for biking, hiking and equestrian use. Amenities at the trailhead, which is open year-round, include approximately 20 to 25 informal, non-striped parking spaces in a gravel lot and an information kiosk for visitors.

Existing Conditions:

The trailhead to the Catherine Creek Day Use Area and system of trails is located on Old Highway 8, approximately 1.5 miles northwest of the intersection of Old Highway 8 at SR 14. Old Highway 8 is owned and maintained by Klickitat County and the existing parking lot straddles County and USFS land. There are trails on each side of Old Highway 8 and no formalized pedestrian crossing of the road. On the busiest days, vehicles will line the county road, hindering through-traffic and degrading the visitor experience.

Facing east toward trailhead on south side of Old Highway 8

The existing parking area is within a SMA and classified as RIC 2. This limits the ability to expand the existing parking lot beyond its present size in the current location.

Catherine Creek gravel parking lot

Klickitat Spit

Recreation:

Klickitat Spit is near the community of Lyle, where the Klickitat River flows into the Columbia River. This is near the Balfour-Klickitat trail and the Lyle Trailhead. The Lyle sandbar is located at the Klickitat Spit and is known to locals as an ideal location for kitesurfing due to the expansive sandbar, shallow waters and consistent winds. Since the sandbar is not maintained by a specific Agency, visitors tend to park wherever they can. The gravel area on the north side of SR 14 west of the Klickitat Bridge serves as informal parking for visitors to the recreation opportunities in the area.

Existing Conditions:

The Lyle sandbar must be accessed via an informal path system that crosses Burlington Northern Santa Fe (BNSF) property and is becoming a safety concern. In addition to the safety concerns of pedestrians crossing an active rail line and busy highway, the gravel parking area on the north side of SR 14 can fill up and overflow onto Old Highway 8, blocking access for heavy vehicles. A public process separate from this study will be needed to fully address the breadth and complexity of concerns at this location.

The existing parking area is within a GMA and classified as RIC 2.

RECREATIONAL OPPORTUNITIES

Projected growth in regional population and recreation is likely to continue its upward trend and managing congestion in the CRGNSA will continue to be a challenge. Despite this increase, the development or reconstruction of recreational opportunities and facilities (e.g., campgrounds, trails,

picnic areas, trailheads) within the study area has not matched pace. As mentioned previously, many trailheads experience parking overflow. As a result, visitors park along nearby roadways, constricting traffic, and causing unsafe highway driving and crossing conditions. This planning process will aim to identify opportunities to spread out demand throughout the CRGNSA and provide a menu of potential strategies to mitigate congestion and enhance safety.

Dog Mountain

Specific to Dog Mountain, while safety mitigation is the primary driver of any potential solution, the USFS is also concerned about the overall carrying capacity of the site. Impacts to the sensitive meadows that draw visitors to this hike are now being documented with encroachment of invasive weeds such as dandelions. Visitor experience may also be degraded judging from causal comments of visitors complaining it was "really crowded." The trailhead, while "grandfathered" in under the CRGNSA Management Plan, would not meet scenic quality standards or RIC standards.

This planning process will explore moving the trailhead to a new location or a combination of redesigning the existing trailhead and developing a new trailhead.

Emerging Hot Spots

During the evaluation of safety and congestion concerns at CRGNSA recreation sites along SR 14, certain locations were flagged as areas to watch for future recurring congestion or safety concerns. These sites may exceed their capacity a few times a year, but not so often that we can anticipate when it will occur. The emerging hot spots may benefit from strategies developed for the sites with recurring congestion and/or safety concerns so it is helpful to identify them now. These emerging hot spot recreation sites are:

- Ozone Climbing
- Ft. Cascades Trailhead
- Bonneville Trailhead
- East Syncline Trail / Rowland Lake
- Lyle Cherry Orchard Trailhead
- Horsethief Butte Trailhead
- Crawford Oaks Trailhead

TRANSPORTATION CONDITIONS

The following analysis of transportation conditions includes a desktop planning-level examination of the corridor based on online databases, field observations, historical traffic data, vehicle crash history, aerial imagery, and geographic information system data.

PHYSICAL FEATURES AND CHARACTERISTICS

State Route 14 traverses five different topographical areas. Most of the corridor is abutted by rock escarpments on the north side, and embankments to the Columbia River or railroad tracks on the south side. Between Washougal and North Bonneville, the route is elevated above the Columbia River, passing through rolling and mountainous terrain. From North Bonneville to Stevenson, SR 14 descends to the same elevation as the Columbia River. Between Stevenson and Home Valley, the route is again elevated above the river, traversing primarily through forest land. From Home Valley to Dallesport, the route again descends along the river. And finally, between Dallesport to the eastern edge of the CRGNSA, the route ascends onto a plateau overlooking the river, traversing primarily grasslands.

ROADWAY CLASSIFICATIONS

SR 14 is a paved, two-lane roadway managed by WSDOT. The pavement width varies throughout the corridor to accommodate sections with passing lanes, provide turnouts and turn lanes. Within the study area, SR 14 is functionally classified as a rural principal arterial by WSDOT and is part of the National Highway System (NHS). These designations suggest that an important objective of the corridor is to connect rural communities and efficiently move traffic over long distances. Posted speeds vary from 25 mph within more populated areas to 55 mph in less populated areas as shown in Table 5.

In addition to the primary corridor, some of the recreation sites in the corridor are accessed via county roads. These roads are generally two-lane rural roads that travel between SR 14 and recreation sites.

BRIDGES AND CULVERTS

Bridge conditions are determined using the National Bridge Inventory (NBI) general condition ratings (GCRs). The GCRs are used to describe the existing bridge as compared to its as-built condition. The material used as well as the physical condition of the deck, superstructure, and substructure of the bridge are considered in the rating. GCRs are given a numerical rating ranging from 0 (failing condition) to 9 (excellent condition) as described in the FHWA Coding Guide.

The bridge condition is classified based on 23 Code of Federal Regulations (CFR) 490.40911. When the minimum GCR of the deck, superstructure, and substructure is 7, 8, or 9, the bridge is classified as “good”. When the minimum GCR is either 5 or 6 the bridge is classified as “fair”. If the minimum GCR is 4 or below the bridge is classified as “poor”. A "Poor" rating is the new rating term for bridges previously described as "structurally deficient" and are prioritized for future work as part of WSDOT’s Bridge Preservation Program. These condition ratings are useful for planning purposes to identify potential issues and needs.

Table 4 summarizes the bridges along the study corridor, their location, what feature they cross and when they were built. This table also lists the curb-to-curb width of each bridge, length condition and who owns and maintains the structure.

Table 4. Study Area Bridges and Culvert Inventory

Bridge No.	Facility	MP	Feature Crossed	Year Built	Curb to Curb Width (ft)	Length (ft)	Condition	Owner
0009275B	SR 14	18.09	Gibbons Crk	1972	40	65	Good	WSDOT
0009275C	SR 14	18.77	BN RR	1972	40	381.9	Fair	WSDOT
0000902A	SR 14	20.90	Lawton Crk	1925	24	44	Good	WSDOT
0017977A	SR 14	24.80	Ped X-ing	2011	N/A	12	Good	WSDOT
0001444A	SR 14	24.92	Half Bridge	1930	30.8	75.1	Poor	WSDOT
0001151A	SR 14	25.04	Cape Horn Slide	1930 1954	24	479	Fair	WSDOT
0017977B	SR 14	26.35	Ped X-ing	2011	N/A	12	Good	WSDOT
08647320	Doetsch Ranch Rd	N/A	BN RR	2006	27.9	174.9	Good	Parks
08647310	Moorage Rd	N/A	Woodard Crk	1998	29.9	25.9	Good	Parks
0001236A	SR 14	34.24	Woodard Crk	1928	24	129.9	Fair	WSDOT
000120CE	SR 14	37.43	Hamilton Crk	1978	44	270	Fair	WSDOT
000064CE	SR 14	37.89	Cascade Dr	1978	44	160.1	Fair	WSDOT
000034CE	SR 14	40.48	BN RR	1978	44	318.9	Fair	WSDOT
0002355A	SR 14	43.90	Rock Crk	1938	24	200.1	Fair	WSDOT
0012630A	SR 14	49.34	Wind River	1985	40.4	663.1	Good	WSDOT
0014259A	SR 14	56.87	Little White Salmon River	1994	36.1	410.1	Good	WSDOT
0002042A	SR 14	59.03	Gulch	1937	24	214.9	Good	WSDOT
0002058A	SR 14	59.44	BN RR	1936	24	126	Fair	WSDOT
0001915A	SR 14	61.62	BN RR	1934	24	158.1	Good	WSDOT
0008842A	SR 14	63.45	White Salmon River	1971	40	295.9	Good	WSDOT
0015470A	SR 14	65.98	Jewett Crk	1999	N/A	20	Good	WSDOT
0001727A	SR 14	75.76	Klickitat River	1933	24	265.1	Fair	WSDOT
0001492A	SR 14	86.03	Half Bridge	1931	27.9	42	Fair	WSDOT
0001492B	SR 14	86.12	Horsethief Canyon	1931	24	91.9	Good	WSDOT
00200140	SR 14	91.83	Cattle Crossing	1965	36	10	Good	WSDOT

Source: National Bridge Inventory (NBI)

PAVEMENT CONDITION

The Washington State Pavement Management System (WSPMS) maintains an online database available to WSDOT employees known as WebWSPMS. This database is WSDOT's principal application for pavement asset management and includes information on maintenance activities, construction costs, and pavement condition and imagery. WSDOT evaluates the condition of asphalt and concrete pavement on state-managed roadways annually using three indicators: smoothness, surface cracking, and rutting. These criteria are used to classify pavement conditions into five categories: very good, good, fair, poor, and very poor. The categories very good, good, and fair show pavement conditions that are considered adequate. Pavement in poor condition is deficient and needs repair, while very poor condition indicates failure and the need for substantial restoration and possibly reconstruction.

For SR 14 through the CRGNSA, pavement condition is not currently available for the entire corridor since sections have not been fully evaluated.[1] Where pavement condition is available, it is summarized below:

- SR 14, MP 58.92 – MP 58.97: Good
- SR 14, MP 59.03 – MP 59.07: Good
- SR 14, MP 61.62 – MP 61.65: Good
- SR 14, MP 86.03 – MP 86.04: Fair
- SR 14, MP 86.12 – MP 86.13: Fair

Although specific ratings are not available for the entire length of the SR 14 corridor, conversations with WSDOT staff indicate that significant pavement issues are addressed as they arise. During the field visit in October 2020, it was clear that patching and spot fixes have been made to SR 14 between Cape Horn and Beacon Rock, which is a known slide area. Driver experience during field visits suggest the remainder of the SR 14 corridor's pavement is generally in good condition but severe weather events in could create new problems if the underlying roadway structure is damaged.

POSTED SPEEDS

Posted speeds vary along SR 14. Outside of urban areas, posted speed ranges from 50 to 60 mph. As SR 14 travels through various communities, the speed reductions vary from 25 mph to 40 mph. Table 5 summarizes the posted speeds for SR 14 through the CRGNSA.

Table 5. SR 14 Posted Speeds

Approximate Location	MP Begin	MP End	Posted Speed (mph)	County
Washougal East City Limit to SE Jody Rd	18.1	21.5	55	Clark
SE Jody Rd to Cape Horn Rd	21.5	26.5	50	Skamania
Cape Horn Rd to 1st St (west)	26.5	43.9	55	Skamania
1st St (west) to 1st St (east)	43.9	44.6	25	Skamania
1st St (east) to Carson Depot Rd	44.6	48.0	50	Skamania
Carson Depot Rd to Cook-Underwood Rd	48.0	63.2	55	Skamania
Cook-Underwood Rd to Charters Rd	63.2	65.8	40	Klickitat
Charters Rd to Willow St	65.8	66.15	30	Klickitat
Willow St to Cedar St	66.15	66.6	25	Klickitat
Cedar St to Bingen East City Limit	66.6	67.1	35	Klickitat
Bingen East City Limit to Canyon Rd	67.1	75.7	60	Klickitat
Canyon Rd to Tacoma Ave	75.7	76.0	40	Klickitat
Tacoma Ave to Eighth St	76.0	76.5	30	Klickitat
Eighth St to Rowena Gap #2	76.5	76.9	40	Klickitat
Rowena Gap #2 to Mt. Hood St	76.9	81.4	60	Klickitat
Mt. Hood St to Schreiner Farms Rd	81.4	82.4	55	Klickitat
Schreiner Farms Rd to Maryhill	82.4	98	60	Klickitat

Source: State Highway Log, WSDOT

[1] https://www.arcgis.com/home/item.html?id=f49a4724610548c693680fa745b0a44e

CLIMBING LANES

Climbing lanes are normally associated with truck traffic, but they may also be considered in recreational or other areas that are subject to slow-moving traffic. Climbing lanes are designed independently for each direction of travel. There are three climbing lanes on SR 14 eastbound at the following locations:

- Eastbound SR 14 MP 27.40 – MP 28.12
- Eastbound SR 14 MP 29.31 – MP 29.84
- Eastbound SR 14 MP 47.62 – MP 48.01

GEOMETRIC ROADWAY CONDITIONS ON SR 14

Existing roadway geometrics were evaluated and compared to current standards. Available horizontal and vertical alignment data was reviewed for SR 14 within the study area.

The American Association of State Highway and Transportation Officials (AASHTO) Greenbook specifies general design principles and controls that determine the overall operational characteristics of the roadway such as design speed. AASHTO's manuals provide guidance for design speed based on facility and operating characteristics; however, some judgment is necessary. Design criteria for the SR 14 study corridor are based on current AASHTO standards as described in the following sections.

Design Criteria

The project team developed design criteria for various roads within the study area. Table 6 lists the design criteria developed from AASHTO design criteria. The design criteria depend on terrain, area context (i.e., urban or rural), and daily traffic volumes. The study corridor appears to be of rural context under rolling terrain on the west end and level terrain on the east end, with projected traffic volumes over 2,000 vehicles per day (vpd). This correlates to a design speed of 50 mph on the west end and 60 mph on the east end. A final determination of design speed will ultimately be made during project development.

Table 6. SR 14 Geometric Design Criteria

Design Element			Design Criteria: Over 2,000 vehicles/day		
Design Control	Design Speed	Level	60 mph		
		Rolling	50 mph		
		Mountainous	40 mph		
Alignment Elements		**Design Speed:**	**40 mph**	**50 mph**	**60 mph**
	Maximum Grade	Level	5%	4%	3%
		Rolling	6%	5%	4%
		Mountainous	8%	7%	6%
	Vertical Curvature (K-value)	Crest	44	84	151
		Sag	64	96	136
	Stopping Sight Distance (SSD)		305	425	570
	Radius		444	758	1200

Sources: David Evans and Associates, Inc., AASHTO Geometric Design of Highway and Streets 2018 (Green Book)
1. Assumes AADT greater than 2,000 veh/day

Horizontal Alignment

Elements comprising horizontal alignment include curvature, superelevation (i.e., the bank on the road), and sight distance. These horizontal alignment elements influence traffic operation and safety and relate directly to the design speed of the corridor. Standards for horizontal curves are defined in terms of curve radius, and they vary based on design speed.

The appendix summarizes each horizontal curve identified along the study corridor. A determination of whether the curve met standards was decided based on the design criteria discussed previously. The controlling design criteria for the horizontal curves are radius and stopping sight distance (SSD). Stopping sight distance for a horizontal curve is evaluated based on the ability to see through the inside of the corner.

There are 305 existing horizontal curves along SR 14 within the study area.

Vertical Alignment

Vertical alignment is a measure of the rate of elevation change of a roadway. The length and steepness of grades directly affect the operational characteristics of the roadway. The controlling design limits for vertical curves are SSD, vertical curvature (K-value), and maximum grade. Vertical curves can be placed into two categories: crest and sag. A crest curve is created at the top of a hill or when the grade decreases. Conversely, a sag curve occurs at the bottom of a hill or when the grade increases. The appendix lists the location and controlling design features for the vertical curves along the study corridor.

According to the AASHTO, the maximum allowable grades for a 50-mph design speed are 4 percent for level terrain, 5 percent for rolling terrain, and 7 percent for mountainous terrain. The rate of vertical curvature is expressed in terms of the K-value. The K-value is defined as a function of the length of the curve compared to the algebraic change in grade, which comprises either a sag or a crest vertical curve. For a 50-mph design speed (rolling terrain), minimum K-values of 84 and 96 are recommended for crest and sag vertical curves, respectively.

Of the 292 vertical curves on SR 14 in the study area, 71 fail to meet the 5 percent maximum grade for a 50-mph design speed (rolling terrain).

TRAFFIC CONDITIONS

Due to the ongoing COVID-19 pandemic, new traffic volume data was not collected as part of the existing conditions analysis. The traffic analysis relies on historic data available from WSDOT. Existing annual average daily traffic (AADT) varies from approximately 2,000-12,000 vehicles per day along SR 14 in the study area. Figure 5 summarizes the historic traffic volumes by mile post from 2015 to 2019.[2] The highest traffic volumes are consistently near MP 65, where the Hood River Bridge meets SR 14 in White Salmon. The bridge is one of the main connections in the region between Washington and Oregon.

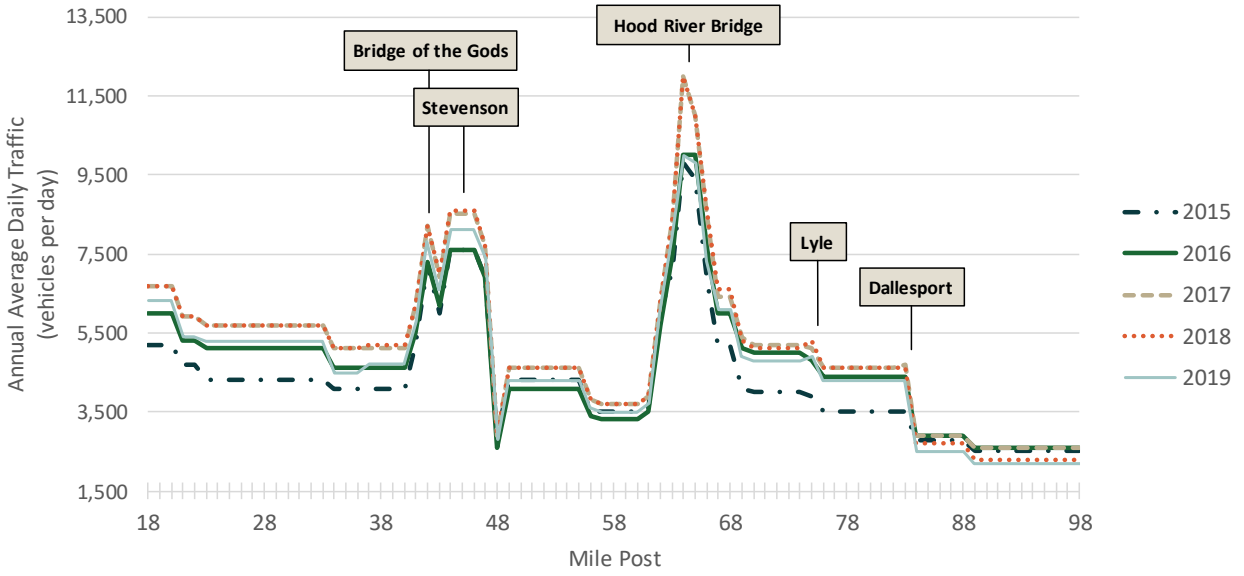
WSDOT reports the top 200 highest volume hours for the year at permanent traffic recorders around the state. In the study area, year 2018 data was available on SR 14 at mile posts 17.7 and 100.64. On the west end of the study corridor the peak hour, or design hourly volume (DHV), is estimated to be 11.5% of the AADT, with approximately 66% of the traffic heading westbound toward Washougal. The most congested

[2] http://www.wsdot.wa.gov/mapsdata/roadway/statehighwaylog.htm

conditions are likely to occur in the late afternoon or evening on a weekend (Friday – Sunday) between May and September, particularly in June.

At the east end of the study corridor, the DHV is estimated to be 14% of the AADT, with approximately 58% of the traffic heading westbound toward Lyle. The most congested conditions are likely to occur in the early to mid-afternoon on summer weekends (Friday – Sunday) between July and August.

Figure 5. SR 14 Annual Average Daily Traffic (AADT), 2015-2019

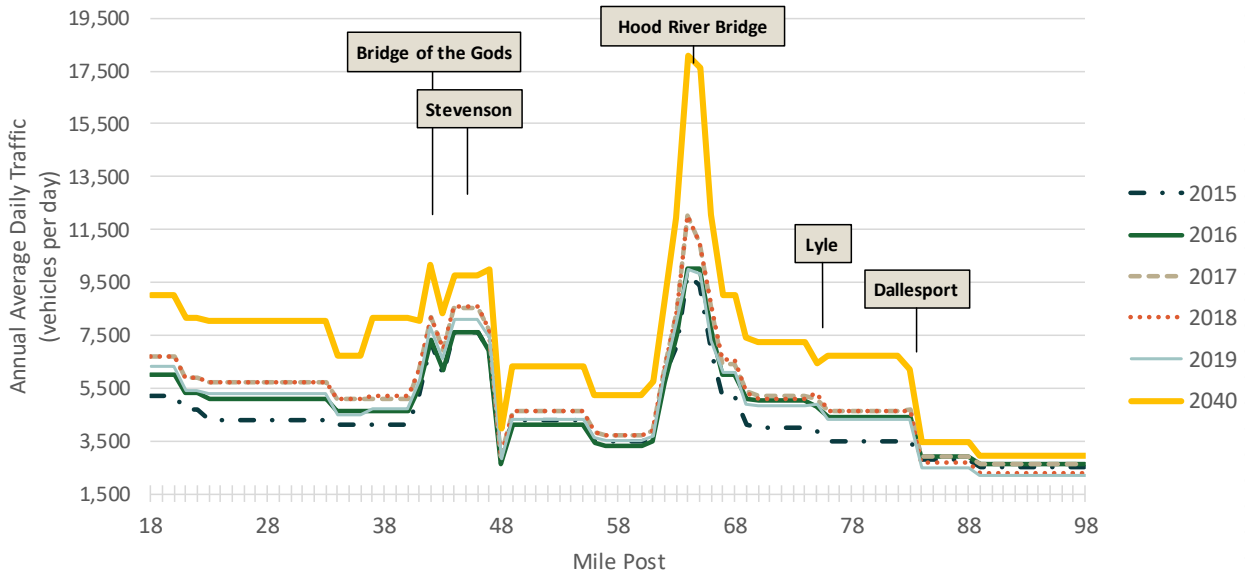


Projected Traffic Volumes

Projected transportation conditions were analyzed to estimate how traffic patterns and characteristics may change compared to existing conditions. The analysis was based on linear trends developed from WSDOT's historic AADT data.

On average, SR 14 traffic volumes are estimated to increase by 60 percent by the year 2040. Figure 6 illustrates the increase relative to the most recent complete five-year historical traffic volumes. The highest increase is expected to occur in the White Salmon and Bingen areas. SR 14 would expect to see a consistent background growth for the length of the corridor, with higher growth in urban areas and between neighboring urban areas.

Figure 6. SR 14 Forecasted Year 2040 Annual Average Daily Traffic (AADT)



Seasonal Variation

Given that SR 14 is the gateway to many tourist activities, with local and non-local visitors, the corridor sees significant seasonal variation. Though transit options do exist, they are very limited, resulting in the primary mode of access being the single-occupancy vehicle. Therefore, traffic volumes closely follow the tourism seasonality within the study area.

As previously mentioned, the landscape consists of mountains, fields, wildflowers, marshlands, wildlife refuges, and the Columbia River Gorge itself; and recreational activities include hiking, mountain biking, fishing, wind surfing, bird watching, picnicking, and sightseeing, all of which are outdoor activities. As a result, the peak season along the eastern part of the study area is spring, mainly due to the endless wildflowers in bloom and active bird watching. Along the western part of the study area, spring and summer experience peak activity due to the various sporting activities and ideal outdoor weather.

Throughout the entire study area, the low season tends to be winter, primarily January and February, due to the inclement weather, including heavy rains, high winds, and muddy hiking trails.

Heavy Vehicle Traffic

The Freight and Good Transportation System (FGTS), in Washington State, classifies freight corridors by modes based on annual freight tonnage moved, including truck, rail, and waterway freight corridors. Each modal network is classified into five tiers and the specific annual tonnage thresholds are described below:

- T-1 corridors: more than 10 million tons
- T-2 corridors: 4 million to 10 million tons
- T-3 corridors: 300,000 to 4 million tons
- T-4 corridors: 100,000 to 300,000 tons
- T-5 corridors: at least 20,000 tons in 60 days and less than 100,000 tons per year

According to the FGTS, SR 14 is classified as a T-3 corridor for most of the study area, except for the segment between the Bridge of the Gods and Wind River Road, which is classified as a T-2 corridor. Due

to the narrow, single lane in each direction, oversized/overweight restrictions apply to the corridor throughout the study area, requiring pilot cars for vehicles over 10 feet wide in most segments. As a result, truck traffic is minimal within the study area, as summarized in Table 7 below.

