CROOK COUNTY WORK SESSION AGENDA

Wednesday, February 26, 2025 at 9:00 am

Crook County Administration Conference Room I 203 NE Court St. I Prineville OR

Members of the public and media are welcome to attend in person or via Zoom: Phone: 1-253-215-8782; Meeting ID: 962 4214 4333; Passcode: 970900

PUBLIC COMMENT

DISCUSSION

1. **Western Ridged Mussel ESA Listing Potential Impacts and Engagement**
   Requester: Bruce Scanlon
   Ochoco Irrigation District Manager

2. **Update on NRAC Vacancy Application Process**
   Requester: Tim Deboodt
   Natural Resources Manager

3. **Update on Ag Extension Advisory Board Appointments**
   Requester: Rebecca Keegan
   Extension Manager

4. **Crook County Ambulance Service Plan**
   Requester: Katie Plumb
   Health and Human Services Director

5. **Grant Acceptance for eBikes Addition to Crook County's Library of Things Collection**
   Requester: Sarah Beeler
   Library Director

6. **Legislative Bill Tracking**
   Requester: Breyanna Cupp
   Presenters: Susan Hermreck / Will Van Vactor

7. **Community Development Monthly Update**
   Requester: John Eisler
   Presenters: John Eisler / Randy Davis

MANAGER REPORT

COMMISSIONER UPDATES

8. **Letter of Opposition - House Bill 2640**

EXECUTIVE SESSION

The Crook County Board of Commissioners will now meet in executive session under ORS 192.660(2)(d) To conduct deliberations with persons designated by the governing body to carry on labor negotiations.

Representatives of the news media are not permitted to attend this executive session, pursuant to ORS 192.660(4). Designated staff shall be allowed to attend the executive session. All other members of the audience are asked to leave the room. No decision may be made in executive session. At the end of the executive session, we will return to open session and welcome the audience back into the room.

9. **ORS 192.660(2)(d) To conduct deliberations with persons designated by the governing body to carry on labor negotiations.**

NOTICE AND DISCLAIMER

The Crook County Board of Commissioners is the governing body of Crook County, Oregon, and holds work sessions to deliberate upon matters of County concern. As part of its efforts to keep the public apprised of its activities, the Crook County Board of Commissioners has published this PDF file. This file contains the material to be presented before the County Board of Commissioners for its next scheduled work session.

Please note that while County staff members make a dedicated effort to keep this file up to date, documents and content may be added, removed, or changed between when this file is posted online and when the County Board of Commissioners meeting is held. The material contained herein may be changed at any time, with or without notice.

CROOK COUNTY MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, ACCURACY, FITNESS FOR A PARTICULAR PURPOSE, OR FOR ANY OTHER MATTER. THE COUNTY IS NOT RESPONSIBLE FOR POSSIBLE ERRORS, OMMISSIONS, MISUSE, OR MISINTERPRETATION.

Please also note that this file does not contain any material scheduled to be discussed at an executive session, or material the access to which may be restricted under the terms of Oregon law.

If you are interested in obtaining additional copies of any of the documents contained herein, they may be obtained by completing a Crook County Public Records Request form. Request forms are available on the County's website or at the County Administration office at 203 NE Court Street, in Prineville.

Additional Items

Additional items may be discussed that arise too late to be included as a part of this notice. For information about adding agenda items, please contact the County Administration office at 447-6555. Assistance to handicapped individuals is provided with advance notice.

Contact: Brian Barney (brian.barney@crookcountyor.gov (541) 447-6555) | Agenda published on 02/20/2025 at 11:10 AM

AGENDA ITEM REQUEST

Date:

2/18/2025

Meeting date desired:

2/26/2025

Subject:

Western Ridged Mussel ESA Listing potential impacts and engagement.