Table 7. Truck Percentages by Mile Post

Begin MP	End MP	Annual Tonnage	Truck Percentage
17.05	21.77	3,640,000	14.5%
21.77	41.55	3,640,000	14.5%
41.55	47.47	5,010,000	13.6%
47.47	63.48	3,640,000	15.3%
63.48	83.53	3,640,000	15.3%
83.53	101.02	2,460,000	19.3%

Source: 2019 Washington State FGTS Corridor Classifications by State Routes

MULTIMODAL

BICYCLE

There are no bicycle facilities that provide non-highway connections between communities in the study area; SR 14 is the only continuous connection and may only appeal to avid cyclers. There are safety concerns, particularly for cyclists riding on SR 14 outside of the urban areas where there are limited or no shoulders and high auto speeds. SR 14 also has several unlit tunnels where cyclists are forced to share the road with vehicles in areas with limited visibility due to lack of illumination. These conditions make cycling between communities in the CRGNSA prohibitive for many.

As mentioned previously, some recreation opportunities provide mountain bike trails, however the users of these trails use personal vehicles to get to the recreation site. Some recreational road cyclists do a loop of the eastern side of the CRGNSA, traveling on SR 14 between the Hood River Bridge and the Dalles Bridge.

Bicycle travel along the SR 14 corridor requires sharing the road with vehicles. Bicycles may use shoulders where available, but the shoulders are narrow and are often used for overflow or illegal parking. Guardrail and rock walls parallel the highway in some areas, further restricting shoulder use for bicycles and tight curves limit sight distance.

PEDESTRIAN

Pedestrian use within the corridor is limited to urban areas and within or near recreation sites. The rural segment of SR 14 most likely to experience pedestrian traffic is where the Pacific Crest Trail crosses the Bridge of the Gods and connects into the trail on USFS lands. Between the Bridge of the Gods and the trail, pedestrians must travel along the shoulder of SR 14 for approximately 500 feet. Pedestrians are also prevalent at recreation sites where the trailheads or recreational resources are adjacent to SR 14. Pedestrians walking from parked vehicles to trailheads share shoulders and roadway where space is limited, sometimes crossing SR 14 in hazardous areas with limited sight distance and high vehicular speeds.

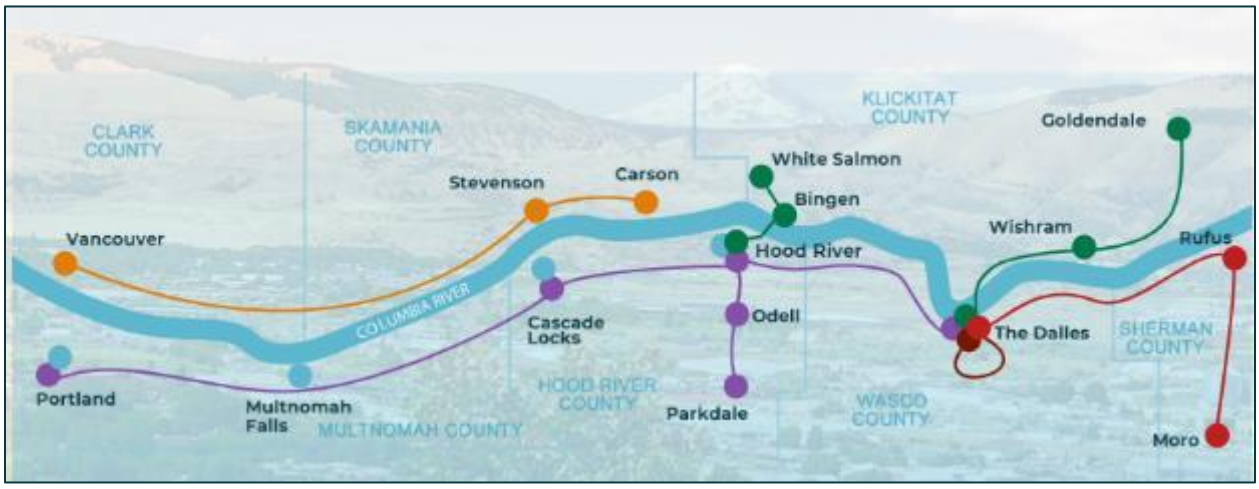
TRANSIT

There are several independent public transportation service providers within the Columbia River Gorge area. Each provider is a member of *Gorge Translink*, an alliance of rural transportation providers, human

service organizations and public planning agencies. The *Gorge Translink* objective is to enhance connectivity and develop a seamless network of transportation services within the Mid-Columbia River Gorge area while linking services to the metropolitan cities of Portland, Oregon and Vancouver, Washington.

Figure 7 maps the various public transportation services in the Columbia River Gorge corridor. Five transportation providers form the *Gorge TransLink* alliance. *Gorge Translink* Providers include Mt Adams Transportation Service (Klickitat County), Skamania County Transit, Columbia Area Transit (Hood River County), the Link (Wasco County), and Sherman County Community Transit. Public transportation services offered by each provider are summarized below, by state.

Figure 7. Map of Public Transportation Services



	Transit Provider	Service Area	Fixed-Route Bus Service				Typical Fare
			Monday-Friday	# Daily Trips	Saturday-Sunday	# Daily Trips	
Washington	Mount Adams Transit Service (MATS)	White Salmon – Bingen - Hood River (OR)	X	10	-	-	$1.00 (1-way)
		Goldendale – Wishram – The Dalles	X	2	-	-	$1.00 (1-way)
	Skamania County Transit	Vancouver – Stevenson – Carson	X	2	X	2	$1.00 (1-way)
Oregon	Columbia Area Transit	City Route	X	17	-	-	$1.00 (1-way)
		Upper Valley Route	X	4	-	-	$1.00 (1-way)
	The Link	The Dalles Loop	X	hourly	-	-	$1.50 (1-way)
	Sherman County Transit	Moro – Rufus – The Dalles	Dial-A-Ride Only				$5 per DAR round trip
	Columbia Gorge Express	Portland – Multnomah Falls – Cascade Locks – Hood River	X	8	X	6	$10 (1-way)

Map Source: Gorge Translink.

Washington Transit Service Providers

Mt. Adams Transportation Service

Mt. Adams Transportation Service (MATS) is a community transportation service provided by Klickitat County, largely for seniors. Services provided by MATS include two fixed bus routes (see Figure 7), Dial-A-Ride (DAR) and Non-Emergent Medical Transportation (NEMT). DAR services are available for seniors and

people with disabilities and the general public, with priority service to riders with medical and essential needs.

MATS operates bus and DAR services Monday through Friday, from about 8:00 a.m. to 5:00 p.m. MATS operates two daily round trips on the Goldendale-The Dalles route, and 10 daily round trips on the White Salmon-Hood River Route. The two fixed route bus lines are open to the general public. There is no transit service on holidays or weekends.

Transit fares are $1.00 (each way) on the two bus routes. Fares vary for DAR service depending on trip location.

Senior transportation is funded in part by the Area Agency on Aging and Disabilities of Southwest Washington and by Klickitat County. Other funding is provided by the Washington State Department of Transportation (WSDOT) and Federal Transit Administration (FTA) grants, and through fare revenue.

Skamania County Transit

Skamania County Transit (SCT) is a community transportation service provided by Skamania County. Services provided by SCT includes one fixed route (see Figure 7), DAR and NEMT. DAR services are available for seniors, people with disabilities and low-income riders.

The fixed-route bus service operates between Carson, Washington and the Fisher's Landing Transit Center in Vancouver, WA (with connecting bus service via C-Tran to various Clark County and Portland, Oregon destinations). The fixed route bus line is open to the general public, with two round trips daily. During summer months, SCT provides shuttle service to a few trailheads along the Gorge within Skamania County. With 24 hours' notice, the transit bus will deviate up to 3/4 miles off Wind River Highway and SR 14 to accommodate persons with disabilities.

Skamania County operates bus and DAR services Monday through Friday, from about 8:00 a.m. to 4:30 p.m. There is no transit service on holidays or weekends.

Transit fares are $1.00 (each way) for bus and DAR trips within Skamania County, and $2.00 for trips outside Skamania County. Funding is provided by WSDOT and FTA grants, and through fare revenue.

At present, there is no public transportation service connection between Carson and Bingen, Washington, or between Bingen and Wishram, Washington.

Oregon Transit Service Providers

Hood River County Transportation District

Hood River County Transportation District is a special transportation service district that operates fixed bus route and DAR services as **Columbia Area Transit (CAT).** Services provided by CAT includes three fixed bus routes (see Figure 7), DAR and NEMT. DAR services are available for seniors and people with disabilities and the general public.

CAT operates localized service on two local routes: The Hood River City Route and the Upper Valley Route. The Hood River City Route operates every 45 minutes between 7:00 a.m. and 7:00 p.m., Monday through Friday. The Upper Valley Route operates four daily round trips between Hood River city center and Parkdale, Oregon near Highway 35.

Transit fares are $1.00 (each way) on the local CAT bus routes. Fares vary for DAR service depending on trip location, generally $2.00 within Hood River with special pass options.

Funding for local CAT City Route and Upper Valley service is provided by the state and FTA grants, local property taxes, and through fare revenue.

Through special funding agreement with the Oregon Department of Transportation (ODOT) in 2019, CAT assumed operations of the Columbia Gorge Express. Columbia Gorge Express operates eight round trips a day (about every 90 minutes) along the I-84 corridor with stops at Gateway Transit Center, Multnomah Falls, Cascade Locks and Hood River, Oregon. Some buses continue east to The Dalles, Oregon. Weekday service is generally from 7:00 a.m. to 6:30 p.m. (eight round trips) and weekend service is from 7:00 a.m. to 4:00 p.m. (six round trips). From the Gateway Transit Center in Portland, Oregon, the Columbia Gorge Express provides connections to multiple parks and trailheads in the Gorge along I-84 and the Historic Columbia River Highway in Oregon.

As shown in Figure 8, Columbia Gorge Express Riders are mostly visitors from out of state and use the bus primarily for sightseeing and hiking or biking activities in the Gorge.

One-way trip fares for the Columbia River Gorge Express is $10.00. Annual passes are also available.

The Link Public Transit

The Link Public Transit is a community transportation service provided by Wasco County through the Mid-Columbia Economic Development District. Services provided by The Link include fixed route bus (see Figure 7), DAR and NEMT. DAR services are available for seniors and people with disabilities and the general public.

The Link operates bus and DAR services in The Dalles urban area Monday through Friday, from about 6:00 a.m. to 6:00 p.m., and on Saturday from about 9:00 a.m. to 4:00 p.m. Transit fares are $1.50 (each way) on the bus route and DAR services.

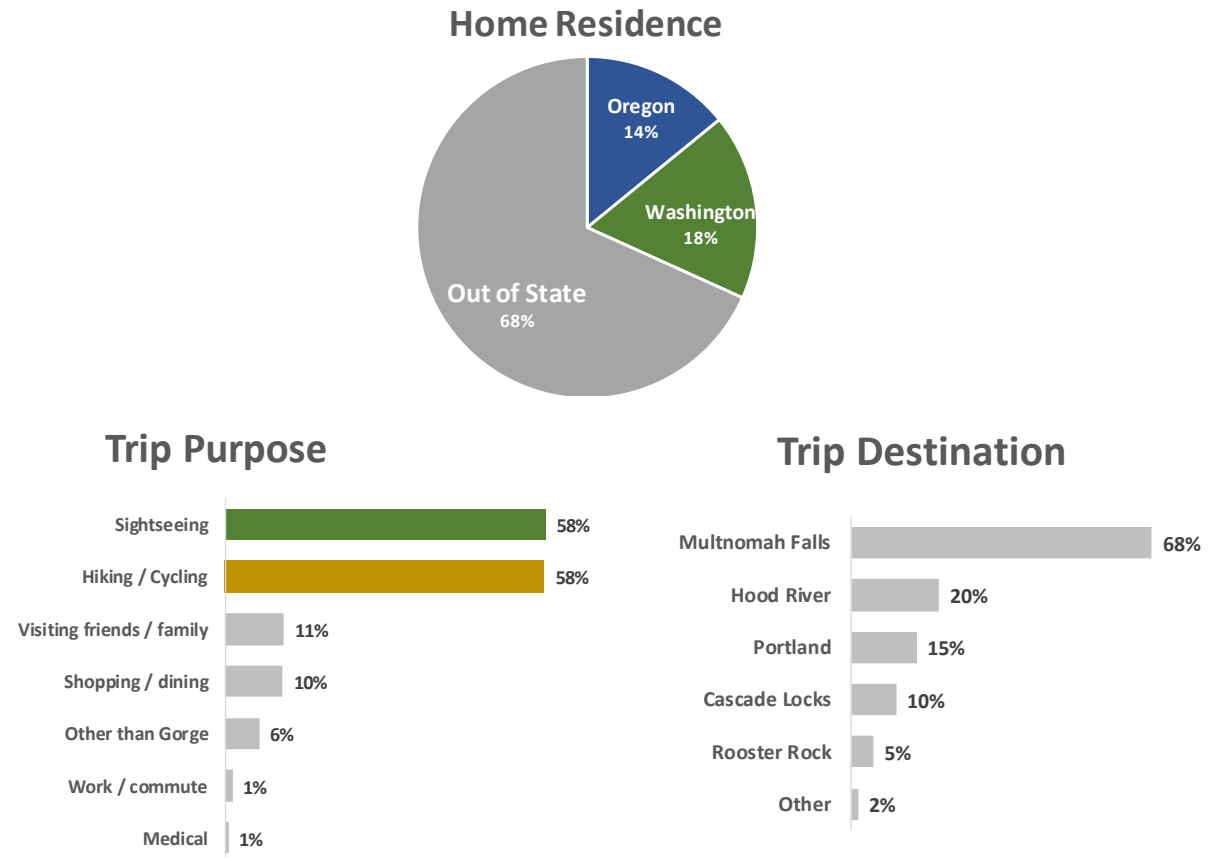
Sherman County Community

Sherman County Community is a community transportation service provided by Sherman County with DAR and NEMT services. DAR services are available for seniors and people with disabilities and the general public.

Sherman County Community Transit DAR services are offered Monday through Thursday, from about 8:00 a.m. to 5:00 p.m. Transit fares are $5.00 per round trip.

Sherman County receives ODOT Special Transportation Funds (STF), Statewide Transportation Improvement Funds (STIF), FTA Capital Funds, and State/Federal Discretionary Grant Funding to provide priority transportation to seniors and disabled persons.

Figure 8. Travel Characteristics of Columbia Gorge Express Riders



Data Source: Oregon Department of Transportation, 2019.

SAFETY

This section provides an analysis of the most recent five-year crash history within the study area. Crash data was obtained from the Washington Department of Transportation's (WSDOT) Crash Data and Reporting Branch. The crash records were provided in a GIS shapefile and included all reported crashes from January 1st, 2015 to December 31st, 2019 within Clark, Skamania, and Klickitat Counties. The data was trimmed to include crashes within a 500 ft radius of SR 14 from MP 18 to MP 98. In addition to reported crashes, any unreported crashes discovered during the project timeline are discussed.[3]

CRASH HISTORY AND TRENDS

A total of 768 reported crashes occurred in the study area from January 1st, 2015 to December 31st, 2019. Approximately 92% occurred on SR 14, and 8% occurred on an adjacent street. The crashes were

[3] *Disclaimer: Under 23 U.S. Code § 148 and 23 U.S. Code § 409, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.*

summarized in tabular format and graphed to look for trends. The following characteristics were reviewed:

a. Number of Crashes by Severity and Year
b. Crash Frequency (#) by Crash Type
c. Crash Frequency (#) by Driver Circumstance (Contributing Factor)
d. Crash Frequency (#) by Vehicle Type and Number of Vehicles Involved

A detailed review of crashes that occurred within 500 ft of a study area trailhead is included. In addition, a summary is provided of all crashes that resulted in a fatality.

Number of Crashes by Severity and Year

Of the 768 reported crashes, 65% (498) resulted in no apparent injury/property damage only, 15% (115) resulted in a suspected minor injury, 13% (103) in a possible injury, 3% (22) in a suspected serious injury, 2% (17) were unknown, and 1.7% (13) resulted in a fatality. Figure 9 summarizes the crash frequency by severity and year. Figure 10 shows each crash along the corridor labeled by severity level.

Figure 9. Crash Frequency by Severity and Year

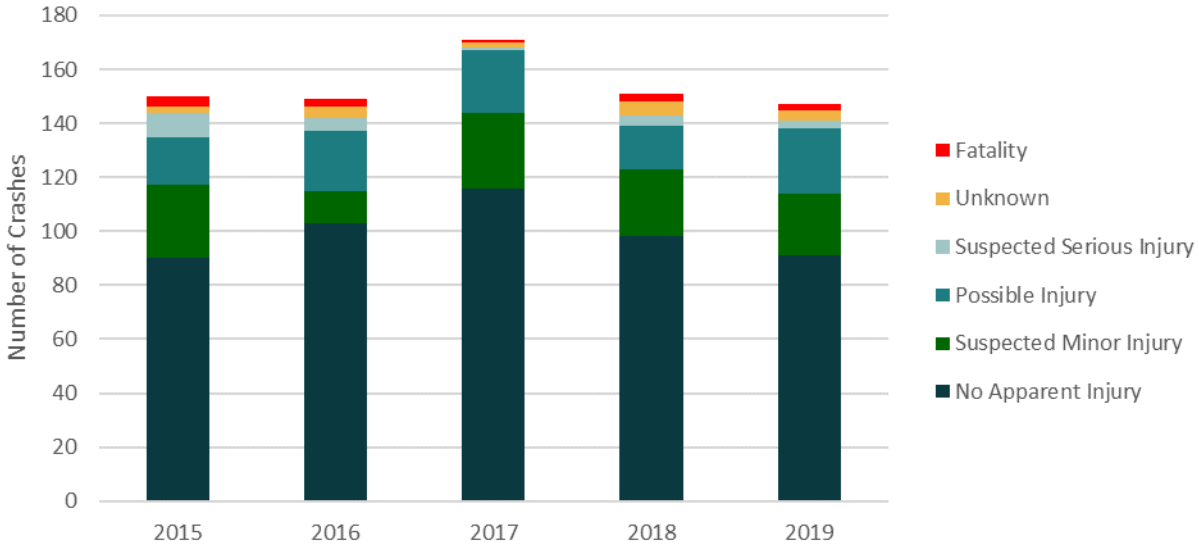


Figure 10, Sheet 1 of 2

Study Area Crashes by Severity (2015-2019)

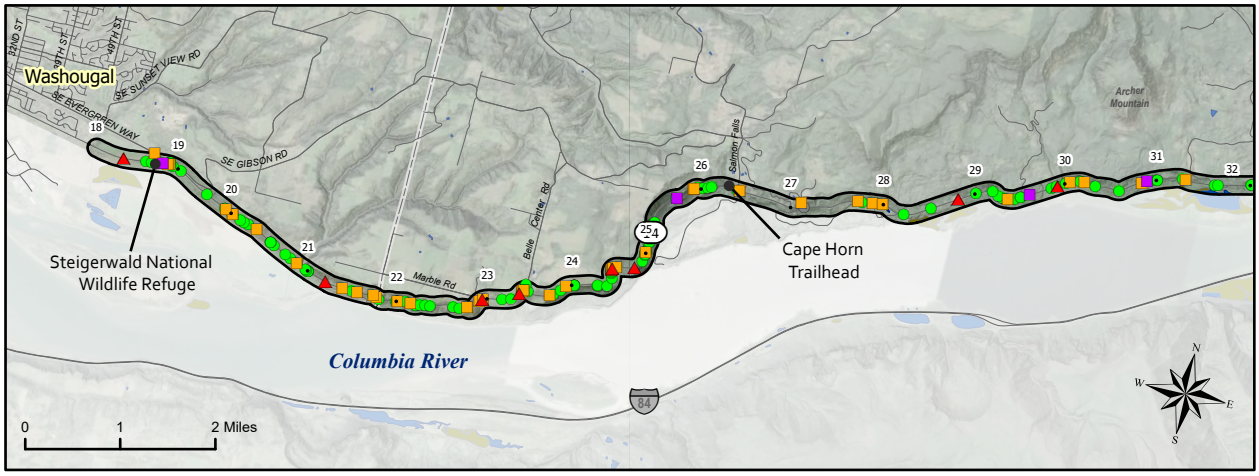
Legend

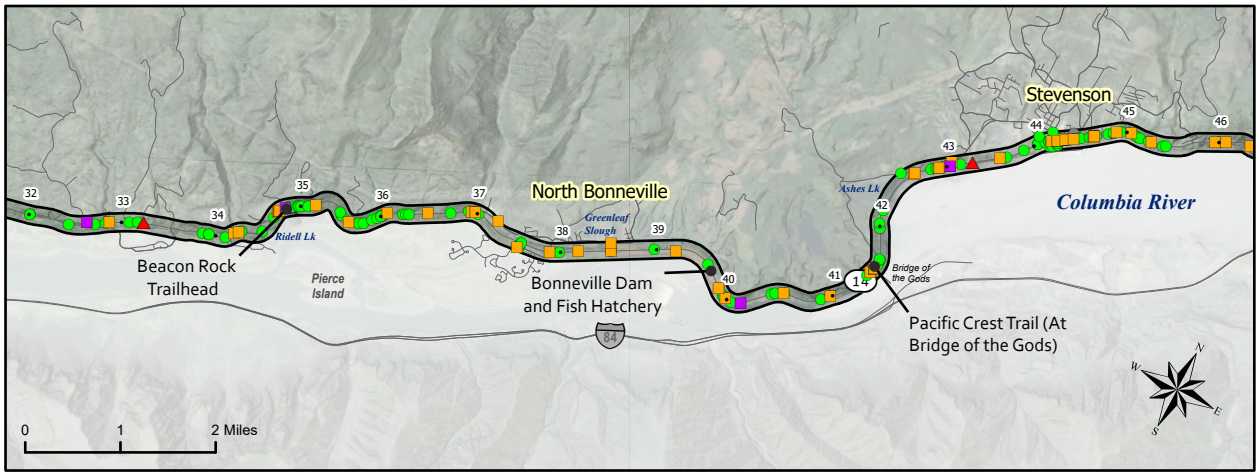
- Study Area
- Milepost Marker

Crash Type

- Fatality
- Suspected Serious Injury
- Suspected Minor/Possible Injury
- No Apparent Injury
- Unknown

Data Source: WSDOT





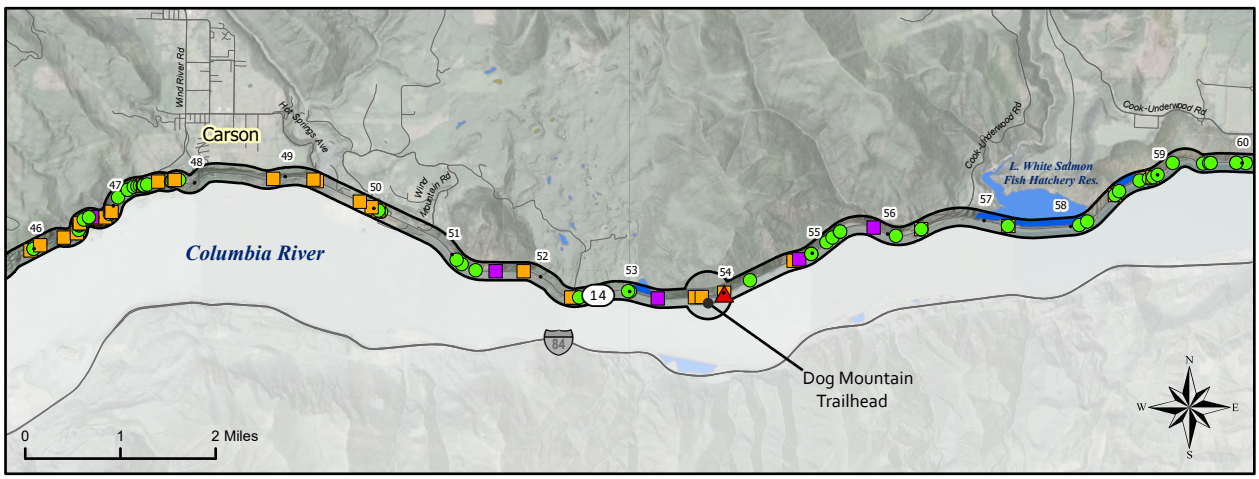


Figure 10, Sheet 2 of 2

Study Area Crashes by Severity (2015-2019)

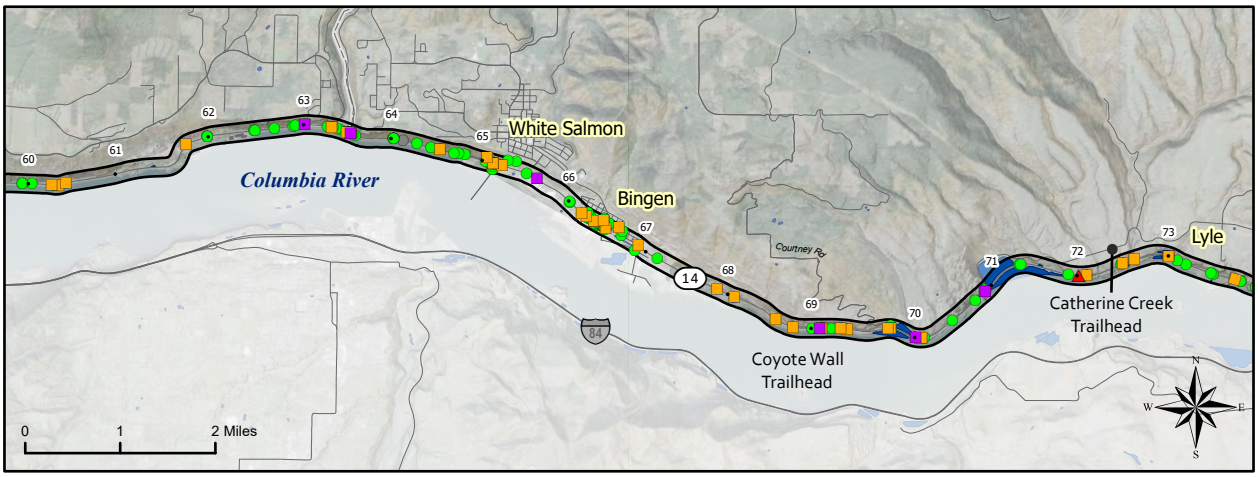
Legend

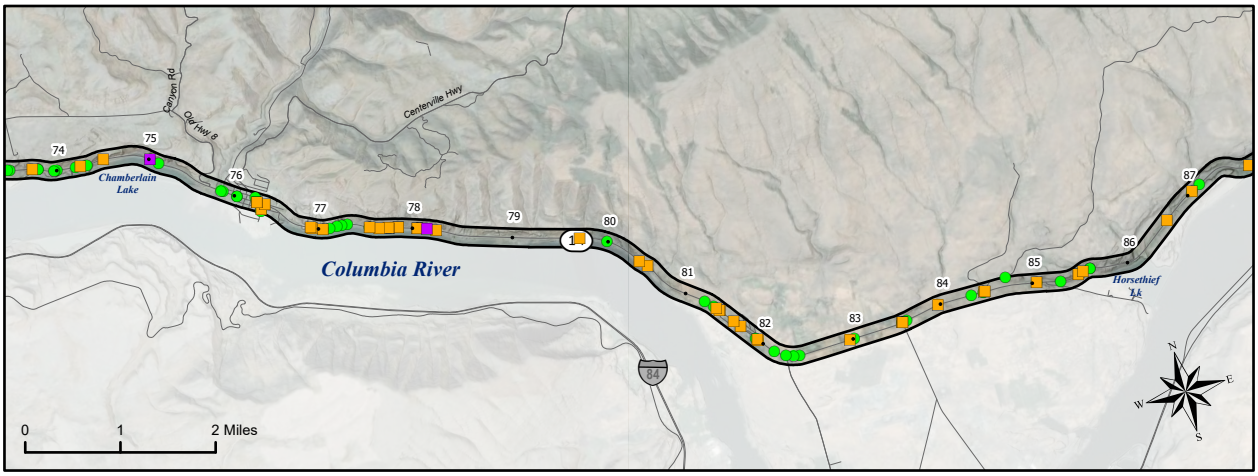
- Study Area
- Milepost Marker

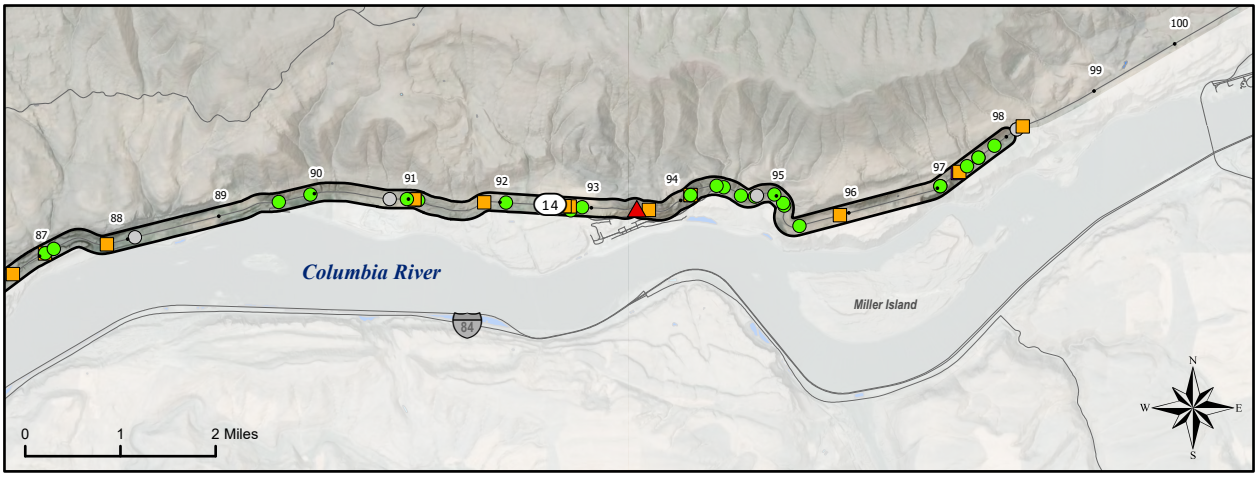
Crash Type

- Fatality
- Suspected Serious Injury
- Suspected Minor/Possible Injury
- No Apparent Injury
- Unknown

Data Source: WSDOT



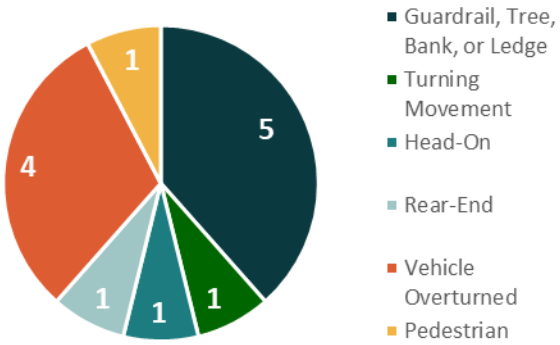




FATALITIES

Thirteen fatalities occurred within the study area from January 1st, 2015 to December 31st, 2019, none of which occurred within 500 ft of a trailhead. Figure 11 summarizes the crash type for crashes that resulted in a fatality. Approximately 38% of fatal crashes were a result of a collision with a fixed object such as a guardrail, tree, bank, or ledge, in which all crash reports documented that the vehicle was going straight ahead, not navigating a turn.

Figure 11: Collision Type of Fatal Crashes



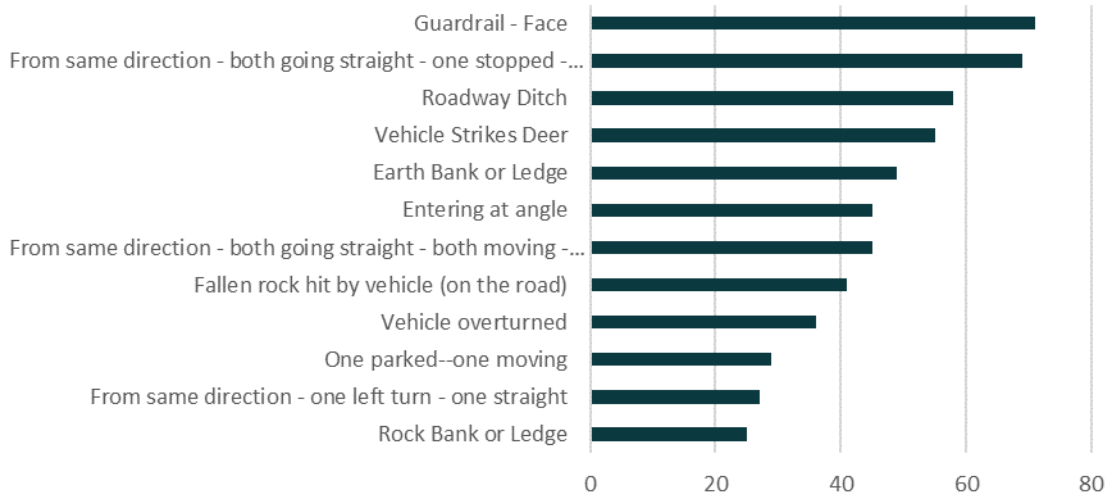
Each fatality occurred in a unique location along the corridor, indicating no geographical hot spots for fatalities. Eleven (85%) fatal crashes occurred in clear or partly cloudy conditions with dry pavement. Ten (77%) fatal crashes occurred in the daylight, one occurred at dusk, and the other two in the dark without streetlights. One of the fatalities that occurred in the dark without streetlights included a pedestrian.

Crash Frequency (# crashes) by Crash Type

There are 59 documented crash types in the crash dataset. Figure 12 summarizes crash frequency by crash type for those which include over 20 crashes, equating to a total of 550 crashes. This leaves 274 crashes randomly distributed over 47 other crash types.

Collisions with a guardrail were the most common throughout the study corridor, followed by rear-end collisions. These crash types are consistent with a scenic, winding highway with many cross streets, turnouts, access points, and trailheads, especially during the peak tourism season in which thousands of visitors from out of state visit, many of whom may not be familiar with the corridor.

Figure 12. Crash Frequency (# crashes) by Crash Type

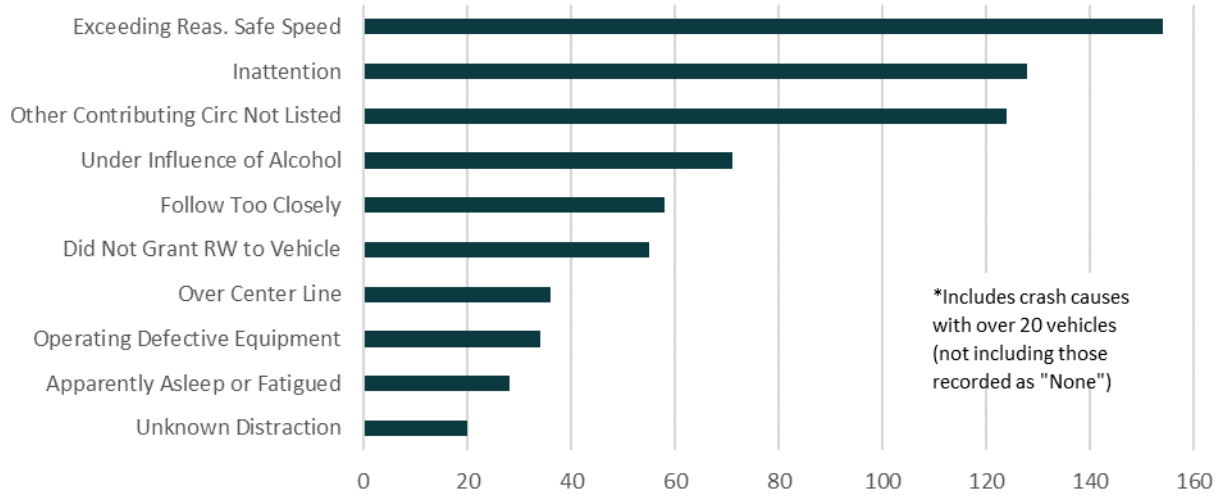


Crash Frequency (# vehicle-crashes) by Driver Circumstance (Crash Cause)

There are 33 documented crash causes recorded in the crash dataset. In this section, the data is summarized by number of vehicle-crashes, rather than number of crashes, since many crashes involved more than one vehicle and therefore, more than one primary contributing factor – one from each driver. Figure 13 summarizes crash frequency (number of vehicles involved in crashes) by crash cause for causes that include over 20 vehicle-crashes, equating to a total of 708 vehicle-crashes. This leaves 311 vehicle-crashes split between 23 other crash causes.

The most common contributing factor to crashes throughout the corridor was exceeding reasonable safe speed (not in excess of posted speed limit), followed by inattention. Over 70 vehicle-crashes involved alcohol.

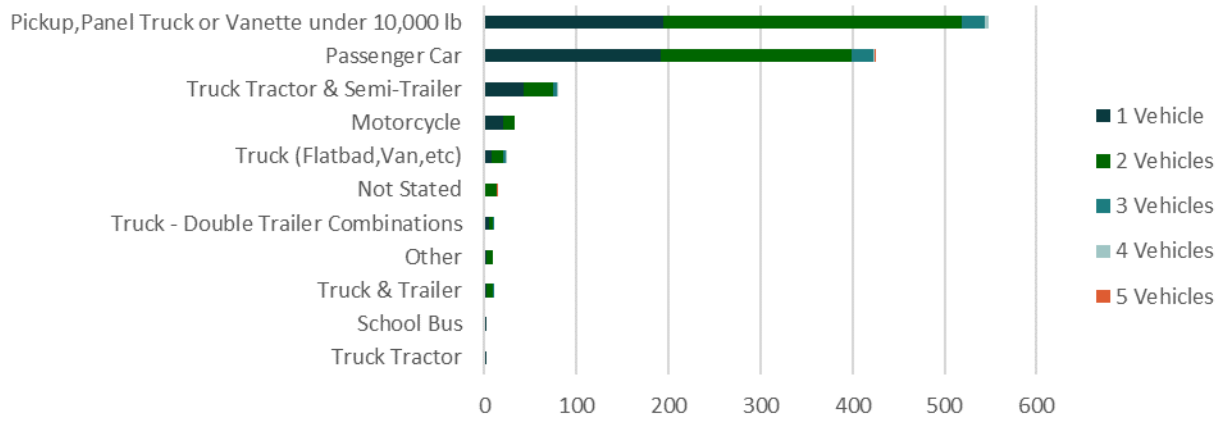
Figure 13. Crash Frequency (# Vehicles) by Contributing Factor (Crash Cause)



Crash Frequency (# crashes) by Vehicle Type and Number of Vehicles Involved

There are 11 documented vehicle types in the crash dataset, including “other”. Figure 14 summarizes crash frequency by vehicle type and number of vehicles involved. Most crashes involved a passenger car or pickup truck, with most crashes involving two vehicles, followed by one-vehicle crashes. There were 33 crashes involving a motorcycle, 20 of which involved no other vehicles, and 13 of which involved another vehicle.

Figure 14. Crashes by Vehicle Type and Number of Vehicles Involved



Crash Density

Figure 15 shows the crash densities along the corridor. As shown, concentrations of crashes tend to be within city limits, around sharp curves, or near trailheads and other stopping points along the highway. These crash patterns are consistent with a single-lane State highway and indicate no unusual crash patterns.

Figure 15, Sheet 1 of 2

Crash Density (2015-2019)

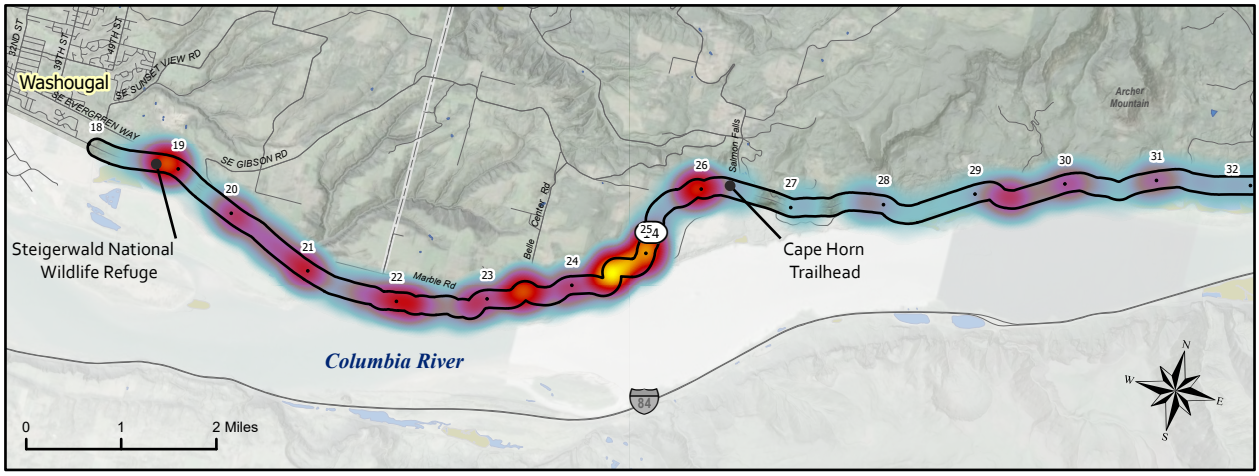
Legend

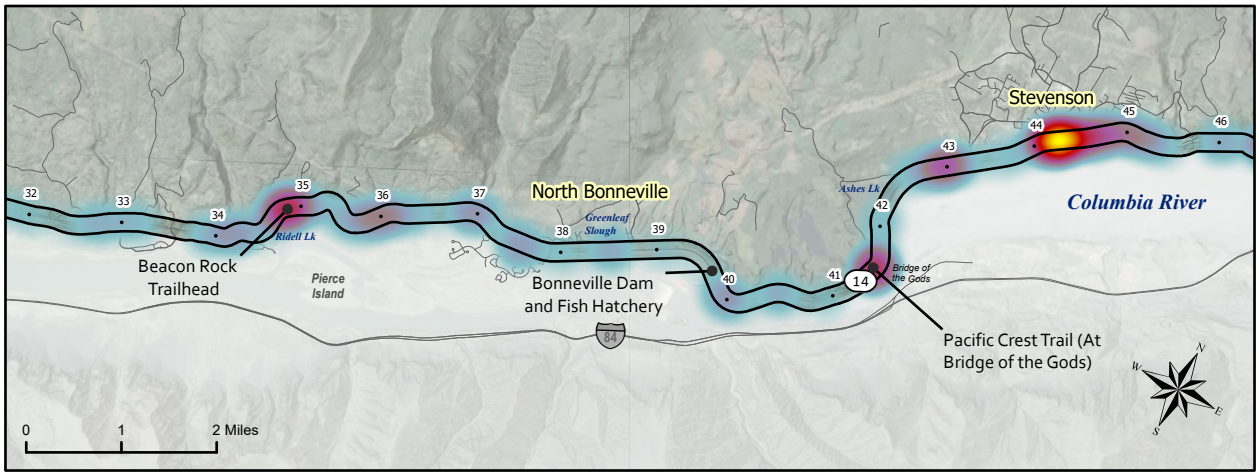
- Study Area
- Milepost Marker

Crash Density

- Sparse
- Dense

Data Source: WSDOT





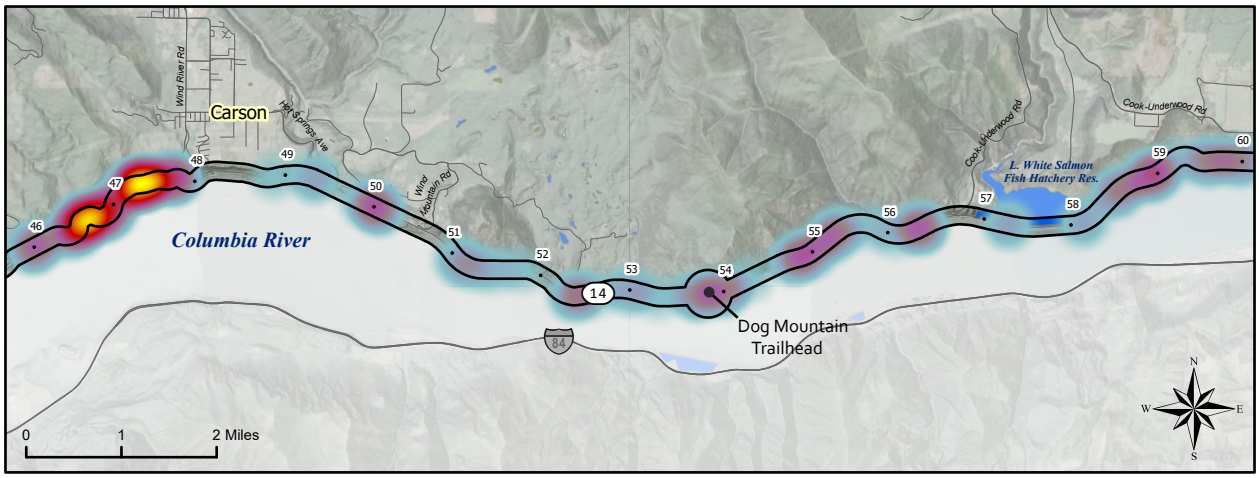


Figure 15, Sheet 2 of 2

Crash Density (2015-2019)

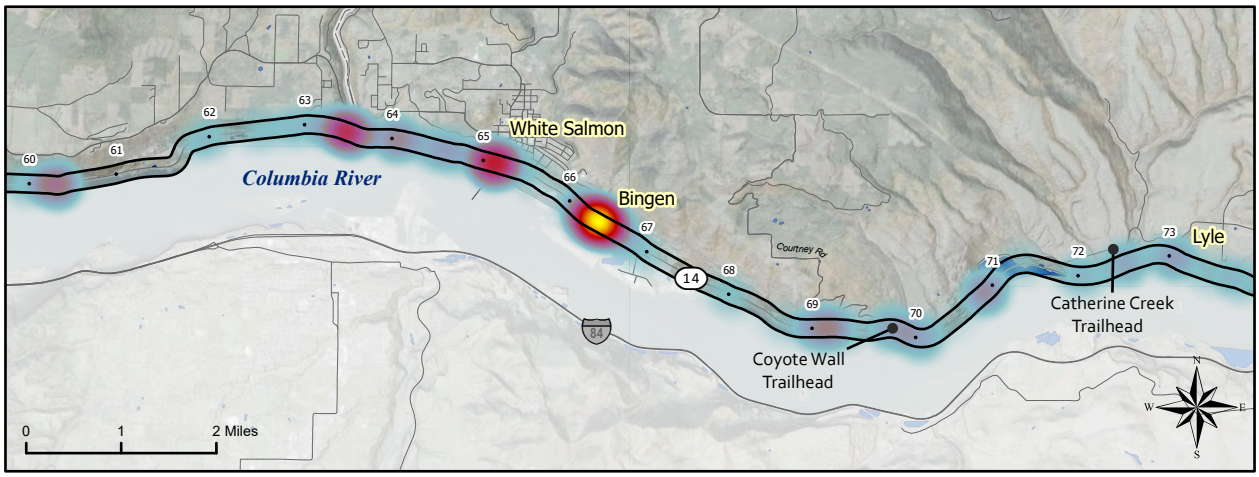
Legend

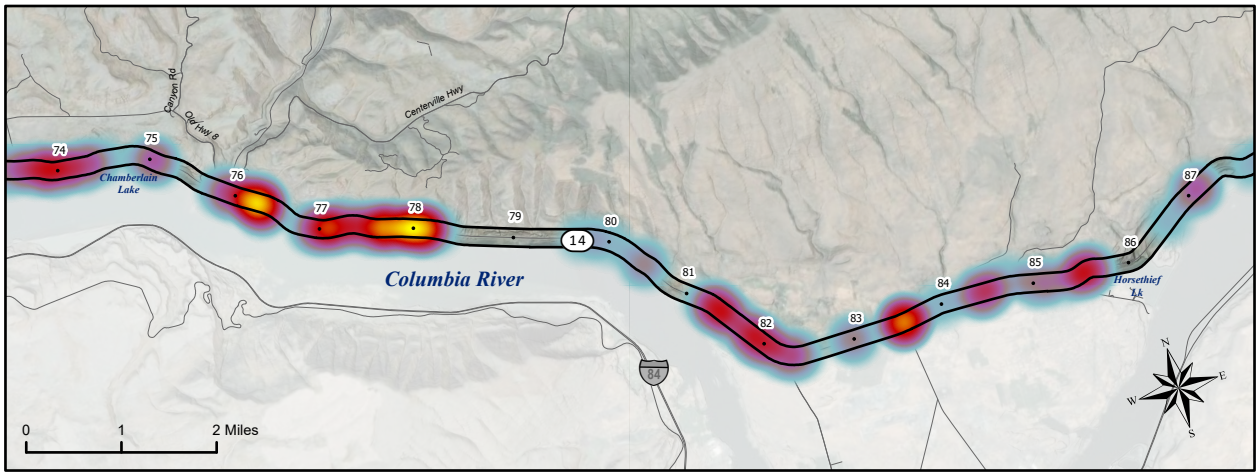
- Study Area
- Milepost Marker

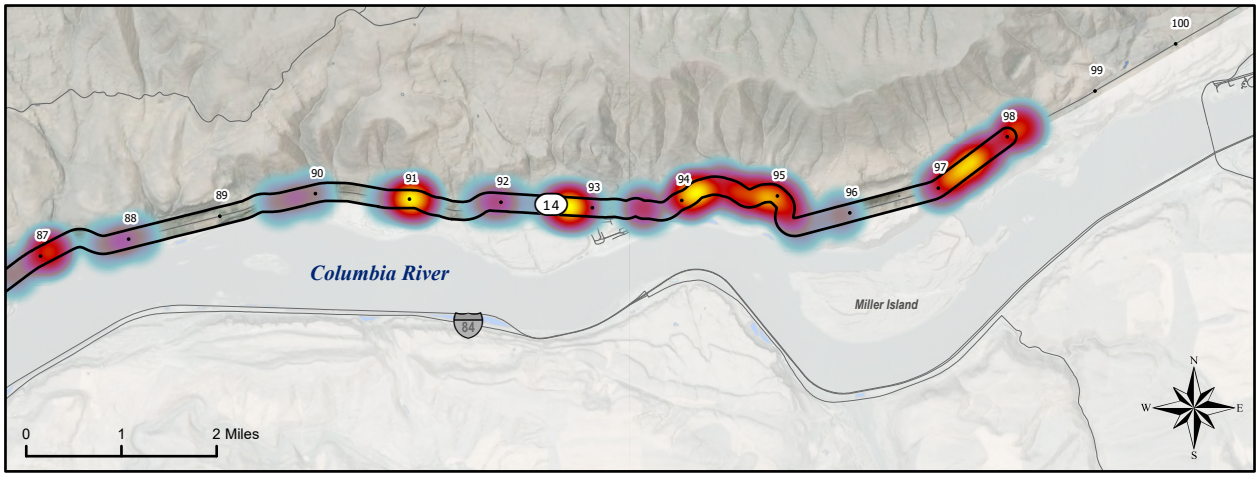
Crash Density

- Sparse
- Dense

Data Source: WSDOT







NETWORK SCREENING

The Highway Safety Manual (HSM) Part B describes the critical crash rate method as a means of identifying locations that warrant further investigation. The critical crash rate is specific to the study area and considers average crash rates at comparable sites, traffic volume, and a confidence interval.