Background and policy implications:

A 2020 petition to list the Western Ridged Mussel as an endangered species and subsequent US Fish and Wildlife Service determination that a full status review is warranted is expected to result in a determination of "threatened" or "endangered" in 2025. The Western Ridged Mussel is located in the Crooked River. The potential for listing could have a significant impact on the citizens of Crook County. Review of data and additional data gathering are recommended.

Budget/fiscal impacts:

Participation in a grant application to access federal funds to study these potential impacts. Full partnership request in the grant application is $4800.

Requested by:

Bruce Scanlon, Manager
Ochoco Irrigation District
bruce@ochocoid.org
541-447-6449

Presenters:

Bruce Scanlon, OID Manager

Legal review (only if requested):

Need to discuss further – The desire is for department heads to be proactive with legal, financial, HR, etc., should legal review/initials be standard operating procedure? Should review/initials expand to finance, HR, IT, facilities, if applicable?

Elected official sponsor (if applicable):

If the item request is submitted after the due date/time, an elected official sponsor is needed.

39065 Pioneer Blvd Suite 212 | Sandy, OR 97055
503-668-0033 | mthoodenvironmental.com

SCOPE OF WORK

Subject: Conservation Planning Assistance Grant Application Development

Date: February 6, 2025

Prepared for: Deschutes Basin Board of Control

Prepared by: Mount Hood Environmental

Work Window: February 10, 2025 – March 14, 2025

Labor and Expenses (NTE): $24,000

BACKGROUND

Pursuant to Chapter 9.6 of the DBHCP (Change in the Federal Status of a Species), when a species is present or potentially present on the covered lands becomes a candidate for listing, is proposed for listing, or is the subject of an emergency listing under the Endangered Species Act (ESA), the Permittees will survey potential habitat for the species on the covered lands or take other appropriate steps to determine whether the species and/or its habitat(s) are present. On August 18, 2020, U.S. Fish and Wildlife Service (USFWS) received a listing petition for the western ridged mussel (WRM) (*Gonidea angulata*) from the Xerces Society. USFWS found the petition had merit and is expected to make either a "threatened" or "endangered" listing determination in March 2025.

WRM are present in the Crooked River basin. However, it is unclear whether WRM are affected by water storage and deliveries. Therefore, inclusion of WRM in the DBHCP will require numerous studies and coordination with USFWS to determine species distribution, critical habitat, and potential for "take" caused by irrigation activities in the Crooked River. Results of that work will determine the scope of potential DBHCP modifications to address WRM and its habitat.

WORK DESCRIPTION

Mount Hood Environmental (MHE) will assist the DBBC in preparing a grant application for Conservation Planning Assistance from the USFWS Cooperative Endangered Species Conservation Fund. This grant program provides federal funding to conduct the necessary work to determine if and how the DBHCP and USFWS incidental take permit may need to be amended to provide coverage for WRM. Preparation of the grant application will include coordination with DBBC, USFWS, and Oregon Department of Fish and Wildlife (ODFW) to scope studies and approximate cost for completing the work. The grant application itself will be

an approximately 20-page document with background information about the DBHCP and distribution of WRM followed by a description of the tasks that will be funded by the grant including technical studies, agency coordination, and HCP and NEPA document preparation. Application submission will occur on March 14.

BUDGET OVERVIEW

We anticipate it will require approximately 160 hours of staff time to coordinate with agencies and prepare the funding application. Senior consultants, Tara Blackman, Sean Gibbs, and Ian Courter will carry out the work at a rate of $150 per hour.

Task 1: Agency Coordination and Scoping (80 hours, $12,000)

To assess the level of assistance required from the Endangered Species Conservation Fund, we must first plan evaluations necessary to determine whether WRM are affected by irrigation operations. This will involve ongoing communication with agency collaborators through phone calls, emails, and at least two web-based meetings. The goal of this coordination is to outline study requirements and establish the total federal funding needed. Although MHE will prepare the application, the State of Oregon will serve as the applicant. Therefore, we must also coordinate with ODFW staff regarding application submission and contract administration if the grant is awarded.