Critical intersection crash rates were calculated for the study intersections with sufficient reference populations. Intersection crash rates are calculated based on number of crashes per Million Entering Vehicles (MEV) for the analysis period (in this case, 5 years). Table 8 summarizes the study intersections that exceeded the critical crash rate for its reference population.

Critical segment crash rates were also calculated for the study area. A segment crash rate is calculated based on the total number of vehicles traveling on the road segment during the specified period. This is called vehicle miles of travel (VMT). VMT is usually expressed as Million Vehicle Miles (MVM). Table 9 summarizes segments that exceed the critical crash rate.

Table 8. SR 14 Intersections Exceeding Critical Crash Rate (2015-2019)

Access to SR 14	5-Year Crash Total	Intersection Crash Rate (crashes/MEV)	Intersection Critical Crash Rate
Access Serves Recreational Site			
Bridge of the Gods	8	0.56	0.30
Coyote Wall (Courtney Rd)	4	0.45	0.36
Syncline Trail (Catherine Creek) (Old Hwy 8)	5	0.57	0.36
Access Serves General Public			
SE Evergreen Blvd	5	0.43	0.32
Belle Center Rd	4	0.41	0.34
Cook-Underwood Rd	4	0.61	0.41
SR 141	7	0.49	0.29
6th St	3	0.34	0.34
US 197	7	1.53	0.48

Sources: WSDOT Crash Data (2015-2019); David Evans and Associates, Inc.

Table 9. SR 14 Segments Exceeding Critical Crash Rate (2015-2019)

Segment Description	Beg. MP	End MP	5-Year Crash Total	Segment Crash Rate (crashes/MVM)	Segment Critical Crash Rate
West end of CRGNSA	18.00	23.42	66	1.24	1.08
Cape Horn	23.42	26.38	54	1.89	1.16
Doetsch Ranch Rd to West Bonneville	34.08	37.04	37	1.49	1.19
Wishram	44.13	44.65	11	1.43	1.09
East end of CRGNSA	94.38	98.07	18	1.34	1.31

Sources: WSDOT Crash Data (2015-2019); David Evans and Associates, Inc.

ENVIRONMENTAL SCAN

The information contained in this section provides a planning-level overview of environmental resources and identifies potential constraints and opportunities for the SR 14 and Dog Mountain Congestion and Safety Plans. The scan is not a detailed environmental investigation. This screening exercise is a scoping-level effort that includes information available through desktop studies and does not include site information verified through a site visit. If improvement options are forwarded from the study into project development, an analysis for compliance with the National Environmental Policy Act (NEPA) and other applicable federal and state regulations will be completed as part of the project development process. Information provided in this report may be forwarded into the NEPA process at that time.

The CRGNSA Management Plan contains specific protections, including avoidance buffers and mitigation measures, for natural resources. These protections are most restrictive in areas designated SMA and in some cases are slightly less restrictive in areas designated GMA, where some level of human development is allowed. In either case, proposed developments in the CRGNSA are required to inventory natural resources and prepare plans to protect, manage, and/or mitigate impacts to them in consultation with the appropriate state and federal agencies.

Resources with specific preservation directives in the CRGNSA Management Plan include the following:

- Wetlands, lakes, ponds
- Streams and riparian habitats
- Priority habitats and sensitive wildlife sites
- Rare plants and natural areas
- In the SMA, forest resources through the review of forest practices

PHYSICAL ENVIRONMENT

GEOLOGIC HAZARDS

The National Earthquake Hazards Reduction Program (NEHRP) seismic site classification system provides a measure of the potential for strong shaking in an area during an earthquake. This approach categorizes soils into six classes (A–F) based on vertical shear wave velocity profile, thickness and liquefaction potential, where earthquake hazard potential generally increases from Class A to Class E. Site class F is reserved for unusual soil conditions where prediction of earthquake shaking can only be determined by a site-specific evaluation (FEMA 2003). Much of the study area from its western terminus to the Dog Mountain trailhead is classified as Site Class D or E, indicating high potential for earthquake shaking and liquefaction. East of Dog Mountain trailhead to the project's eastern terminus, most of the study area is classified as Site Class B, denoting relatively lower potential for earthquake shaking and liquefactions. Interspersed, isolated areas within this stretch are classified as Site Class C, D, and E (see Figure 16).

The Washington Geological Survey maintains a clearinghouse of geologic hazard information, including mapped landslides and landslide hazard potential. Figure 17 shows the extent of historic landslide deposits along the length of the study area, along with landslide potential.

Shallow landslides are those that occur at depths of less than approximately 6 – 10 feet. Although they are typically minor, their potential speed and long runout can make them dangerous to humans (City of Seattle 2019). Deep-seated landslides occur at depths of more than 6 - 10 feet and are typically ancient

landslides that have been on the landscape for centuries or longer. Most deep-seated landslides are slow, allowing people to escape them without issue. However, some can be dangerous if they go undetected and can cause considerable damage to buildings and infrastructure (City of Seattle 2019).

Generally, the potential for earthquake shaking, liquefaction, and landslides appears to be lower in the eastern portion of the study area. Projects forwarded from this study will need to account for nearby geologic hazard potential in the project design. Depending on the nature of a proposed project, geotechnical investigations may be required to support project design and construction.

STREAMS, RIPARIAN HABITATS, AND WETLANDS

The abundance of streams and other aquatic habitats is one of the defining traits of the CRGNSA, from both scenic quality and natural resources perspectives. The CRGNSA Management Plan policies emphasize protecting and enhancing aquatic and riparian systems. This includes expanding stream buffers, requiring vegetation enhancement, protecting cold water refuge habitats, and other approaches. Activities that impact streams, riparian habitats, wetlands (including ponds and lakes), and their buffers must be avoided or offset through mitigation and restoration to the greatest extent practicable.

Streams and Riparian Areas

Healthy functioning stream ecosystems provide society with many benefits, including water purification, flood control, nutrient recycling, waste decomposition, fisheries, recreation, and aesthetics (USGS 2020). The riparian areas associated with streams and other waterbodies throughout the study area are a key contributing element to the health of stream ecosystems. Riparian areas represent the transition from aquatic to terrestrial ecosystems and provide numerous benefits including energy flow, nutrient cycling, water cycling, hydrologic function, and refuge, foraging, and breeding habitat for a multitude of wildlife species (NRCS 1996). Riparian areas in the study area are commonly home to species such as turtles, neotropical bird species, and raptors such as the bald eagle (CRGC and USFS 2020).

The study area parallels the Columbia River throughout its extent. Large tributary streams located within the study area include the White Salmon River, Klickitat River, Wind River, and Little White Salmon River. Numerous other tributary streams of varying sizes, together with their associated riparian areas, are located throughout the extent of the study area (see Figure 18). A total of approximately 34.49 miles of streams and their associated riparian areas intersect with the study area. The CRGNSA Management Plan stipulates that proposed uses adjacent to streams, ponds, and lakes must preserve an undisturbed buffer zone that is wide enough to protect both the aquatic and riparian areas. Buffer zones are based on the characteristics of the individual stream (i.e. perennial, intermittent) and the vegetation community type (i.e. forest, shrub, herbaceous). For projects forwarded from this study, field surveys would be required to determine potential impacts to any streams and associated riparian areas. Coordination with the appropriate state or federal wildlife agency (WDFW, USFWS, and/or USFS) would be required to determine the appropriate width for proposed protective buffers and to develop plans for protection or mitigation as necessary. For any unavoidable in-stream impacts, coordination with WDFW, the U.S. Army Corps of Engineers (USACE), and other state and federal agencies as applicable would be required.

Wetlands

Wetlands are abundant throughout the CRGNSA, providing a multitude of ecological, economic, and social benefits. They provide habitat for fish, wildlife, and plants - many of which have commercial or recreational value. They also recharge groundwater, reduce flooding, provide clean drinking water, offer food and fiber, and support cultural and recreational activities (USFWS 2020a).

The USFWS National Wetlands Inventory (NWI) (USFWS 2020a) identifies approximately 1,616.3 acres of wetlands within the study area. The extent of mapped wetlands within and adjacent to the study area is shown in Figure 18. For any projects that are forwarded as a result of this study, on-site delineations will need to be conducted according to the Level 2 Routine On-Site Method (USACE 1987; USACE 2010) in order to verify the presence of wetlands and identify any potential impacts.

The CRGNSA Management Plan stipulates that new uses must be sited to avoid wetlands to the greatest extent possible. Impacts to wetlands may only be allowed when they are unavoidable, in the public interest, and all practicable measures to minimize impacts have been applied. Projects forwarded from this study would need to assess the potential for wetland impacts and provide sufficient buffer zones to avoid impacts. Project proposals that could affect wetlands would require coordination with the appropriate agencies that regulate wetland impacts (USACE, Washington Department of Ecology) and impacts to wildlife habitat (USFWS, WDFW, and USFS and/or NMFS as applicable) to determine appropriate impact mitigation or compensation approaches.

FLOODPLAINS AND FLOODWAYS

Floodplains provide flood risk reduction benefits by slowing runoff and storing floodwater. They also provide other economic, social, and environmental benefits that are often overlooked when local land use decisions are made. Floodplains frequently contain wetlands and other important ecological areas that directly affect the quality of the local environment. Some of the benefits of floodplains to a functioning natural system include:

- Fish and wildlife habitat protection
- Natural flood and erosion control
- Surface water quality maintenance
- Groundwater recharge
- Biological productivity
- Higher quality recreational opportunities (fishing, bird watching, boating, etc.) (FEMA 2020)

Figure 19 shows the extent of floodplains associated with the Columbia River and its tributaries along the extent of the study area. Approximately 1,822.7 acres of the study area are located within the Special Flood Hazard Area (SFHA). No regulatory floodways are identified within the boundaries of the project area. The SFHA throughout the study area is primarily characterized as areas subject to inundation by the 1-percent-annual-chance flood event (i.e. 100-year floodplain) with base flood elevations undetermined. A small portion of the study area near the western terminus is characterized as areas subject to inundation by the 0.2-percent-annual-chance flood event (i.e. 500-year floodplain) (FEMA 2020). The study area encroaches on the 100-year floodplain in numerous locations interspersed throughout its extent from the western terminus to Horsethief Lake The study area does not encroach into the floodplain between Horsethief Lake and its eastern terminus.

Most counties and major cities have floodplain regulations within their local codes. This is true for all the jurisdictions within the study area. Typically, these regulations are consistent with the FEMA Model Floodplain Code. Under FEMA regulations (Executive Order [EO] 11988, Floodplain Management, 1977), no alteration of flood zones shall result in an increase in the base flood elevation (BFE) or an increase in the velocity of floodwaters without FEMA approval. The BFE is defined in the FEMA regulations as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given

year," which is also referred to as the 100-year floodplain. EO 11988 directs all federal agencies to refrain from conducting, supporting, or allowing an action in a floodplain unless it is the only practicable alternative. U.S. Department of Transportation Order 5650.2, Floodplain Management and Protection, describes policies and procedures for "ensuring that proper consideration is given to avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs and budget requests." Projects forwarded from this study would need to determine during the planning phase whether development would take place within the 100-year floodplain. If it is not possible to avoid development within the 100-year floodplain, projects would be required to comply with floodplain regulations of the specific jurisdiction(s) in which the project is located.

Figure 16, Sheet 1 of 2

Seismogenic Hazards

Legend

- Study Area

NEHRP Seismic Site Class

- B
- C
- C to D
- D
- D to E

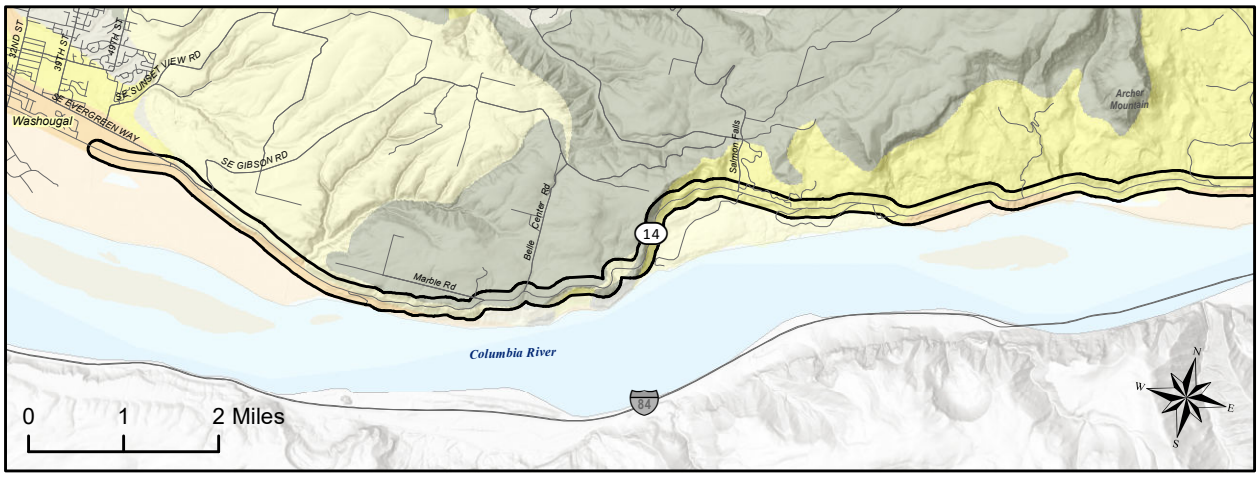
Active Faults, Known or Suspected

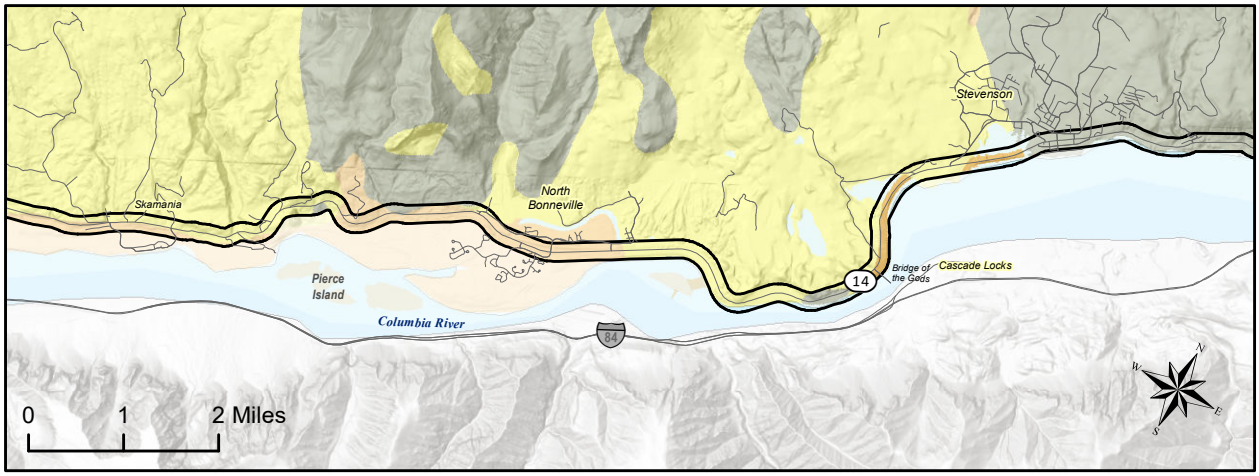
- Visible fault trace
- Concealed fault trace

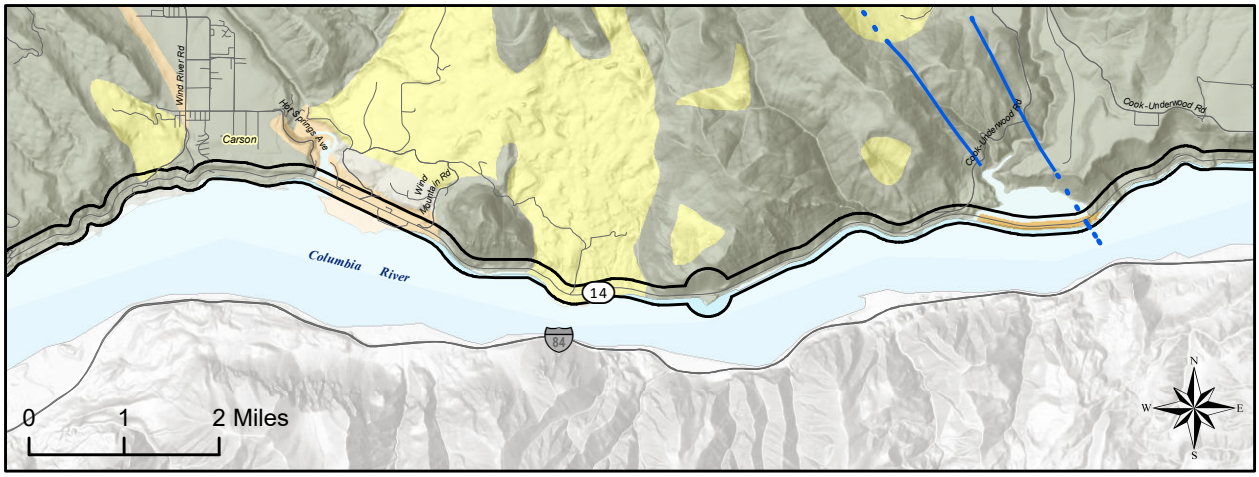
Seismogenic Folds, Known or Suspected

- Visible fold trace

Data Source: Washington Geological Survey (WGS)







Seismogenic Hazards

Legend

Study Area

NEHRP Seismic Site Class

- B
- C
- C to D
- D
- D to E

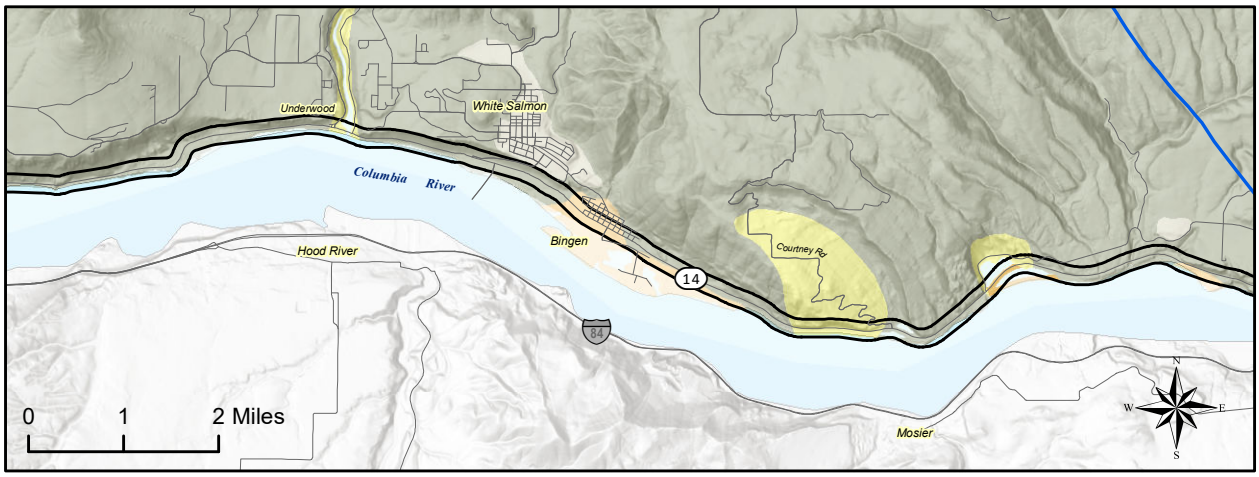
Active Faults, Known or Suspected

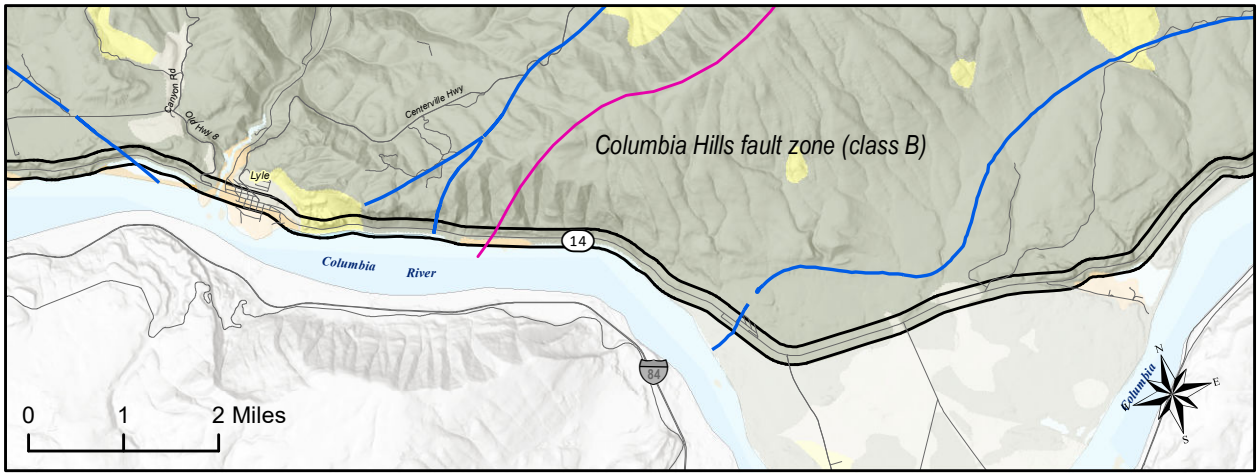
- Visible fault trace
- Concealed fault trace

Seismogenic Folds, Known or Suspected

- Visible fold trace

Data Source: Washington Geological Survey (WGS)





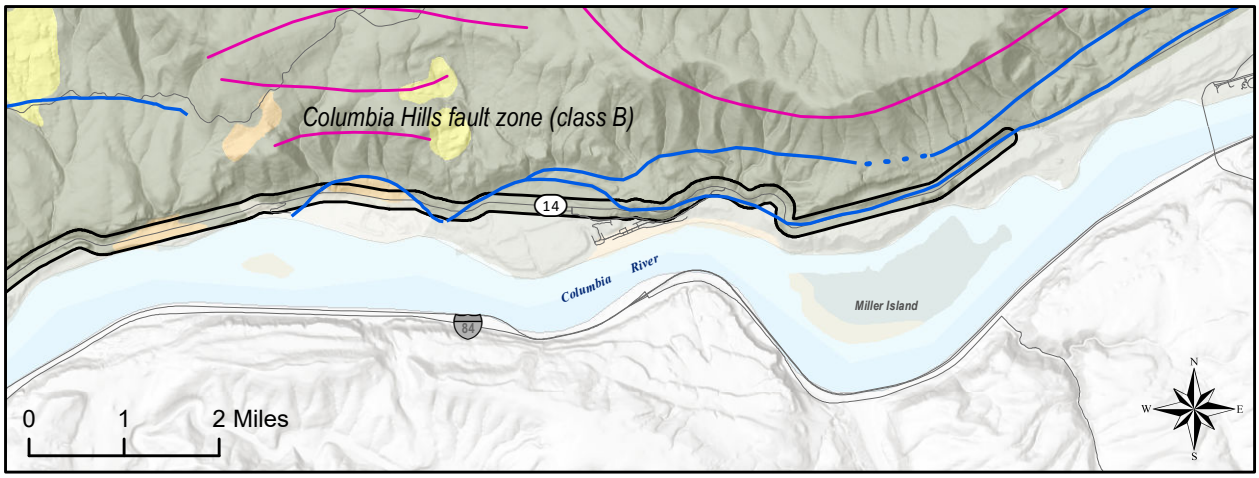


Figure 17 , Sheet 1 of 2

Landslide Hazards

Legend

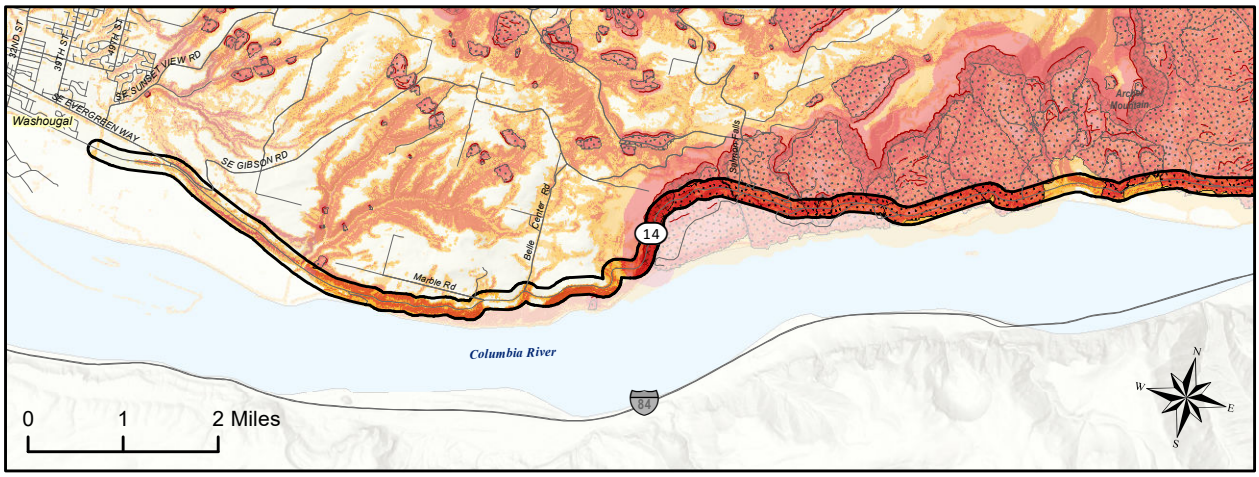
- Study Area
- Landslide Deposits
- Scarps and Flanks

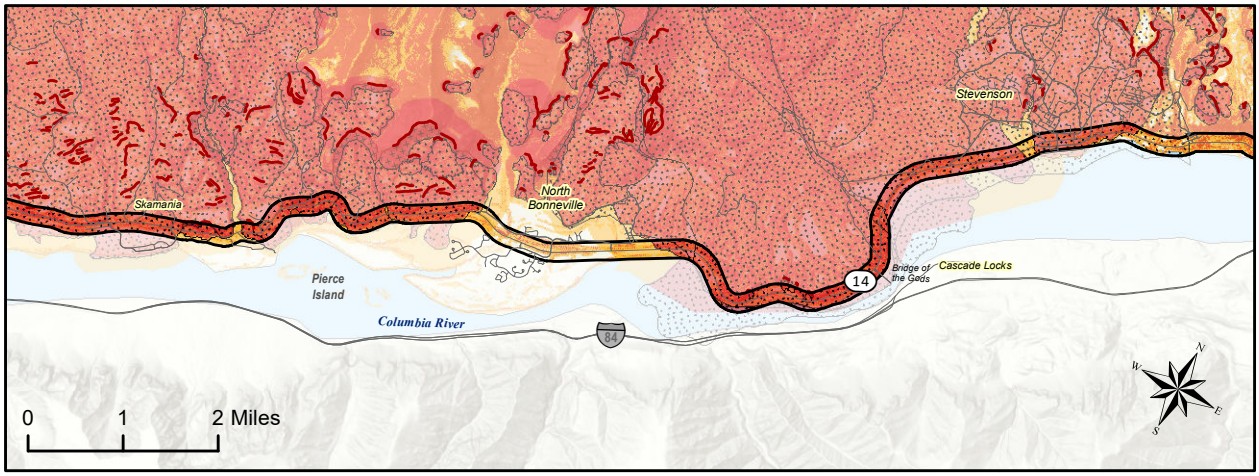
Landslide Susceptibility*

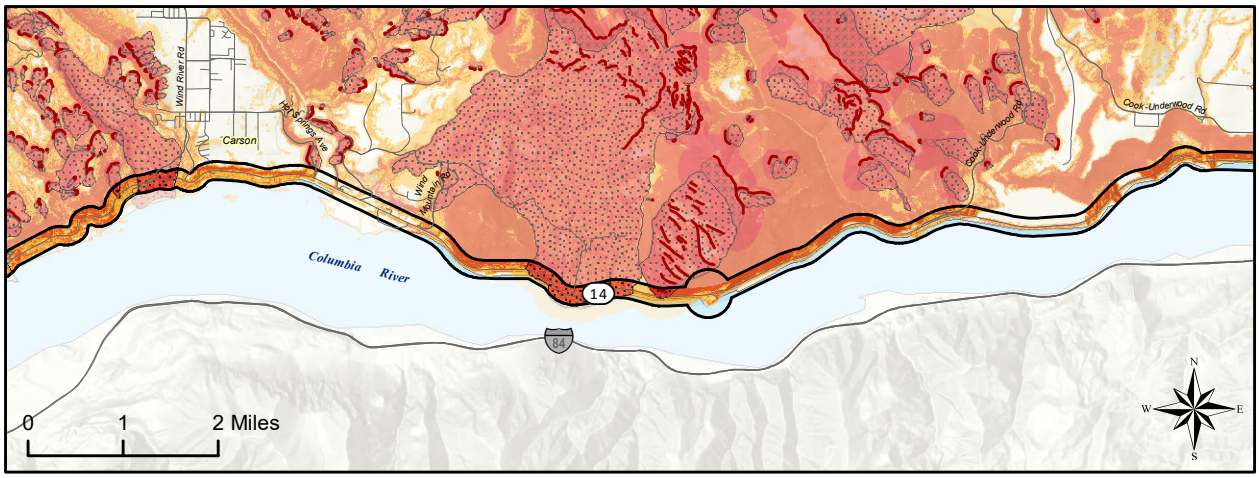
- Moderate
- High

* Landslide susceptibility is shown for both deep and shallow landslides; high susceptibility is prioritized

Data Source(s): Washington Geological Survey (WGS), WSDOT







Landslide Hazards

Legend

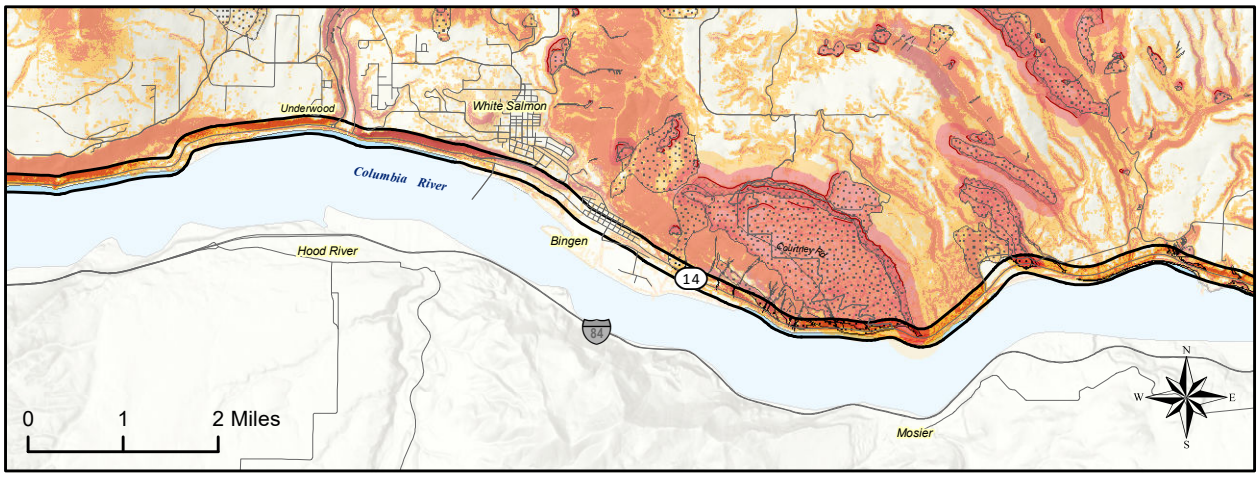
- Study Area
- Landslide Deposits
- Scarps and Flanks

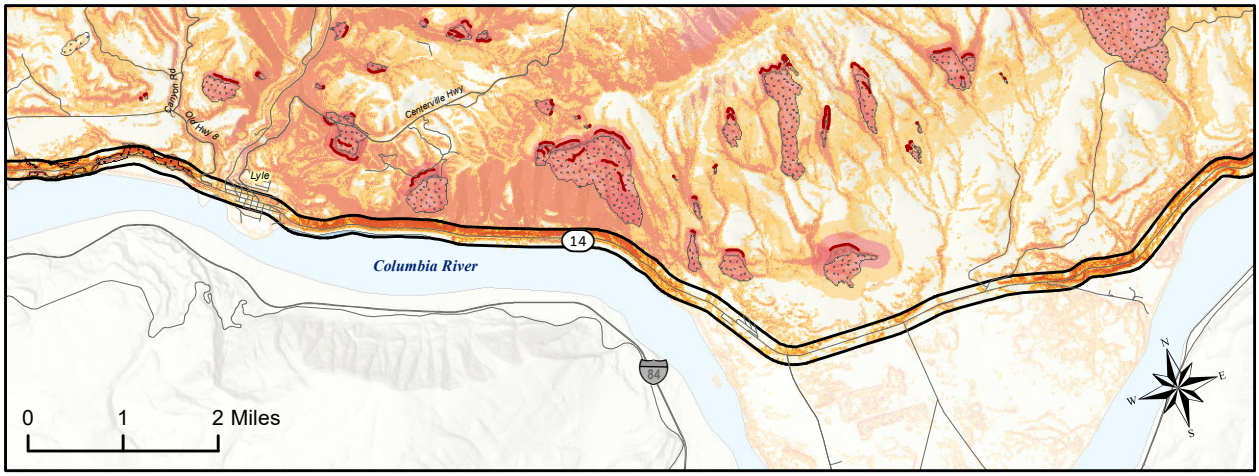
Landslide Susceptibility*

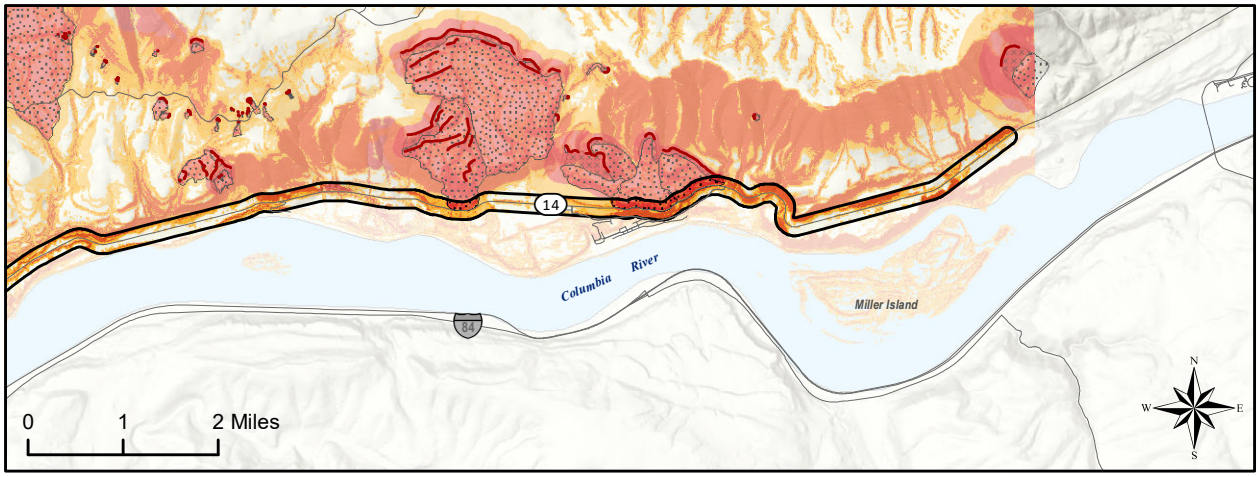
- Moderate
- High

* Landslide susceptibility is shown for both deep and shallow landslides; high susceptibility is prioritized

Data Source(s): Washington Geological Survey (WGS), WSDOT







Wetlands and Waters

Legend

- Study Area

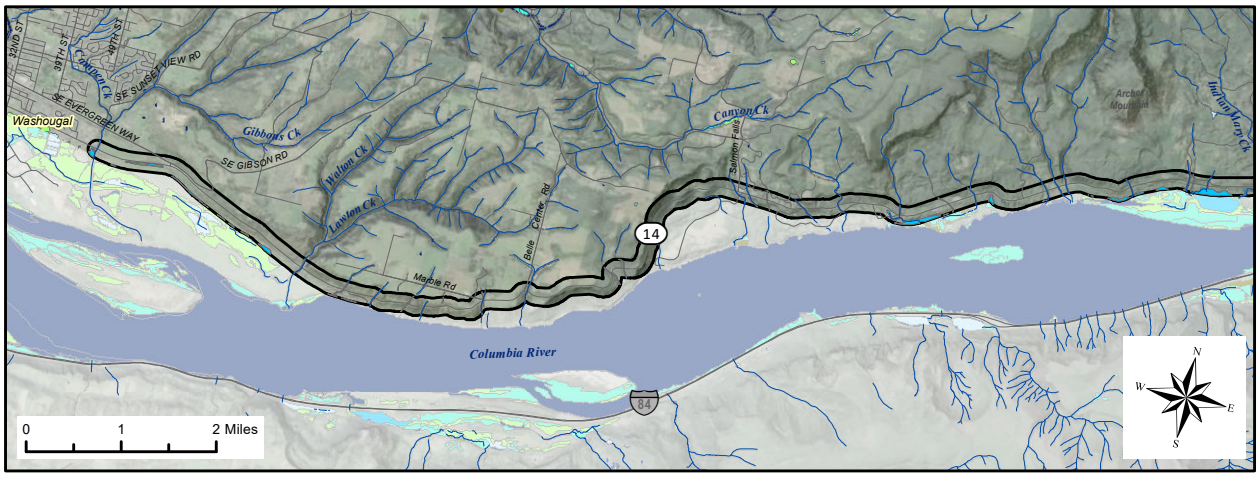
USFWS NWI Wetland

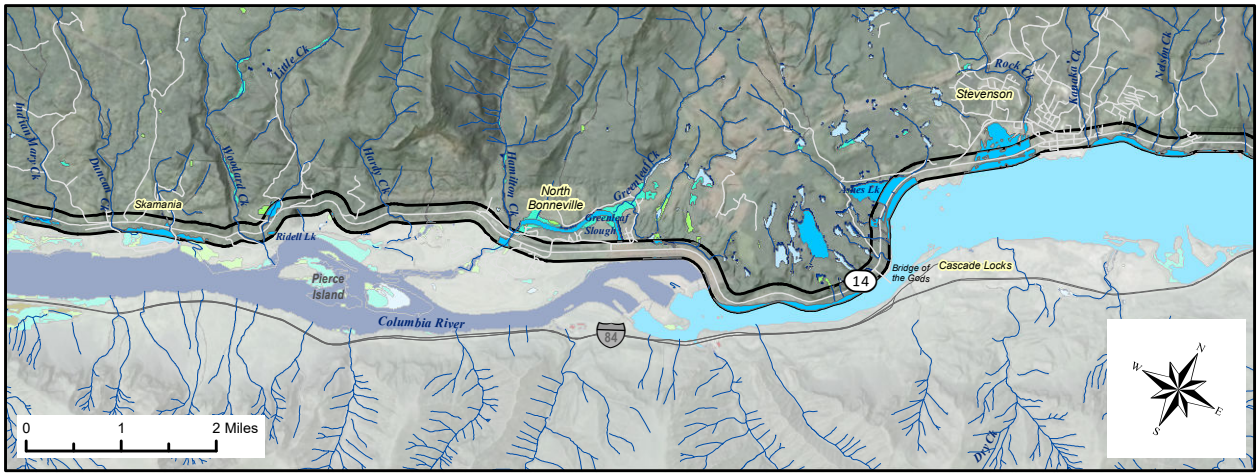
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

USGS NHD

- Stream/Creek (perennial)
- Stream/Creek (intermittent)
- Lake/Pond
- Reservoir
- Swamp/Marsh

Data Source(s): USFWS, USGS





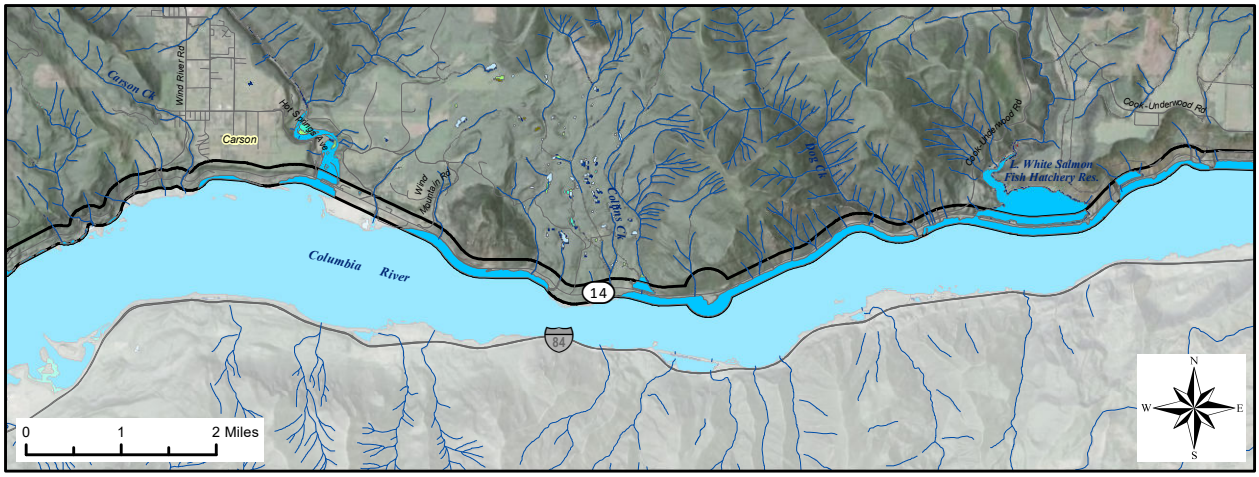


Figure 18, Sheet 2 of 2

Wetlands and Waters

Legend

- Study Area

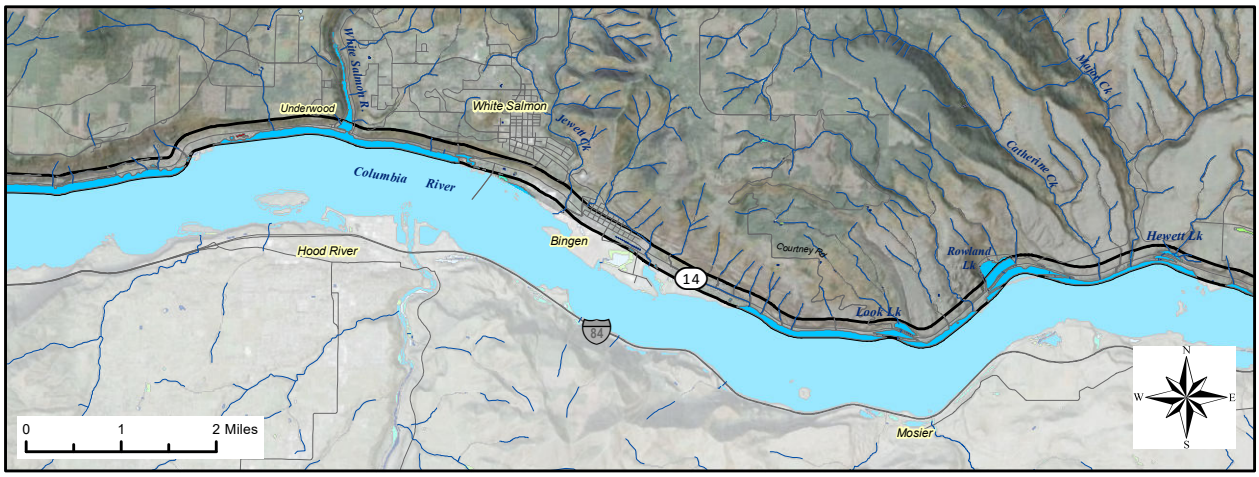
USFWS NWI Wetland

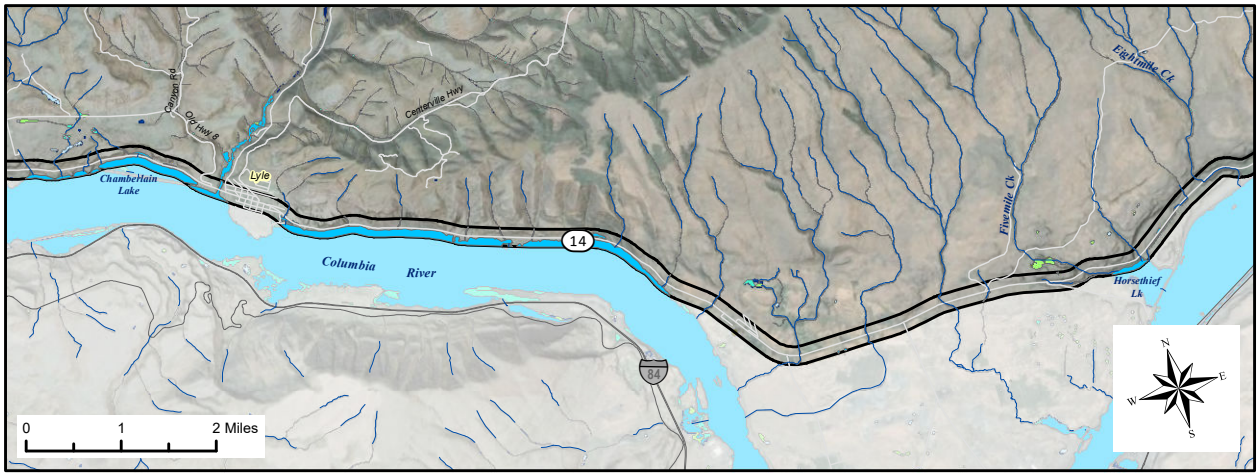
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

USGS NHD

- Stream/Creek (perennial)
- Stream/Creek (intermittent)
- Lake/Pond
- Reservoir
- Swamp/Marsh