Task 2: Draft Application (60 hours, $9,000)

MHE will prepare the draft grant application in accordance with the guidelines provided at https://www.grants.gov/search-results-detail/357649. The DBBC has previously applied for and received Conservation Planning Assistance funds for HCP development. MHE will leverage content from the DBBC's previous application where possible to reduce the amount of time needed to prepare the document.

Task 3: Finalize Application and Coordinate Submission (20 hours, $3,000)

The Draft Application will be distributed to the DBBC and our agency partners one week prior to the submission deadline. Comments and edits will be incorporated, and the final application will be sent to ODFW. MHE will work with ODFW staff to ensure the application is complete and submitted by the deadline.

BUDGET DETAIL

Mount Hood Environmental
PO Box 744
Boring, OR 97009
+15036680033
lauren.courter@mthoodenvironmental.com
www.mthoodenvironmental.com

MOUNT HOOD ENVIRONMENTAL

Estimate

ADDRESS
Deschutes Basin Board of Control
PO Box 919
Madras, OR 97741

ESTIMATE 1070
DATE 02/06/2025

PERFORMANCE PERIOD
February - March 2025

DESCRIPTION	QTY	RATE	AMOUNT
TASK 1. Agency Coordination, Scoping. SENIOR SCIENTIST	80	150.00	12,000.00
TASK 2. Draft Application. SENIOR SCIENTIST	60	150.00	9,000.00
TASK 3. Finalize Application, Coordination Submission. SENIOR SCIENTIST	20	150.00	3,000.00

Conservation Planning Assistance Grant Application Development

TOTAL **$24,000.00**

Accepted By

Accepted Date

Western Ridged Mussel
Petition for ESA Listing

Overview

The Xerces Society for Invertebrate Conservation filed a Petition to List the Western Ridged Mussel (Gonidea angulata) with the US Department of Interior on August 18, 2020 as an endangered species under the Endangered Species Act. This petition asserted the distribution and density of G. angulata has declined throughout the Pacific Northwest, California, Nevada, and Idaho. In 2021, the U.S. Fish and Wildlife Service (USFWS) responded to the petition and determined that a full status review is warranted.

G. angulata is a native freshwater mussel endemic to regions of Oregon, including the Willamette, Upper John Day, the Grande Ronde, the Owyhee, and Deschutes basins. In the last decade, mussel experts have observed significant declines in G. angulata bed density and increased incidence of die-offs at historical sites. For example, a die-off was observed in the Crooked River near Smith Rock State Park in 2014 where remains from thousands of dead mussels were reported.

The Petition to List identified habitat destruction and modification and poor water quality as primary threats to the success of G. angulata. It is asserted that inadequate stream flow as well as habitat restoration targeted at improving conditions for fish have disrupted mussel habitat, thereby contributing to the species' decline. Potential water quality threats include high stream temperature, nitrate levels, and anthropogenically-sourced toxicants (e.g., pesticides, heavy metals). Additionally, pathogens and invasive species have been listed as potential threats to the species.

Potential declines in G. angulata density and distribution in the Deschutes River Basin and USFWS' decision to list the species are relevant to the City of Prineville (City), Deschutes Basin irrigation districts (Districts) and residents of Crook County. The Petition to List points to several elements that warrant in-depth analysis of existing data, and in some cases the collection of additional data.

REFERENCES

Blevins, E., Jepsen, S. and Selvaggio, S., 2020. Petitions to list the Western Ridged Mussel (Gonidea angulata) as an endangered species under the Endangered Species Act. Submitted by the Xerces Society for Invertebrate Conservation.