Data Source(s): USFWS, USGS





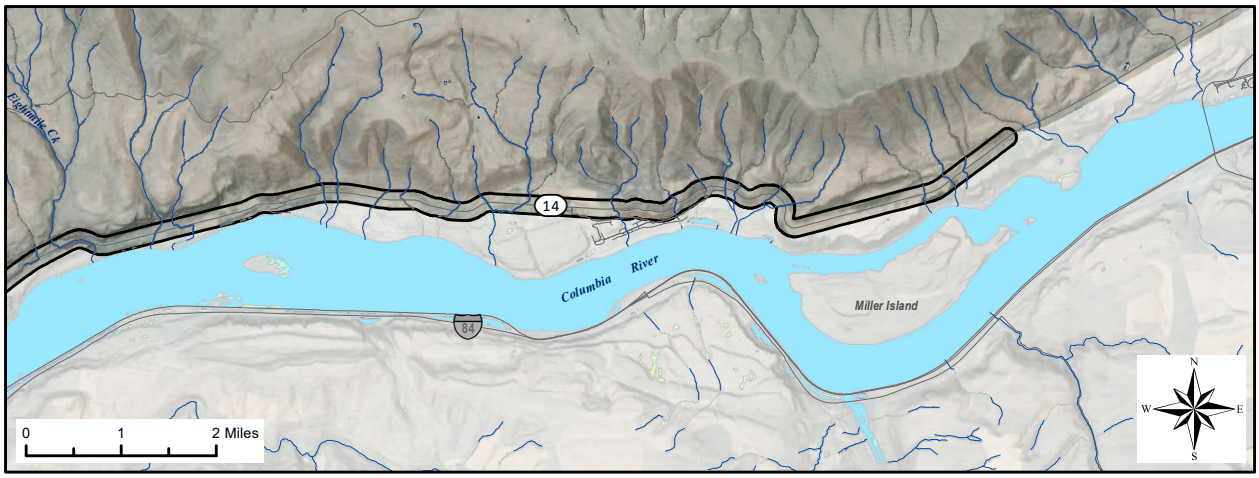


Figure 19, Sheet 1 of 2

FEMA Floodplains and Floodways

Legend

- Study Area

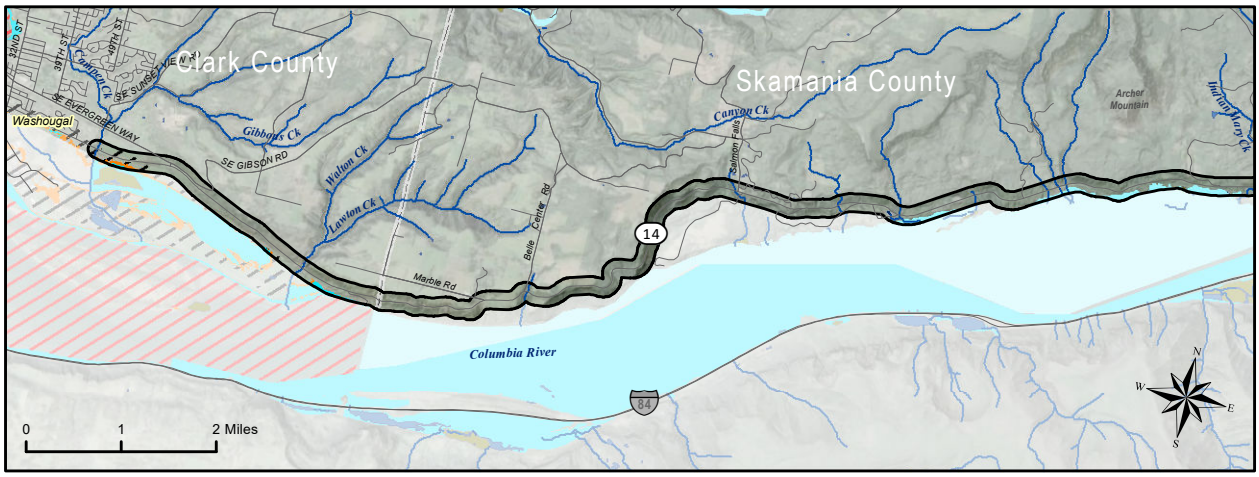
Flood Hazard

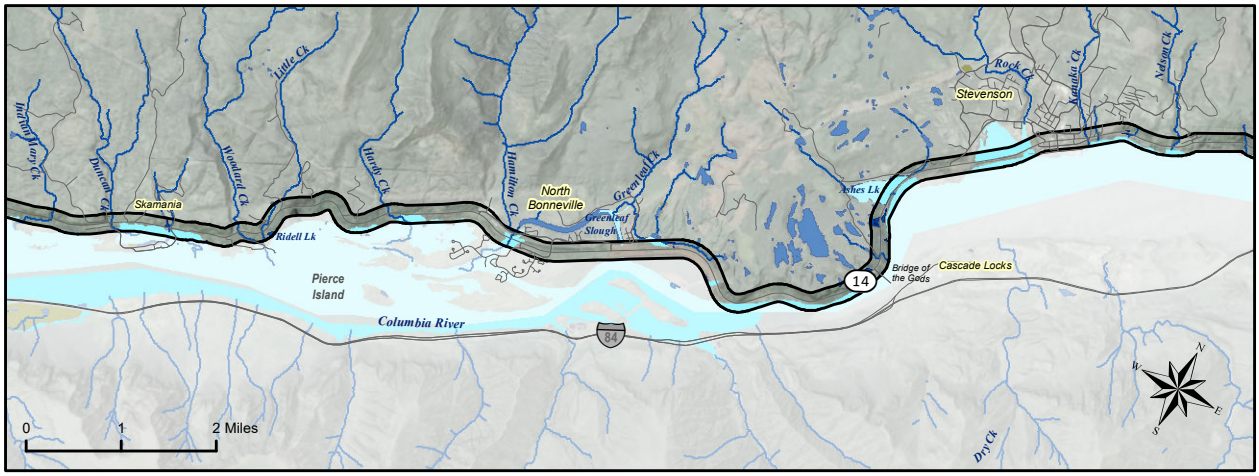
- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

USGS NHD

- Stream/Creek (perennial)

Data Source(s): FEMA, USGS





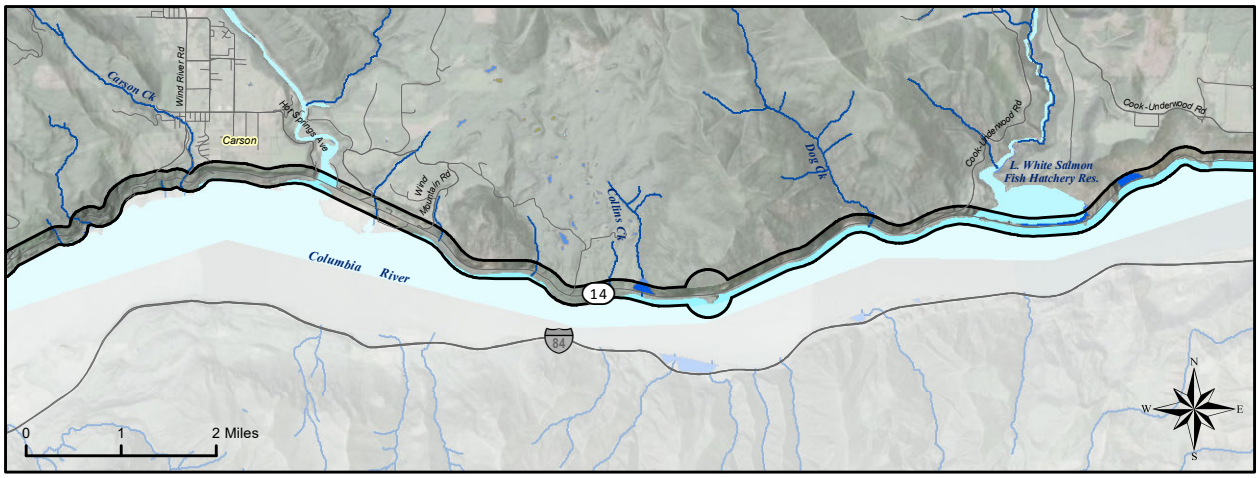


Figure 19, Sheet 2 of 2

FEMA Floodplains and Floodways

Legend

- Study Area

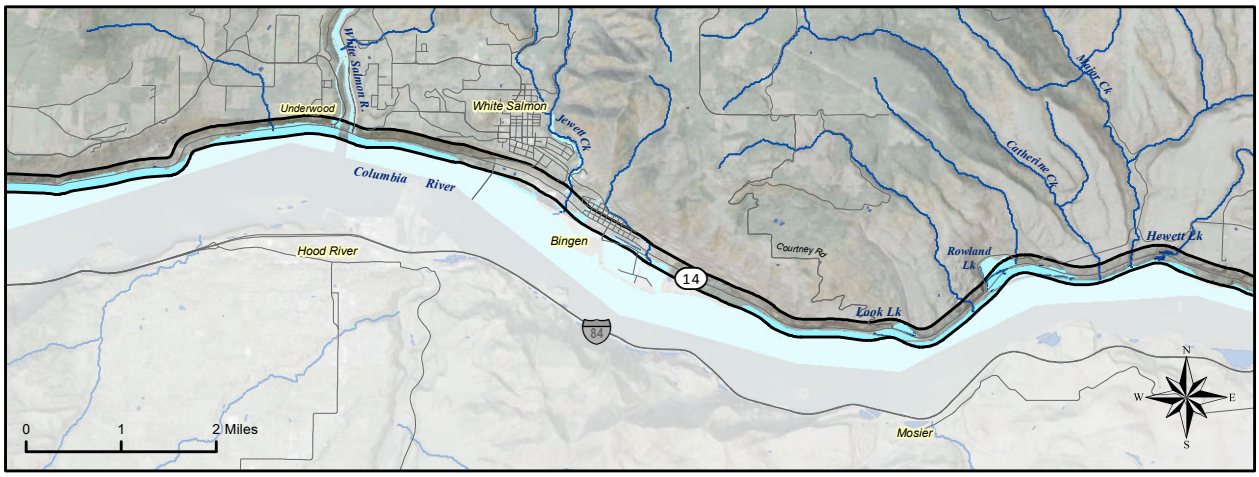
Flood Hazard

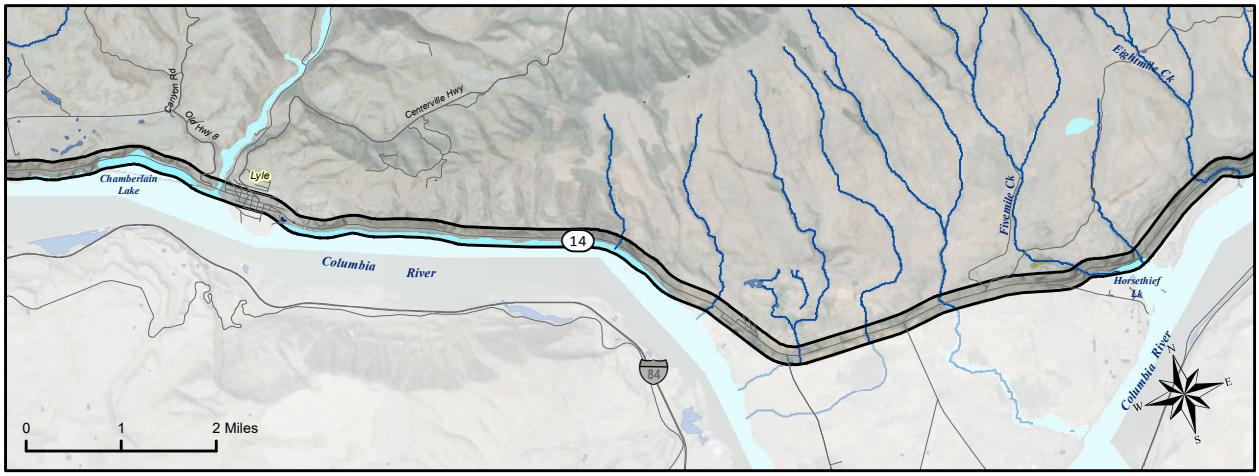
- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

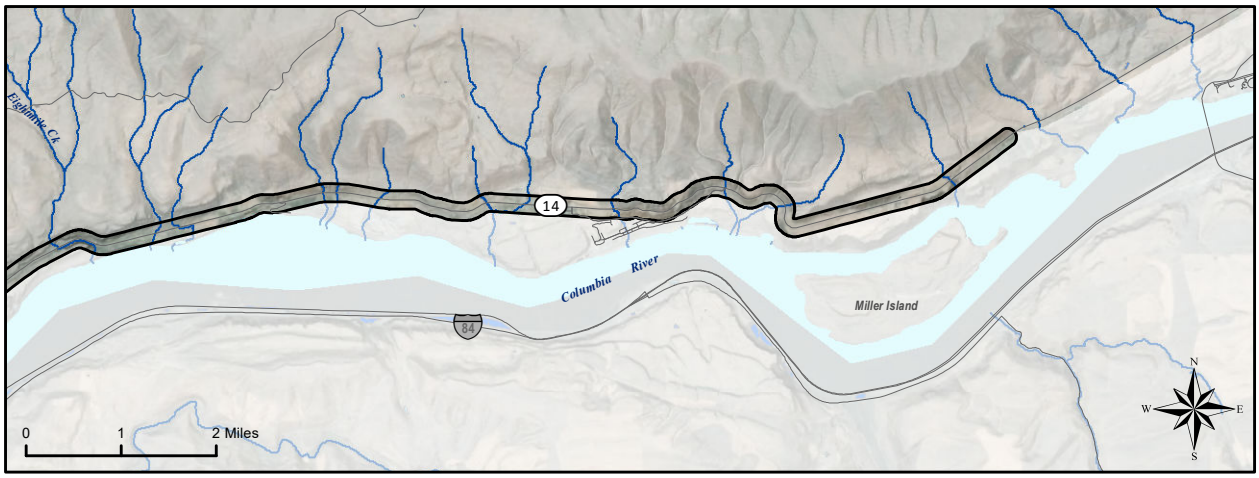
USGS NHD

- Stream/Creek (perennial)

Data Source(s): FEMA, USGS







BIOLOGICAL RESOURCES

VEGETATION (RARE PLANTS AND NATURAL AREAS)

Vegetated habitats along the extent of the study area are highly diverse, ranging from old growth coniferous forests at the western end of the study area to prairie and steppe at the east end of the study area. The varied landscape provides habitat for numerous species of rare plants, many of which are endemic to the CRGNSA. The CRGNSA Management Plan policies require new development to ensure that rare plants are not adversely affected.

Several ecologically and scientifically significant areas, designated in the CRGNSA Management Plan as Natural Areas, have been identified as outstanding examples of the diversity of the landscape and ecosystems throughout the CRGNSA. The CRGNSA Management Plan requires these areas to be protected from adverse effects.

Rare Plants

An initial assessment of rare plants potentially occurring within the study area was performed using the Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) web mapping tool (WDFW 2020) and the USFS Sensitive Species List for the CRGNSA (USFS, no date). This information was cross-checked with a GIS-based analysis using data provided by the Washington Natural Heritage Program (WNHP) detailing rare plants documented within or adjacent to the study area. Rare plants potentially occurring within the study area, along with their typical habitats, are listed below in Table 10. The CRGNSA Management Plan requires site plans to be prepared and reviewed by the appropriate state and federal government agencies for any proposed use within 1,000 feet of a rare plant site. For projects forwarded from this study, consultation with WDFW and USFS would be required to determine any potential impacts on rare plants and develop appropriate avoidance and mitigation strategies.

Table 10. Rare Plants Potentially Occurring in the Study Area

Species	Common Name	State Status	Habitat
Leptosiphon bolanderi	Baker's linanthus	S	Found in dry open areas in the eastern Columbia River Gorge.
Penstemon barrettiae	Barrett's beardtongue	T	Grows on rocky substrates of basaltic origin with little soil development, including crevices in basalt cliffs, ledges of rock outcrops, open talus, and occasionally well-drained roadsides. Occurs at elevations below 3000 feet
Montia diffusa	branching montia	S	Found in up-turned root disturbances within forested areas of the Cascades.
Leptogium burnetiae	Burnet's skin lichen	E	Found in mid-elevation moist western hemlock stands, old-growth Douglas-fir, moist Pacific silver fir or noble fir forests.
Rorippa columbiae	Columbia yellowcress	T	Grows in moist to wet, sandy habitat types at elevations from 700-6100 feet
Githopsis specularioides	common bluecup	S	Grows in dry, open areas at lower elevations such as thin soils over bedrock outcrops, grassy balds, talus slopes, and gravelly prairies.

Species	Common Name	State Status	Habitat
Hackelia diffusa var. diffusa	diffuse stickseed	T	Found in rocky places in sagebrush-steppe and ponderosa pine forests, on cliffs and on talus slopes in the Columbia River Gorge
Collinsia sparsiflora var. sparsiflora	few-flower blue-eyed Mary	T	Found on low-elevation dry slopes with sparse vegetation on the east side of the Cascades.
Erigeron oreganus	gorge daisy	T	Found in wet environments on basalt outcroppings and moist, shady basalt cliffs and ledges, often beneath overhangs or near waterfalls. Occurs at elevations between 50 - 1700 feet.
Aphyllon californicum ssp. grayanum	Gray's broomrape	E	Parasitic flowering plant typically found in vernally inundated sites, which are favored by its host plant, the western mountain aster (Symphyotrichum spathulatum) later in the year.
Corispermum villosum	hairy bugseed	S	Found on inland dunes or other sandy sites in the eastern Columbia River Gorge.
Packera bolanderi var. harfordii	Harford's ragwort	S	Found on coastal bluffs and beaches and moist woodlands west of the Cascades
Navarretia tagetina	marigold navarretia	T	Found in open, rocky areas, scablands, vernal pools, grasslands and stony washes with standing water in spring, becoming dry in summer. Occurs at east end of Columbia River Gorge.
Isoetes nuttallii	Nuttall's quillwort	S	Found in seasonally wet ground, seepages, temporary streams, and mud near vernal pools at elevations of 200-345 feet.
Bolandra oregana	Oregon bolandra	T	Found in moist, wooded, rocky, low-elevation sites in deep shade such as near streams or on basalt cliffs near waterfalls.
Eryngium petiolatum	Oregon coyote-thistle	T	Obligate wetland species of wet prairies, swales, shallow ditches and low ground, especially in places submerged in spring and dry in summer.
Sullivantia oregana	Oregon sullivantia	E	Endemic to the western Columbia River Gorge. Found in dense, damp coniferous forest on moist basalt cliffs, seepy rock faces, and spray zones of waterfalls. Microsites remain wet to moist much of the year.
Lomatium tamanitchii	ribseed biscuitroot	S	Found on open slopes and valleys, typically in clay-rich, volcanic ash-derived soils at low elevations. Occurs at the east end of the Columbia River Gorge. Endemic to Klickitat County.
Scribneria bolanderi	Scribner's grass	T	Found in dry, sandy to rocky soils, seepages, vernal pools, and sometimes along roadsides, at elevations from 1640 - 9800 feet.
Plectritis brachystemon	shortspur seablush	S	Found on coastal bluffs, lowland prairies, and balds at low elevations.
Trillium albidum ssp. parviflorum	small-flowered trillium	S	Found in moist lowland forests, oak-ash woodlands, and thickets in the western Columbia River Gorge.
Lomatium laevigatum	smooth desert-parsley	T	Found on ledges and crevices of basalt cliffs along the Columbia River and adjacent rocky slopes of sagebrush steppe. Adapted to dry, rocky habitats, where it faces a minimal amount of competition.

Species	Common Name	State Status	Habitat
Actaea elata var. elata	tall bugbane	S	Found in moist, shady low elevation forested habitat characterized by Douglas-fir, bigleaf maple (Acer macrophyllum), western redcedar (Thuja plicata), and red alder (Alnus rubra).
Cirsium remotifolium var. remotifolium	weak thistle	S	Found in meadows, along stream banks, in open forest, and on brushy slopes, in low to mid-elevation areas.
Spiranthes porrifolia	western ladies'-tresses	S	Found in wet meadows, bogs, streams, and seepage slopes at elevations of 10 - 6800 feet
Meconella oregana	white meconella	E	Found primarily in open grassland; sometimes within a mosaic of forest and grassland on gradual to almost 100% slopes. Habitats are wet to moist in spring, but dry by early summer.
Penstemon wilcoxii	Wilcox's beardtongue	T	Grows in a range of habitats, including shrubby areas, forested slopes, moist soil, and open rocky sites.
Leymus flavescens	yellow wildrye	S	Found on coarse textured soils, primarily in the Columbia Plateau. May occur in sand dune ecosystems in the eastern Columbia River Gorge.

E = Endangered
T = Threatened
S = Sensitive

Sources: WNHP 2020; WDFW 2020; USFS, no date; Camp and Gamon 2011.

Natural Areas

There are 45 designated Natural Areas in the CRGNSA, which are ecologically and scientifically significant areas that are representative of the diverse native ecosystems of the Columbia Gorge. There are 21 Natural Areas located on the Washington side of the CRGNSA. Several of these are located partially within or adjacent to the study area, as shown in Table 11. Figure 20 identifies the Natural Areas that are located within the study area. The CRGNSA Management Plan stipulates that Natural Areas shall be protected from adverse effects. Uses that would adversely affect native plant communities and rare plants are prohibited in natural areas. Projects forwarded from this study would need to address any potential impacts on Natural Areas, including consulting with WDFW and USFS biologists.

Table 11. Natural Areas within the Study Area

Natural Area	Acres	Vegetation/Terrain	Within/Adjacent to Study Area
Beacon Rock State Park	35	Douglas-fir/red alder forest with open areas; rare plants	Yes
Burdoin Mountain	60	Old-growth Douglas-fir with scattered ponderosa pine	No
Cape Horn	55	Topographic bench, basalt cliffs and slopes; rare plants	Yes
Columbia Falls	765	Basalt cliffs, valleys and ridges with 120-175 foot waterfalls; old-growth Douglas-fir, grand fir, and red cedar; rare plants	No
Columbia Hills	2,600	Ridge with moist draws, bunch grass prairies, scablands; rare plants	No
Columbia Tunnels	15	High-quality oak woodland with native grasses	Yes
Dog Mountain	2,700	East-west transition; fir and hemlock, oak, and ponderosa pine forests, with talus slopes and grasslands	Yes

Natural Area	Acres	Vegetation/Terrain	Within/Adjacent to Study Area
East Fork of Major Creek	640	Intact, original forest in eastern Gorge; Douglas-fir, ponderosa pine, grand fir, scattered old-growth trees	No
Hamilton Creek	1,280	Old-growth patches of Douglas-fir and riparian communities	No
Horsethief Ponds	280	Mound/swale topography with ponds; rare plants	No
Little Wind River	1,150	Drainage basin, including riparian areas and steep slopes; Douglas-fir and western hemlock forest with old growth stands and rare plants	No
Lower Klickitat River Canyon	145	Oak woodland with native grasses; rare plants	No
Lower Major & Catherine Creeks	3,000	Oregon white oak/ponderosa pine forests, with grassland and riparian areas; rare plants	Yes
Miller Island	130	Sand dunes and basalt cliffs; rare plants	No
Mosley Lakes	110	Wetlands	No
Pierce Island	200	One of the least-disturbed Columbia River islands; cottonwood-Oregon ash and shoreline plant communities; rare plants	No
Prindle Mountain	130	Douglas-fir forests, meadows; rare plants	No
Table Mountain/ Greenleaf Basin	2,300	Bluffs, meadows, wetlands, old-growth forest; rare plants	No
Underwood Mountain	120	Douglas-fir forest with rare plants	No
West Fork of Sasquatch Creek	430	Remnant old-growth stand of Douglas-fir; rare plants	No
Wind Mountain	290	Intact, original Douglas-fir and Oregon white oak forests	Yes

Sources: CRGC and USFS 2016; WNHP 2020

FISH AND WILDLIFE (PRIORITY HABITATS AND SENSITIVE WILDLIFE SITES)

The CRGNSA Management Plan emphasizes wildlife habitat protection by requiring projects to ensure that new uses do not adversely affect Priority Habitats or sensitive wildlife sites. Priority Habitats are important for providing nesting, roosting, denning, foraging, and other life cycle needs for wildlife species in the CRGNSA. In many cases, they are vulnerable to alteration or limited in availability on the landscape. Sensitive wildlife sites are identified by wildlife management agencies on a site-specific basis, based on their known use by sensitive wildlife species. In addition to avoiding adverse impacts to these resources, proposed projects are directed by the CRGNSA Management Plan to enhance wildlife habitat that has been altered or destroyed by past uses.

Priority Habitats

Priority Habitats in the CRGNSA are identified by the USFS and state wildlife agencies as part of State Wildlife Action Plan efforts and are revised from time to time. Table 12 lists Priority Habitats that are present within or adjacent to the study area, along with the respective defining characteristics of each. Figure 20 shows the location of mapped priority habitats within the study area. Some priority habitat types, for example, snags and logs and old growth forest, are not specifically mapped because these habitat types could be present in many of the forested areas adjoining the study area and would require more detailed field verification to reliably identify. Projects forwarded from this study would be required to identify any Priority Habitats within the project vicinity via field survey and maintain adequate buffer

zones in order to protect them. Any proposed development within 1,000 feet of a Priority Habitat would need be evaluated for adverse effects in coordination with WDFW and USFS, as applicable.