PETITION TO LIST

The Western Ridged Mussel

Gonidea angulata (Lea, 1838)

AS AN ENDANGERED SPECIES

UNDER THE U.S. ENDANGERED SPECIES ACT

Photo credit: Xerces Society/Emilie Blevins

Submitted by

The Xerces Society for Invertebrate Conservation
Prepared by Emilie Blevins, Sarina Jepsen, and Sharon Selvaggio

August 18, 2020

The Honorable David Bernhardt
Secretary, U.S. Department of Interior
1849 C Street, NW Washington, DC 20240

Dear Mr. Bernhardt:

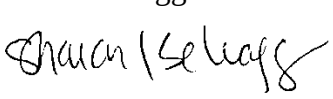
The Xerces Society for Invertebrate Conservation hereby formally petitions to list the western ridged mussel (*Gonidea angulata*) as an endangered species under the Endangered Species Act, 16 U.S.C. § 1531 *et seq.* This petition is filed under 5 U.S.C. 553(e) and 50 CFR 424.14(a), which grants interested parties the right to petition for issue of a rule from the Secretary of the Interior.

Freshwater mussels perform critical functions in U.S. freshwater ecosystems that contribute to clean water, healthy fisheries, aquatic food webs and biodiversity, and functioning ecosystems. The richness of aquatic life promoted and supported by freshwater mussel beds is analogous to coral reefs, with mussels serving as both structure and habitat for other species, providing and concentrating food, cleaning and clearing water, and enhancing riverbed habitat. The western ridged mussel, a native freshwater mussel species in western North America, once ranged from San Diego County in California to southern British Columbia and east to Idaho. In recent years the species has been lost from 43% of its historic range, and the southern terminus of the species' distribution has contracted northward approximately 475 miles. Live western ridged mussels were not detected at 46% of the 87 sites where it historically occurred and that have been recently revisited. Where this species still occurs, it is generally only found in small numbers or is known only from collections or observations of shells. Several populations in rivers where it has recently been known to occur across tens of river miles or in high density and abundance have experienced sudden, enigmatic die-offs that have reduced those populations considerably. The western ridged mussel is threatened by enigmatic die-offs, as well as direct habitat destruction and modification; impacts to water, including water management, water quality, and climate change; the potential for introduction of invasive species, overutilization from recreational harvest; disease; inadequate regulations; population demographic factors; and impacts to genetic diversity. These threats to the species' viability (resiliency, redundancy, and representation) exemplify the species' high risk of extinction. Further, existing regulations are inadequate to protect this species from factors that threaten its continued survival.

We recognize that this petition sets in motion a specific process placing definite response requirements on the U.S. Fish and Wildlife Service (the Service) and very specific time constraints upon those responses. 16 U.S.C. § 1533(b). We will therefore expect a finding by the Service within 90 days regarding whether our petition contains substantial information to warrant a full status review.

Sincerely,

Emilie Blevins | Sarina Jepsen | Sharon Selvaggio



The Xerces Society for Invertebrate Conservation
Phone: 503-232-6639
Address: 628 NE Broadway | Suite 200 | Portland, OR, 97232-1324, USA

I. EXECUTIVE SUMMARY

The western ridged mussel (*Gonidea angulata*) is a species of freshwater mussel (Bivalvia: Unionidae) that historically occurred in river basins spanning portions of the western states of California, Idaho, Nevada, Oregon, and Washington, and the Canadian province of British Columbia. This species is the only extant member of its genus and evolutionarily unique with respect to the United States' freshwater mussel fauna (Lopes-Lima et al. 2017). Research indicates that the species has experienced a significant reduction in range from the historic distribution (43%; Blevins et al. 2017a), with the southern extent of the species' range in California having contracted northward approximately 475 miles as compared to the historic range. Live western ridged mussels were not detected at 46% of the 87 sites where it historically occurred and that have been recently revisited.