Table 12. Priority Habitats in the CRGNSA

Priority Habitat	Criteria	Within/Adjacent to Study Area
Aspen stands	High fish and wildlife species diversity, limited availability, high vulnerability to habitat alteration.	No
Caves	Significant wildlife breeding habitat, limited availability, dependent species.	No
Old-growth forest	High fish and wildlife density, species diversity, breeding habitat, seasonal ranges, and limited and declining availability, high vulnerability.	Yes
Oregon white oak woodlands	Comparatively high fish and wildlife density, species diversity, declining availability, high vulnerability.	Yes
Prairies and steppe	Comparatively high fish and wildlife density, species diversity, important breeding habitat, declining and limited availability, high vulnerability.	No
Riparian	High fish and wildlife density, species diversity, breeding habitat, movement corridor, high vulnerability, dependent species.	Yes
Wetlands	High species density, high species diversity, important breeding habitat and seasonal ranges, limited availability, high vulnerability.	Yes
Snags and logs	High fish and wildlife density, species diversity, limited availability, high vulnerability, dependent species.	Yes
Talus	Limited availability, unique and dependent species, high vulnerability.	Yes
Cliffs	Significant breeding habitat, limited availability, dependent species.	Yes
Dunes	Unique species habitat, limited availability, high vulnerability, dependent species.	Yes
Winter range	Provides important deer and elk wintering habitat.	Yes

Sources: CRGC and USFS 2020

Sensitive Wildlife Sites

"Sensitive wildlife sites" is a generic term used in the CRGNSA Management Plan to refer to sites that are used by species that are (1) listed as endangered or threatened pursuant to federal or state endangered species acts, (2) listed as endangered, threatened, sensitive, or candidate by the Washington Wildlife Commission, (3) listed as sensitive by the Oregon Fish and Wildlife Commission, or (4) considered to be of special interest to the public (limited to great blue heron, osprey, golden eagle, and prairie falcon) (CRGC and USFS 2016; CRGC and USFS 2020). The CRGNSA Management Plan requires site-specific plans for development proposed near sensitive wildlife sites. Buffer zones must be established, which are determined on a case-by-case basis depending on the biology of the affected species, the characteristics of the project site, and the proposed use. If proposed new development could alter habitat, resource rehabilitation and mitigation are required to reduce and offset effects. For projects forwarded as a result of this study, consultation with WDFW would be required to determine if a proposed project is located within 1000 feet of a sensitive wildlife site.

Figure 20. Natural Areas and Priority Habitats (1 of 2)

Figure 20, Sheet 1 of 2

Natural Areas and Priority Habitats

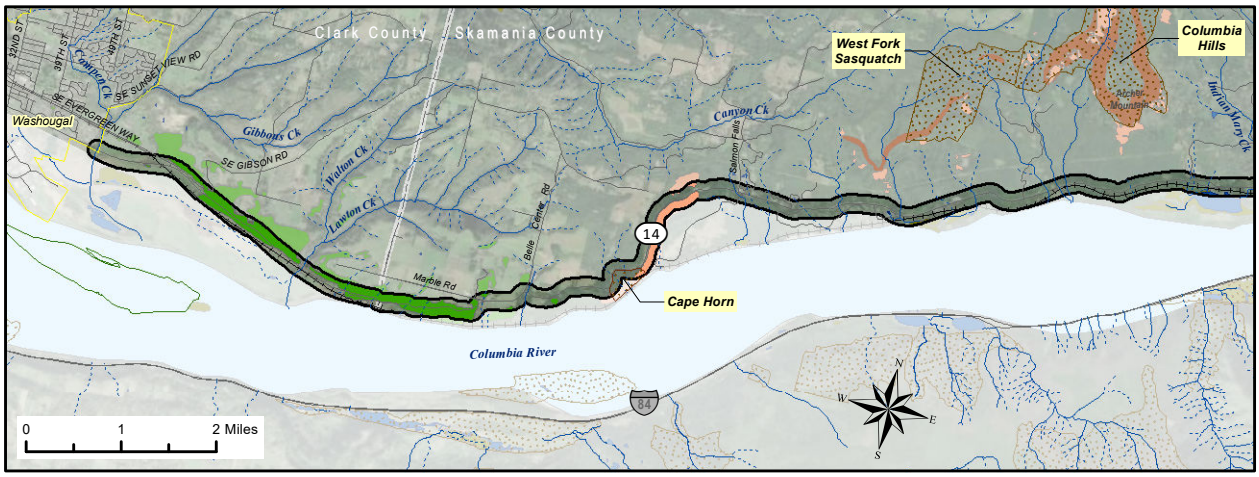
Legend

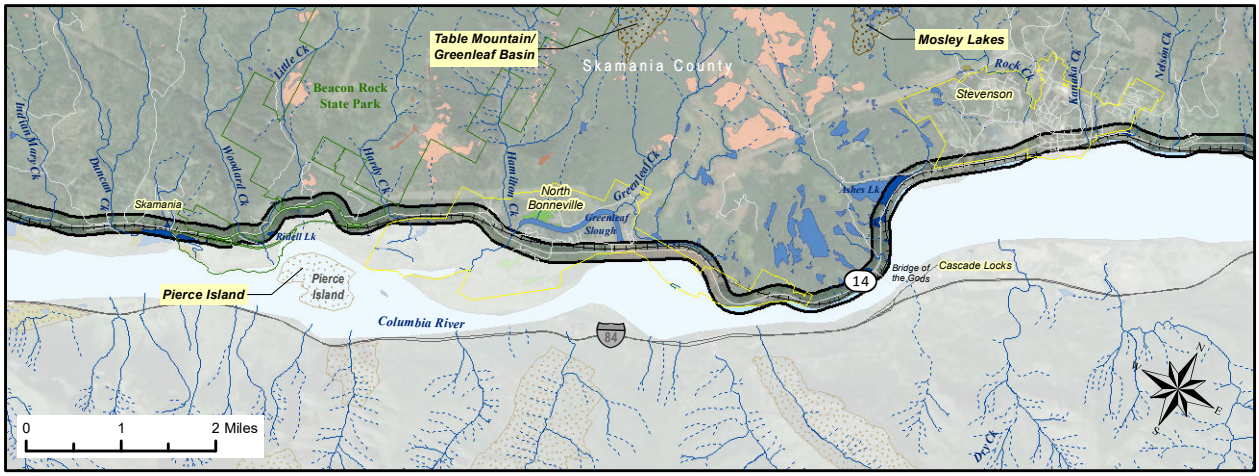
- Study Area
- Natural Areas

Priority Habitat

- Black-tailed Deer Winter Range
- Oak Woodland
- Sand Dunes
- Talus Slopes
- Cliffs/Bluffs

Data Source(s): WDFW PHS, Columbia River Gorge Commission





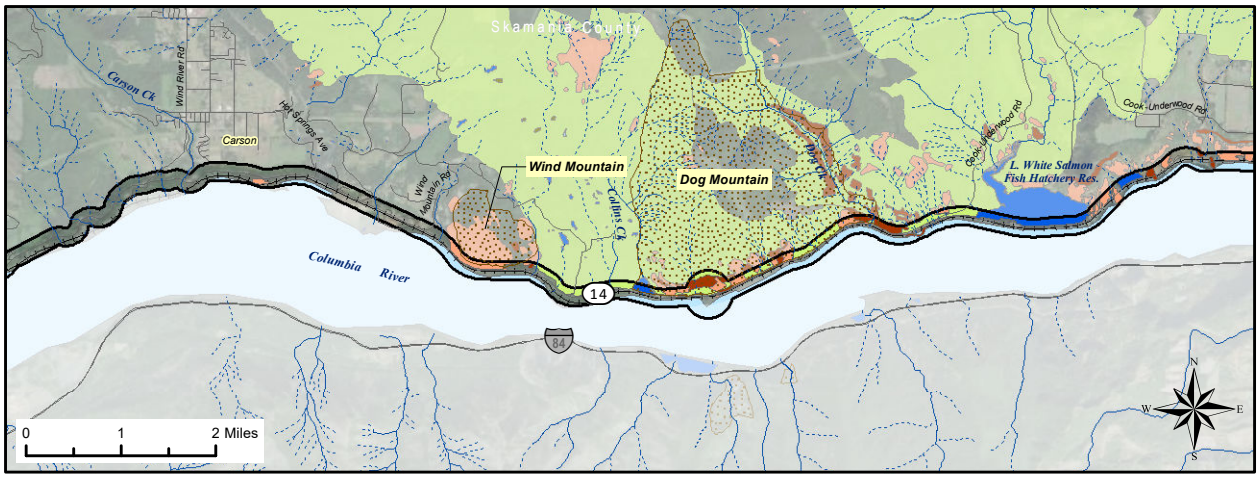


Figure 20, Sheet 2 of 2

Natural Areas and Priority Habitats

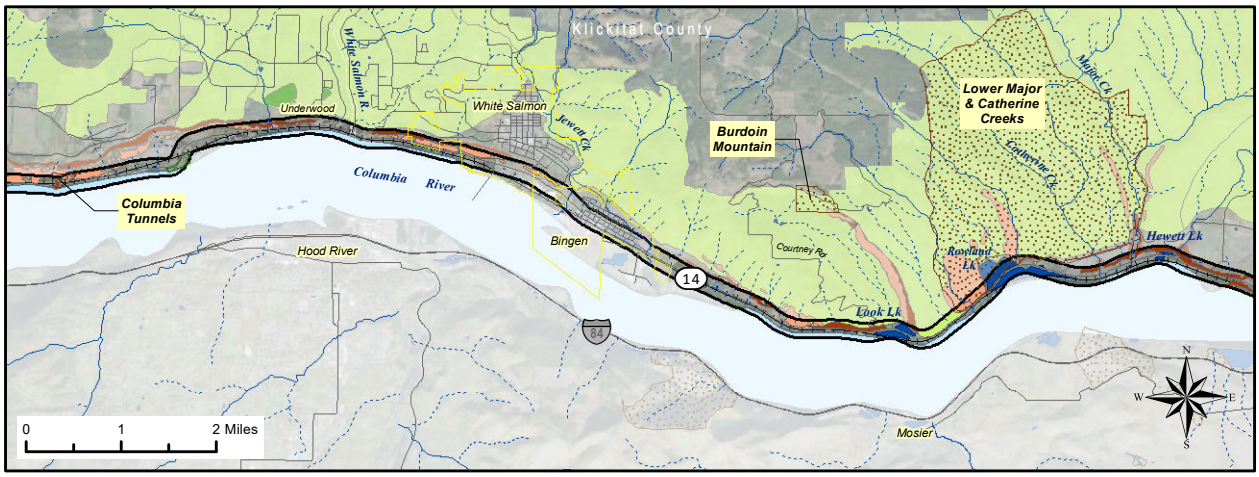
Legend

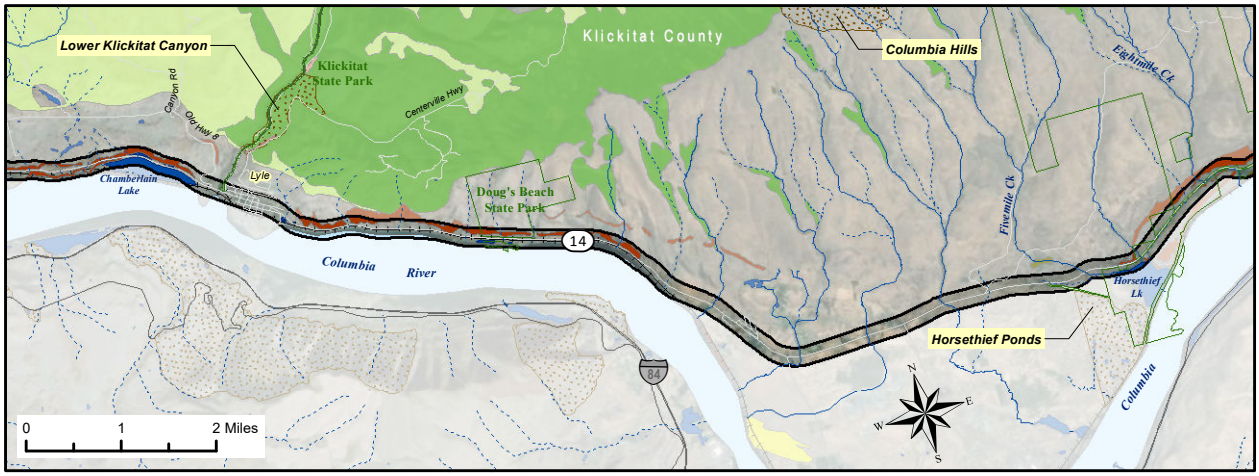
- Study Area
- Natural Areas

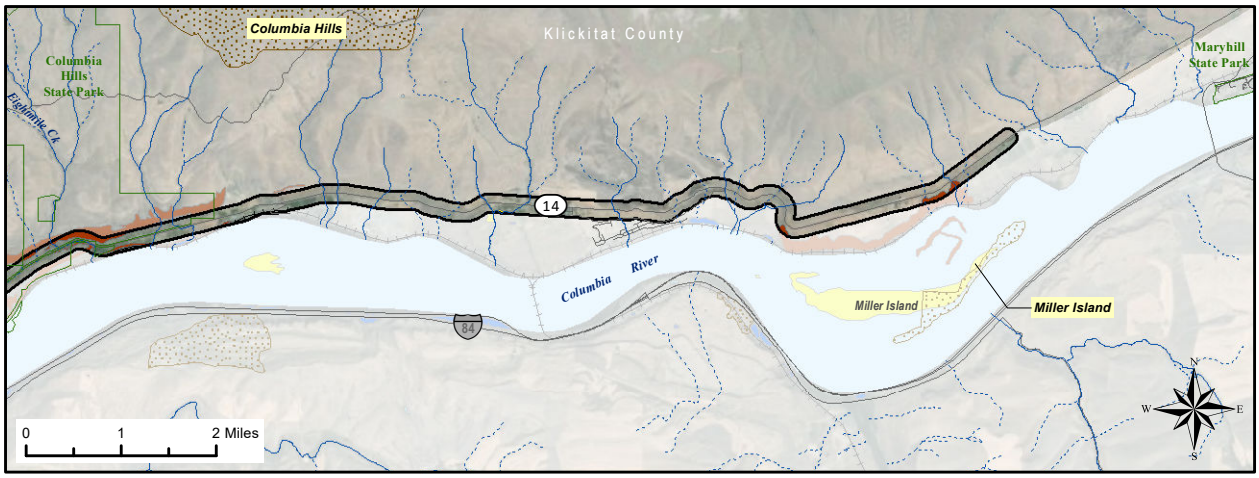
Priority Habitat

- Black-tailed Deer Winter Range
- Oak Woodland
- Sand Dunes
- Talus Slopes
- Cliffs/Bluffs

Data Source(s): WDFW PHS, Columbia River Gorge Commission







THREATENED AND ENDANGERED SPECIES

A query of federally listed threatened, endangered and sensitive species and their habitats regulated by the U.S. Fish and Wildlife Service (USFWS) was conducted using the USFWS Information for Planning and Consultation (IPaC) database (USFWS 2020b). The results of the IPaC query includes species protected under the federal Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA). The IPaC system also identifies Critical Habitat, if present. The IPaC query was supplemented with desktop research using the USFWS Critical Habitat for Threatened and Endangered Species online GIS tool (USFWS 2020c). Species identified by the IPaC database have the potential to occur in the area; however, their presence is dependent on many factors, such as suitable habitat. Therefore, the IPaC query results were cross-checked with the USFS sensitive species list for the CRGNSA to determine which species have the potential to be present in the study area (USFS, no date).

To determine fish species distribution and the potential presence of any federally protected anadromous fish species and/or habitat regulated by NMFS within the study area vicinity, a query was conducted using the StreamNet fish data mapper (StreamNet Mapper 2020) and the NOAA Fisheries (NMFS) Protected Resources App online GIS viewer (NMFS 2020a). Federally listed threatened, endangered, and sensitive species identified as potentially present in or near the study area are shown below in Table 13.

Table 13. Federally Listed Threatened and Endangered Species Potentially Occurring in the Study Area

Species	Common Name	Federal Status	USFWS	NMFS	Critical Habitat	Likelihood of Occurrence
Birds						
Strix occidentalis caurina	Northern Spotted Owl	LT	•		Yes	Generally found in closed canopy mature to old-growth forests (USFWS 2020d). Potentially present.
Fish						
Salvelinus confluentus	Bull Trout	LT	•		Yes	Assumed present.
Oncorhynchus kisutch	Coho Salmon, Lower Columbia River Evolutionary Significant Unit (ESU)	LT		•	Yes	Assumed present.
Oncorhynchus keta	Chum Salmon, Columbia River ESU	LT		•	Yes	Assumed present.
Oncorhynchus tshawytscha	Chinook Salmon, Lower Columbia River ESU	LT		•	Yes	Assumed present.
Oncorhynchus tshawytscha	Chinook Salmon, Upper Columbia River Spring-run ESU	LE		•	Yes	Assumed present in Columbia River.

Species	Common Name	Federal Status	USFWS	NMFS	Critical Habitat	Likelihood of Occurrence
Oncorhynchus tshawytscha	Chinook Salmon, Snake River Fall-run ESU	LE		•	Yes	Assumed present in Columbia River.
Oncorhynchus nerka	Sockeye Salmon, Snake River ESU	LE		•	Yes	Assumed present in Columbia River.
Oncorhynchus mykiss	Steelhead, Lower Columbia River Distinct Population Segment (DPS)	LT		•	Yes	Assumed present west of White Salmon River.
Oncorhynchus mykiss	Steelhead, Middle Columbia River DPS	LT		•	Yes	Assumed present in Columbia and White Salmon Rivers.
Oncorhynchus mykiss	Steelhead, Upper Columbia River DPS	LT		•	Yes	Assumed present in Columbia River.
Oncorhynchus mykiss	Steelhead, Snake River Basin DPS	LT		•	Yes	Assumed present in Columbia River.
Thaleichthys pacificus	Eulachon	LT		•	Yes	Potentially present in Columbia River below Bonneville Dam.

LE = Listed Endangered
LT = Listed Threatened

Sources: USFWS 2020a; USFWS 2020b; NMFS 2020a; StreamNet Mapper 2020

Designated critical habitat for six federally listed species regulated by NMFS, including six Evolutionary Significant Units (ESUs) of listed salmon and four Distinct Population Segments (DPSs) of listed steelhead, is located within or adjacent to the study area throughout its extent (NMFS 2020a). Designated critical habitat for USFWS-regulated, federally threatened bull trout is located in the Columbia, White Salmon, and Klickitat Rivers (USFWS 2020b). Designated critical habitat for USFWS-regulated federally threatened northern spotted owl (*Strix occidentalis caurina*) is present in the western portion of the study area and is concentrated in the portion of the study area between Beacon Rock State Park and the Dog Mountain trailhead (USFWS 2020b). See Figure 21 for the location of critical habitat for ESA listed species in the study area.

In order to determine potential direct impacts to ESA listed fish species from projects forwarded under this study, it will be necessary to review the species potentially present within a given stream and describe on-site conditions for any in-stream construction work. For projects that would not have potential direct impacts to stream habitat but could generate additional stormwater runoff, potential impacts from stormwater runoff would need to be evaluated in coordination with WDFW. Projects that could have impacts in or adjacent to forested habitat would need to ensure that terrestrial fieldwork is conducted to determine the presence of suitable northern spotted owl habitat in order to satisfy ESA compliance requirements.

Direct impacts to listed fish species and their critical habitat in the Columbia River would not be expected as a result of projects forwarded from this study. However, potential impacts from stormwater runoff from the study area would need to be evaluated on a project by project basis in coordination with WDFW.

OTHER SPECIES OF CONCERN

In addition to the species listed under the federal ESA that are referenced in the above section, proposed projects and management activities in the CRGNSA must consider several other species that are protected by state or federal law or by agency management policy. These include species identified as sensitive by USFS and WDFW; USFS Survey and Manage species (on National Forest lands only); and species protected under the Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA).

USFS and WDFW Sensitive Wildlife Species

The USFS maintains a list of sensitive species that is specific to National Forest lands within the CRGNSA. The list includes federally listed species (including but not limited to those listed in Table 13 above) as well as USFS Region 6 sensitive species with potential to occur on National Forest lands within the CRNGSA (see Table 14 below).

Because of direction included in the CRGNSA Management Plan, the USFS is also required to manage for WDFW sensitive wildlife species on National Forest lands. These include some additional sensitive species identified by WDFW that are not already included on the USFS Sensitive Species List. Projects must consider potential impacts to WDFW sensitive species irrespective of whether a project is located on National Forest land. However, USFS sensitive species that are not otherwise considered sensitive by WDFW must only be considered when projects are proposed on National Forest land.

A GIS-based query of Washington Natural Heritage Program (WNHP) Priority Habitats and Species (PHS) data was used to identify species included on the USFS and/or WDFW sensitive species lists for the CRGNSA that have been documented within or adjacent to the study area (WNHP 2020). These species could have potential to be affected by projects forwarded from this study. Sensitive species that could potentially occur within the study area are detailed in Table 14 below. Projects forwarded from this study that are proposed to take place on National Forest lands would require consultation with USFS and WDFW to identify and address potential impacts to these species and possibly others, in addition to any necessary impact avoidance and/or mitigation actions. In portions of the study area that are not located on National Forest lands, development activities would still need to consider potential impacts to species included on the WDFW sensitive species list as well as the federally listed species detailed in Table 13 above.

Table 14. Sensitive Species Potentially Occurring within the Study Area

Common Name	Species	Federal Status	State Status	USFS Sensitive	Habitat
Birds					
American white pelican	*Pelecanus erythrorhynchos*		T	Yes	Nests in large colonies on islands within shallow water and marshes free of human disturbance and mammalian predators. Post-breeders sometimes seen in the Columbia River (Klickitat Delta, below The Dalles Dam).

Common Name	Species	Federal Status	State Status	USFS Sensitive	Habitat
Bald eagle	*Haliaeetus leucocephalus*	SOC		Yes	Found near shoreline (generally within 1 mile of large water bodies) with large trees and prey base of primarily fish. Diet also includes some waterfowl, turtles, and carrion.
Great blue heron	*Ardea Herodias*		Monitored		Found in a variety of wetland habitats including marshes, flooded meadows, lake edges, or shorelines. Breeds within the study area.
Golden eagle	*Aquila chrysaetos*		C	Yes	Uses a variety of habitats in open country/forests; often nests on steep cliffs or large trees
Lewis' woodpecker	*Melanerpes Lewis*		C	Yes	Found in open pine/oak woodland, conifer forests, and riparian woodland in eastern portions of the CRGNSA. Regionally displays seasonal migration to lower elevations during non-breeding season, although in the CRGNSA, it is often resident year-round in same location. Nests in cavities of trees and snags.
Purple martin	*Progne subis*		C	Yes	Found in the western portion of the study area eastward to Bingen. Nests in cavity and crevices, often near water. Forages over open water/fields/ forest canopy.
Western grebe	*Aechmophorus occidentalis*		C	Yes	Found in open lakes and marshes with rushes and tules. Winters in coastal estuaries/bays.
Fish					
Pacific lamprey	*Lampetra tridentata*	SOC		Yes	Anadromous. Documented in the Columbia River. Information on current distribution and abundance is developing.
Reptiles and Amphibians					
Western pond turtle	*Actinemys marmorata*	SOC	E	Yes	Found near streams, large rivers, slow sloughs, and quiet waters with nesting habitat (open meadow) within ½ mile. Occurs at elevations below 3000 feet.
Larch Mountain salamander	*Plethodon larselli*		S	Yes	Largely found in moss-covered talus slopes or other rocky substrate, at low to mid-elevations.

Common Name	Species	Federal Status	State Status	USFS Sensitive	Habitat
Western toad	*Anaxyrus boreas*		C	Yes	Most common near marshes and small lakes (breeding sites in midspring); can travel readily overland and be found along streams/seeps. Known to occur near White Salmon, Major and Catherine creeks
Sharp-tailed snake	*Contia tenuis*		C	Yes	Found on rocky slopes, often in open pine/oak woodland with prey species of small slugs present. Often in moist riparian area east of the Cascades
Sagebrush lizard	*Sceloporus graciosus*		C	Yes	Found on eastern end of Gorge. Associated with sagebrush, but also conifer habitats.
Mammals					
Western gray squirrel	*Sciurus griseus*	SOC	T	Yes	Associated with open mixed oak/conifer woodland, typically within ½ mile of water source. The CRGNSA is in the northernmost portion of its range, with core habitat in Klickitat county.

E = Endangered
T = Threatened
S = Sensitive
C = Candidate
SOC = Species of Concern

Sources: USFS, no date; WNHP 2020

USFS Northwest Forest Plan Survey and Manage Species

In addition to the sensitive species list discussed above, the USFS maintains a list of "Survey and Manage" species identified by the Northwest Forest Plan, which includes rare and little-known species thought to be associated with late-successional and old growth forests. The Northwest Forest Plan prescribes a set of management standards and guidelines requiring surveys before initiating management actions and limitations on actions if these species found. These species are only applicable on National Forest lands where old growth or late-successional forest conditions exist. Therefore, the areas where these species are most likely to require consideration would be in the vicinity of Dog Mountain, if trailhead and parking lot relocation result in tree removal and ground disturbance in areas that may exhibit old growth forest characteristics. Some terrestrial mollusk species could potentially be present in leaf litter in other forested areas adjacent to the roadway corridor (Carré 2020, pers. comm.). For projects on National Forest land that are forwarded from this study, consultation with USFS is recommended in order to determine whether Survey and Manage species could apply.

Migratory Bird Protection Act / Bald and Golden Eagle Protection Act

The bald eagle and golden eagle are protected under BGEPA, which prohibits the taking or possession of, or commerce in, bald and golden eagles, with very limited exceptions. Migratory bird species are protected under the MBTA, which prohibits the destruction, or take, of migratory birds or their active nests. USFWS can issue a take permit, but early coordination with USFWS is recommended to avoid take. Any projects forwarded as a result of this study would need to comply with MBTA and BGEPA.

If projects have the potential to take place during the nesting season for bald or golden eagles, an eagle nest survey may need to be conducted for compliance with the BGEPA. If nests are present, coordination with USFWS would be necessary in order to determine appropriate measures to avoid disturbing nesting eagles.

If proposed project construction cannot take place outside of the nesting season for migratory bird species, nesting bird surveys would be required prior to vegetation (tree or shrub) removal in order to comply with the MBTA. If nests are present, MBTA allows nest removal if eggs or young are not yet present. If active nests are located during construction and cannot be avoided, construction activities in the area must stop until young have fledged from the nest.

Figure 21
ESA Critical Habitat

Legend

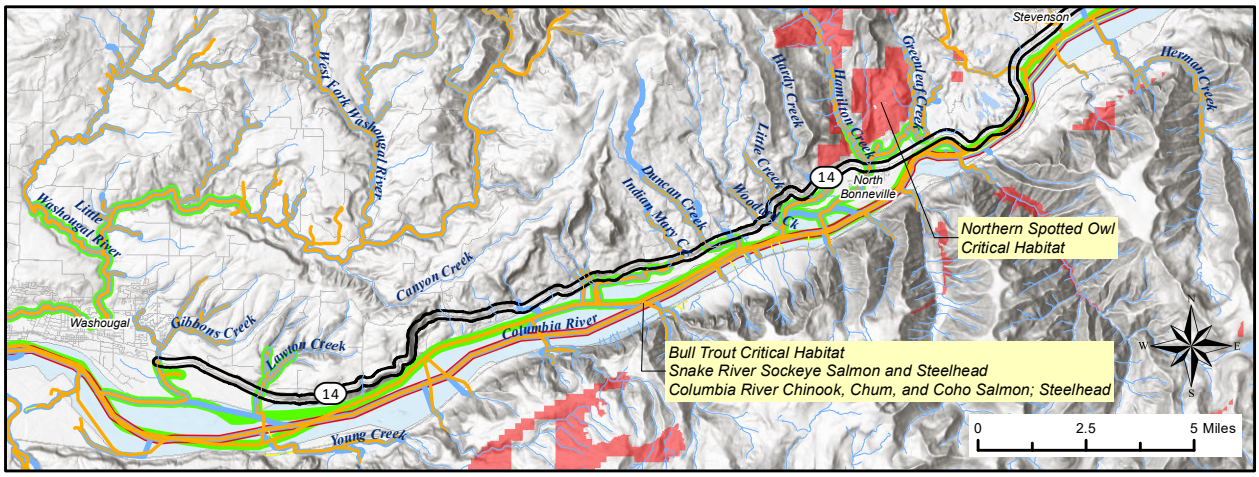
- Study Area
- Stream/Creek (perennial)

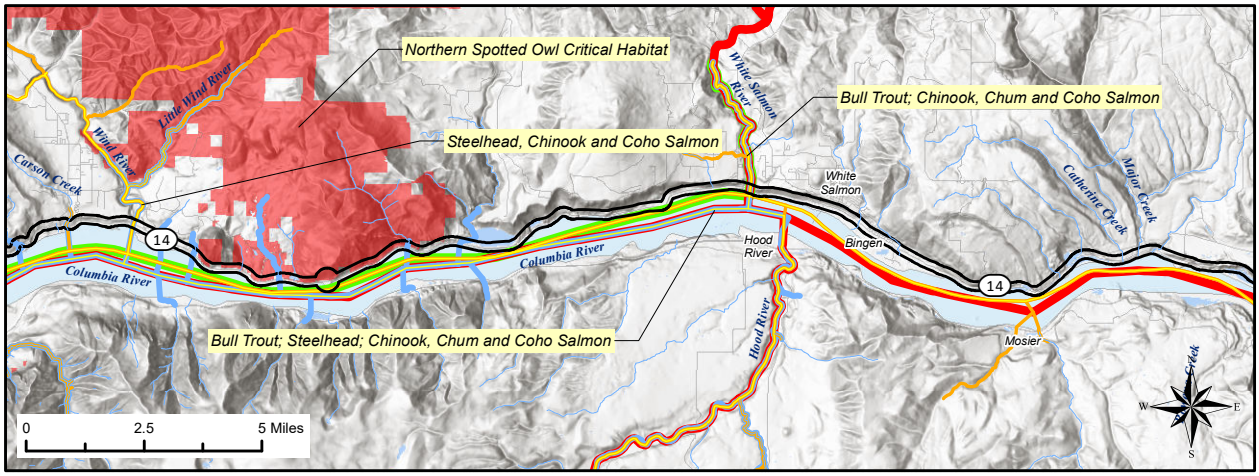
Critical Habitat

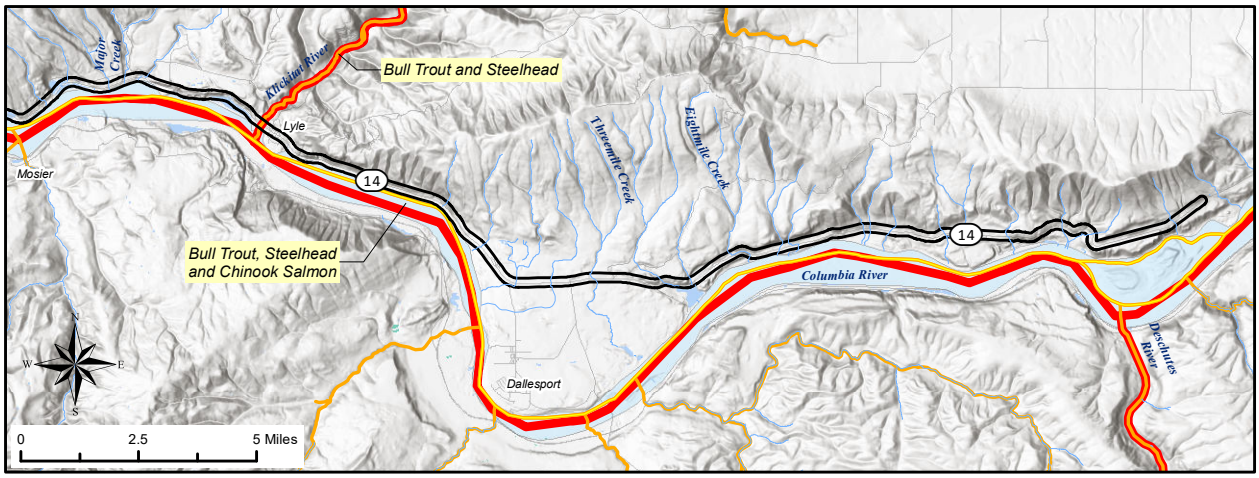
- Chinook Salmon
- Steelhead
- Coho Salmon
- Bull Trout
- Chum Salmon
- Northern Spotted Owl

Sockeye salmon and eulachon critical habitat extent (not shown) is limited to the Columbia River below the Bonneville Dam.

Data Source(s): NOAA NMFS, USGS NHD







SOCIAL AND CULTURAL RESOURCES

DEMOGRAPHIC AND ECONOMIC CONDITIONS

Racial and ethnic diversity varies throughout the study area. Table 15 through Table 17 summarize the racial/ethnic and economic characteristics of multiple cities and the three counties along the study corridor in comparison to the state's characteristics.

The racial and ethnic diversity in Clark, Skamania, and Klickitat Counties are lower than Statewide levels, although the cities of Bingen and Lyle are higher, with Hispanic or Latino populations of 43 percent and 36 percent, respectively, as shown in Table 17. As shown in Table 15, Clark County has a median household income that is slightly higher than the Statewide median, with a lower poverty rate. This is likely due to the concentration of people living in Vancouver and surrounding cities of Clark County, whom have higher incomes than the state median.

The cities of North Bonneville, Stevenson, and Carson all have similar racial and ethnic characteristics as Skamania County as a whole, which is still lower than state levels, as shown in Table 16. North Bonneville has a much lower poverty level and Stevenson and Carson have slightly higher poverty levels. The median household income levels of the three cities and county are lower than the State's, likely due to the rural nature of Skamania County, which offers less economic opportunities than Washington's larger cities. Both the cities of Stevenson and Carson have higher poverty levels than Skamania County and the state, as shown in.

Of the five cities within Klickitat County listed in Table 17, Dallesport is the only one which has lower racial/ethnic diversity levels than Klickitat County as a whole. The city of Wishram has a Native American population of 15 percent, which is significantly higher than Klickitat County and state levels. This is due to the presence of the Wishram tribe, which is part of the Confederated Tribes of Warm Springs. The cities oof Lyle, Dallesport, and Wishram have poverty levels significantly higher than Klickitat County or state, at 39 percent, 29 percent, and 27 percent, respectively, in comparison to 16 percent countywide and 10 percent statewide. Median household incomes are lower in all listed cities than Klickitat County and state levels, with Wishram having the lowest at $31,250.

Table 15. Demographic and Economic Data near Study Area - Clark County

		Clark County	Washington State
Population (2019)		**488,241**	**7,614,893**
Racial/Ethnic Characteristics	White (not Hispanic or Latino)	77%	67%
	Hispanic or Latino	10%	13%
	Black or African American	2%	4%
	Native American	1%	1%
	Asian	4%	9%
	Islander	1%	1%
	Two or more races	4%	5%
Economic Characteristics	Median Household Income, 2019	$80,555	$78,687
	Persons below poverty level	9.2%	9.8%

Source: Censusreporter.org

Table 16. Demographic and Economic Data near Study Area - Skamania County

		North Bonneville	Stevenson	Carson	Home Valley	Skamania County	Washington State
Population (2019)		**1,126**	**1,530**	**2,830**	**N/A**	**11,753**	**7,614,893**
Racial/Ethnic Characteristics	White (not Hispanic or Latino)	89%	91%	83%	N/A	88%	67%
	Hispanic or Latino	7%	7%	11%	N/A	6%	13%
	Black or African American	0%	0%	0%	N/A	0%	4%
	Native American	0%	1%	4%	N/A	2%	1%
	Asian	1%	1%	2%	N/A	1%	9%
	Islander	1%	0%	0%	N/A	0%	1%
	Two or more races	2%	1%	0%	N/A	2%	5%
Economic Characteristics	Median Household Income, 2019	$64,952	$57,500	$55,819	N/A	$65,181	$78,687
	Persons below poverty level	3.7%	15.7%	20.7%	N/A	12.8%	9.8%

Source: Censusreporter.org

Table 17. Demographic and Economic Data near Study Area - Klickitat County

		White Salmon	Bingen	Lyle	Dallesport	Wishram	Klickitat County	Washington State
Population (2019)		**2,554**	**644**	**464**	**1,515**	**529**	**21,721**	**7,614,893**
Racial/Ethnic Characteristics	White (not Hispanic or Latino)	77%	56%	64%	92%	82%	82%	67%
	Hispanic or Latino	20%	43%	36%	0%	2%	12%	13%
	Black or African American	0%	0%	0%	0%	0%	1%	4%
	Native American	0%	0%	0%	0%	15%	2%	1%
	Asian	0%	1%	0%	2%	0%	1%	9%
	Islander	0%	0%	0%	0%	0%	0%	1%
	Two or more races	3%	0%	0%	6%	1%	2%	5%
Economic Characteristics	Median Household Income, 2019	$55,652	$54,327	$42,143	$54,609	$31,250	$55,773	$78,687
	Persons below poverty level	6.7%	13.4%	39%	28.7%	26.5%	15.6%	9.8%

Source: Censusreporter.org

LAND OWNERSHIP

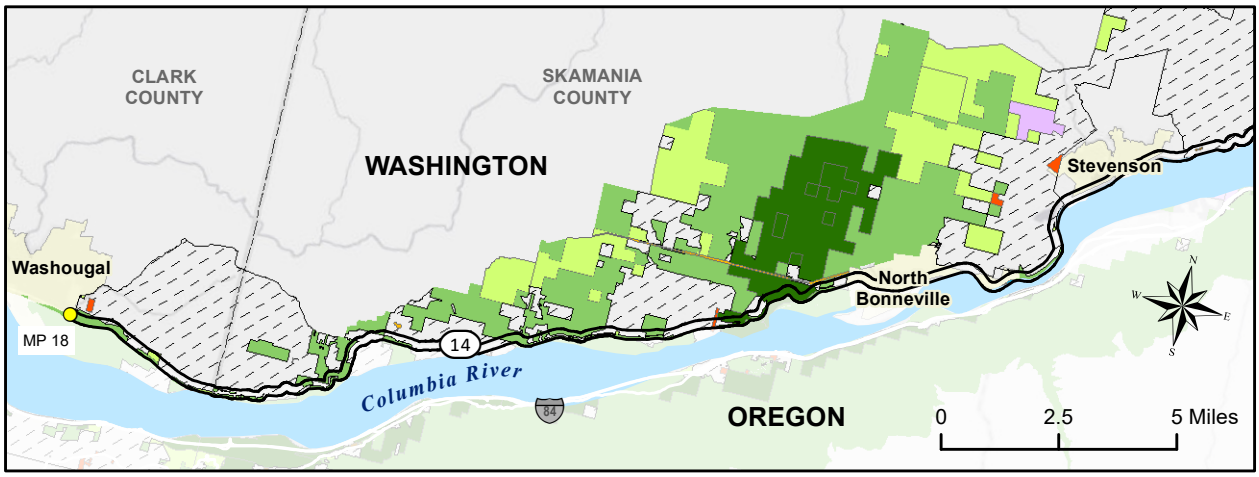
Adjacent lands located along the study corridor are primarily owned by either the USFS or private parties. Other owners include other federal agencies, Washington State Parks, and the State of Washington. There are small pockets owned by counties, but the area is minor in comparison. Figure 22 shows land ownership near the study corridor.

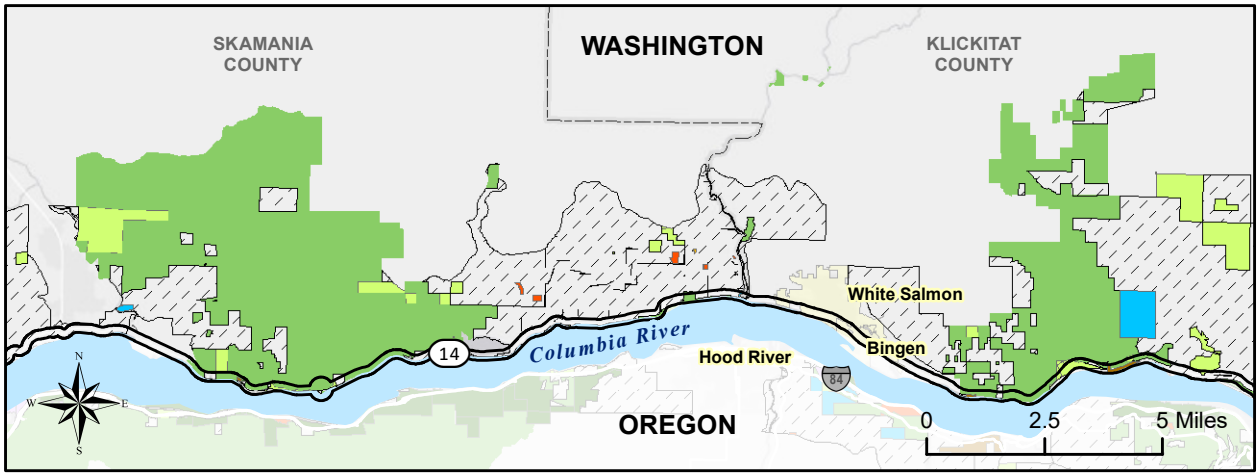
Figure 22
Land Ownership

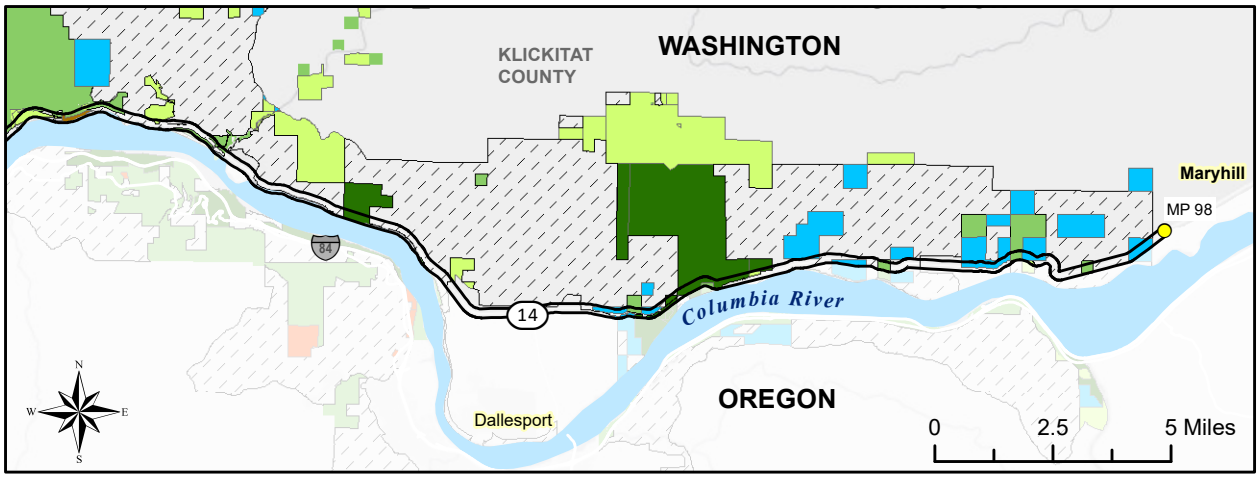
Legend

- Study Area
- **Land Ownership**
  - Federal
  - State
  - State Park
  - City
  - County
  - Bureau of Indian Affairs
  - BPA
  - Dept of Transportation
  - Private
  - City Limits
  - County Line

Data Source(s): USFS, Gorge Commission







CULTURAL RESOURCES

The National Historic Preservation Act (16 USC 470) is the primary federal law governing the preservation of cultural and historic resources in the United States. This Act established a national preservation program and the basic structure for encouraging the identification and protection of cultural and historic resources of national, state, tribal, and local significance. A key element of the preservation program is the National Register of Historic Places (NRHP), which is the federal list of historic, archaeological, and other cultural resources deemed worthy of preservation. In Washington, the National Register is administered by the Washington State Department of Archaeology and Historic Preservation (DAHP). Resources listed, or determined eligible for listing, are considered historic properties. Such properties are also generally afforded protection under Section 4(f). Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their undertakings (including funding, licensing, or permitting of the undertakings of other entities) on historic properties and stipulates that affected American Indian tribes must be consulted. The implementing regulations of Section 106 also require agencies to seek ways of avoiding, minimizing, or mitigating any adverse effects on historic properties.

To comply with these regulations and with NEPA, agencies must consider the effects of proposed projects on previously identified resources as well as resources not yet identified. In addition, in accordance with the Archaeological Sites and Resources Act (RCW 27.53) and the Indian Graves and Records Act (RCW 27.44), a permit must be obtained from DAHP before any excavation that will alter, dig into, deface, or remove archaeological resources; including American Indian graves, cairns, or glyptic records. The State Historic Preservation Officer reviews and comments on archaeological surveys performed on site and makes determinations regarding eligibility and effect.

In addition, U.S. Government agencies have a permanent legal obligation to exercise statutory and other legal authorities to protect tribal land, assets, resources, and treaty rights, as well as a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. In the study area, the CRGNSA consults with federally recognized tribes that are culturally and historically affiliated with and have ongoing interest in management of CRGNSA administered lands. These tribes include the Confederated Tribes of the Warm Springs, and Yakama Nation, Nez Perce Tribe and the Confederated Tribes of Umatilla Indian Reservation. The Warm Springs and Yakama Tribes have ceded lands within the National Scenic Area but all four have strong ties to the river.

The Forest Service also consults with the Confederated Tribes of the Grand Ronde, the Cowlitz Tribe and the Siletz Tribe. Members of local tribes use SR 14 for access to traditional hunting, fishing, and gathering areas.

Additional statutes, regulations, and policies aimed at protecting cultural resources include the following:

- American Indian Religious Freedom Act
- Antiquities Act of 1906
- Archaeological Resources Protection Act of 1979
- Native American Graves Protection and Repatriation Act of 1990
- EO 13175 (Consultation and Coordination with Indian Tribal Governments)
- EO 11593 (Protection and Enhancement of the Cultural Environment)

DAHP maintains a GIS database of buildings, structures, and sites that have been evaluated for inclusion in the NRHP or its State of Washington equivalent, the Washington Heritage Register, as well as all above-

ground resources that have been surveyed. Access to archaeological data is redacted from public viewing in accordance with state law.

According to Washington DAHP, there are two areas in the study area are on the state and/or national registers: The Bonneville Damn Historic District and the Klickitat River Bridge. There are also several sites in the study area or accessed from the study area that are eligible or a determination of eligibility has yet to be made.

It is unlikely that the study area has been completely surveyed for historical and archaeological resources. Before any ground disturbing actions, an archaeological field investigation must be completed.

Washington State Historic Highway Bridges

Bridges in Table 18 are listed in the NRHP (NR), determined eligible for listing (NR DE), have been nominated or recommended eligible for inclusion in the NRHP. The Historic American Engineering Record (HAER) bridges have been documented by, or for, the HAER or the Department of Archaeology and Historic Preservation's Level 2.

Table 18. Historic Highway Bridges in the Study Area

County	Structure ID	Bridge No.	Bridge Name	Year Built	Owner	Inventory
Skamania/ Hood River OR	8712700	259228300	Bridge of the Gods	1926	Port of Cascade Locks	NR DE
Klickitat	0001727A	14/212	Klickitat River	1933	WSDOT	NR DE
Klickitat	0001492B	14/222	Horsethief Canyon	1931	WSDOT	NR DE
Klickitat-Hood River (OR)	000000PH	6645	Hood River-White Salmon	1924	Port of Hood River	NR DE

Source: WSDOT

There are also seven tunnels and several stone walls along SR 14 through the CRGNSA. All but one of the tunnels (mile post 59.61) are listed as having historical and engineering interest to the state.

NOISE

Traffic noise may need to be evaluated for any future improvements in the study area. A noise analysis is required for projects that include a substantial shift in the roadway horizontal or vertical alignments, increasing the number of through lanes, providing passing lanes, or increasing traffic speed and volume. Such an analysis includes measuring ambient noise levels at selected receivers and modeling design year noise levels using projected traffic volumes. If noise levels approach or substantially exceed noise abatement criteria for the project, noise abatement measures may be necessary. Possible abatement measures available for consideration include, but are not limited to, one or more of the following:

- Modifying the existing or proposed roadway horizontal or vertical alignment.
- Constructing noise barriers such as sound walls or earthen berms.
- Decreasing traffic speed limits.

Noise abatement measures must be considered reasonable and feasible and be supported by the affected public.

Construction activities associated with any improvements resulting from this feasibility study may cause localized, short-duration noise impacts. These impacts can be minimized by using standard WSDOT specifications for the mitigation of noise sources during construction.

VISUAL RESOURCES

Scenic quality is a fundamental element of recreation experiences and this is especially true within the CRGNSA. The CRGNSA Management Plan has defined Key Viewing Areas (KVAs) as "those portions of important public roads, parks, or other vantage points within the Scenic Area from which the public views Scenic Area landscapes." The location of KVAs within the study area, like the location of trailheads, influences tourism hot spots. Understanding where the KVAs are located within the study area will aid in identifying potential underlying contributing factors to the current traffic patterns as well as the crash history along the corridor. Identified KVAs within the study area include:

- Historic Columbia River Highway
- Crown Point
- Highway I-84, including rest stops
- Multnomah Falls
- SR 14
- Beacon Rock
- Panorama Point Park
- Cape Horn
- Dog Mountain Trail
- Cook-Underwood Rd
- Rowena Plateau and Nature Conservancy Viewpoint
- Portland Women's Forum State Park
- Bridal Veil State Park
- Larch Mountain (including Sherrard Point)
- Rooster Rock State Park
- Bonneville Dam Visitor Centers
- Columbia River
- Washington SR 141
- Washington SR 142
- Oregon Highway 35
- Sandy River
- Pacific Crest Trail

For projects located in the SMAs only:

- Wyeth Bench Rd (also known as Wyeth Rd)
- Old Highway 8 (previously known as Old Washington State Route 14 and County Road 1230)

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