The western ridged mussels' viability, as measured by redundancy and representation of populations, has been significantly reduced. Further, the resiliency of the species is also greatly compromised; many recent records for the species are limited to observations of empty shells or only a small number of live animals from just a few locations within larger river basins (Xerces/CTUIR 2020). Extant populations in multiple rivers have also recently experienced rapid declines in abundance as a result of enigmatic die-offs, which may be caused by pathogens and other interrelated factors. These die-offs have occurred in spatially disjunct rivers and have resulted in devastating effects on mussel beds, often with thousands of mussels killed outright over the course of a single summer and spanning tens of river miles (Leis et al. 2018). For example, the Confederated Tribes of the Umatilla Indian Reservation monitored one site containing approximately 500 western ridged mussels per square meter in the Middle Fork John Day River between 2005 and 2010 and recorded a precipitous extirpation of the entire mussel bed (Maine et al. 2019).

In addition to the enigmatic die offs that have been recently recorded, the western ridged mussel faces multiple other threats, including direct habitat destruction and modification; impacts to water, including water management, water quality, and climate change; the potential for introduction of invasive species, overutilization from recreational harvest; disease; inadequate regulations; population demographic factors; and impacts to genetic diversity. Several characteristics also contribute to the species' high risk of extinction including its near-total immobility as an adult, reliance on perennial inundation and good water quality, the extended period of growth required prior to reaching sexual maturity (~7 years), and its strict reliance on a few species of host fish to successfully complete reproduction within a narrow temporal window (Blevins et al. 2017a,b). Combined with the level of decline in viability that the western ridged mussel has already undergone, the species faces a high risk of extinction, particularly given that existing regulations are inadequate to protect it from these threats.

As a species group, freshwater mussels are the most imperiled animals in the U.S., yet they are critical to healthy aquatic ecosystems and provide numerous invaluable services that contribute to clean drinking water, healthy fish populations, and biodiverse habitat (Haag and Williams 2014; Vaughn 2017). Freshwater mussels, including the western ridged mussel, are also significant to some tribes in the Pacific Northwest as a traditional cultural resource (CTUIR 2015; Norgaard et al. 2013). This petition presents the best scientific data available, including observations and distribution data from the Western Freshwater Mussel Database (Xerces/CTUIR 2020), which comprises data from more than 250 individuals, more than 100

institutions, and nearly 200 published and unpublished articles and reports. Based on this and other supporting information, this petition demonstrates that the western ridged mussel meets multiple criteria of an Endangered Species under the U.S. Endangered Species Act.

II. CANDIDATE BACKGROUND, STATUS, AND LISTING HISTORY

The western ridged mussel (*Gonidea angulata*) has no legal protection under the U.S. Endangered Species Act or any state endangered species statutes. To our knowledge, the western ridged mussel has never been petitioned for listing under the Endangered Species Act and it has no federal status. Canada lists *Gonidea angulata* as Special Concern, Schedule 1, under the Species At Risk Act, although it is currently proposed for reclassification to Endangered status (SARA 2019). Provincially, it is assessed as Endangered in British Columbia (COSEWIC 2010). NatureServe ranks the species as G3, Vulnerable throughout its range, N2, Imperiled in Canada, and N3, Vulnerable in the United States (NatureServe 2019). The International Union for Conservation of Nature (IUCN) ranks the species as Vulnerable (Blevins et al. 2016). The species is listed as a Species of Greatest Conservation Need in Washington (WDFW 2015), Oregon (ODFW 2016), Idaho (IDFG 2017), and California (CDFW 2015). The USFS lists the species as Sensitive in Oregon and Washington, and the BLM lists it as Sensitive in Oregon, Washington, and Nevada. The species is also categorized as "List 1: Threatened or Endangered" in Oregon (ORBIC 2019), "At-Risk" in Nevada (NNHP 2020), and a "Special Animal" in California (CNDDB 2019).

III. POPULATION STATUS AND DISTRIBUTION

A. Historic Distribution

The western ridged mussel historically occurred in the western U.S. states of Washington, Oregon, Nevada, Idaho, and California, as well as the Canadian province of British Columbia (Figure 1; Xerces/CTUIR 2020). The species was historically reported as far south as San Diego County in California and as far north as the Okanagan basin in the U.S. and into Canada. The species' historic range included coastal basins in California, Oregon, and Washington, east to the Salmon and upper Snake basins in Idaho, with records ranging from near sea level to at least 5,800 ft above sea level.

B. Recent Distribution and Population Status

The recent distribution of the western ridged mussel was assessed by Blevins et al. (2017a) using standardized methods and criteria developed by the IUCN Red List (2012). This analysis indicated a reduction in range of 43% from the historic distribution. Notably, the southern extent of the species' range appears to have contracted more than 475 miles northward from the Santa Margarita River in San Diego County to rivers north of San Francisco Bay, including the Russian River, which now represents the southernmost recent observation of live western ridged mussel in California. In the past few years, multiple surveys of historic western ridged mussel locations have been undertaken and die-offs of western ridged mussel have been observed in at least four river basins, and potentially as many as six rivers, across its range. Of the 318 western ridged

mussel sites[1] documented in the Western Freshwater Mussel Database (Xerces/CTUIR/2020), 171 are historic (reported prior to 1990). Of these historic sites, approximately half (87) have been resurveyed for the western ridged mussel. Live western ridged mussels were not detected at 46% of the historic sites that were resurveyed, that is, at 40 out of 87 sites (Figure 2; Xerces/CTUIR 2020).

Since 1990, there has been increased interest in western freshwater mussels among biologists, leading to the formation of the Pacific Northwest Native Freshwater Mussel Workgroup in 2003, the development of a centralized database of mussel occurrence records by the Xerces Society in partnership with the Confederated Tribes of the Umatilla Indian Reservation (Figure 3; Xerces/CTUIR 2020), increased study and publication of original research, trainings and workshops related to freshwater mussel survey, identification, and management techniques, and development of restoration and management guidelines (Blevins et al. 2017b, 2019). This increased interest in freshwater mussels has translated to increased reporting of mussel records since 1990 (Figure 3). Though search effort has increased, only 13% of the more than 6,000 recent (1990-2020) freshwater mussel records in the Western Freshwater Mussel Database (Xerces/CTUIR 2020) are for observations of the western ridged mussel. Additionally, more than half of the recent western ridged mussel records come from just a few locations, and are the result of detailed surveys that have occurred in places like the Klamath River, the Owyhee River, Okanagan Lake and Skaha Lake. In contrast, historic records are more evenly distributed across as many as 86 different waterbodies. Further, when reported, recent observations of abundance at multiple sites indicate very low numbers of individuals (<50 live animals), or are based on observations of only empty shells, which may persist in the environment for years or even decades (depending upon environmental conditions) after the animal has died.[2]

Thus, despite an increase in recent search effort for freshwater mussels (Figure 3) and a targeted resurvey of historic sites, including numerous historic sites in California (Howard et al. 2015), a significant northward range contraction (~475 miles) has been observed. Additionally, the range of the western ridged mussel is the smallest among western North American species of freshwater mussels (which also includes *Margaritifera falcata* and several species of *Anodonta*, with which it frequently co-occurs), comprising just over one-third the average recent range size of those species (Blevins et al. 2017a).

[1] A site is defined as all occurrence records occurring within a 2 km buffer, based on the shorter of two possible separation distances, as recommended in NatureServe (2004) mapping guidance for freshwater mussels.

[2] NatureServe (2004) mapping guidance for freshwater mussel occurrences categorize weathered shells as a "historic" occurrence, and only live or recently dead shells (as described therein) as evidence of current presence. Such information is not available in the Western Freshwater Mussel Database (Xerces/CTUIR 2020) for many reports of shells. However, it is likely that a subset of shell observations treated in this petition as "recent" (based on *observation* of the shell from 1990 to 2020) would be considered "historic" by NatureServe.

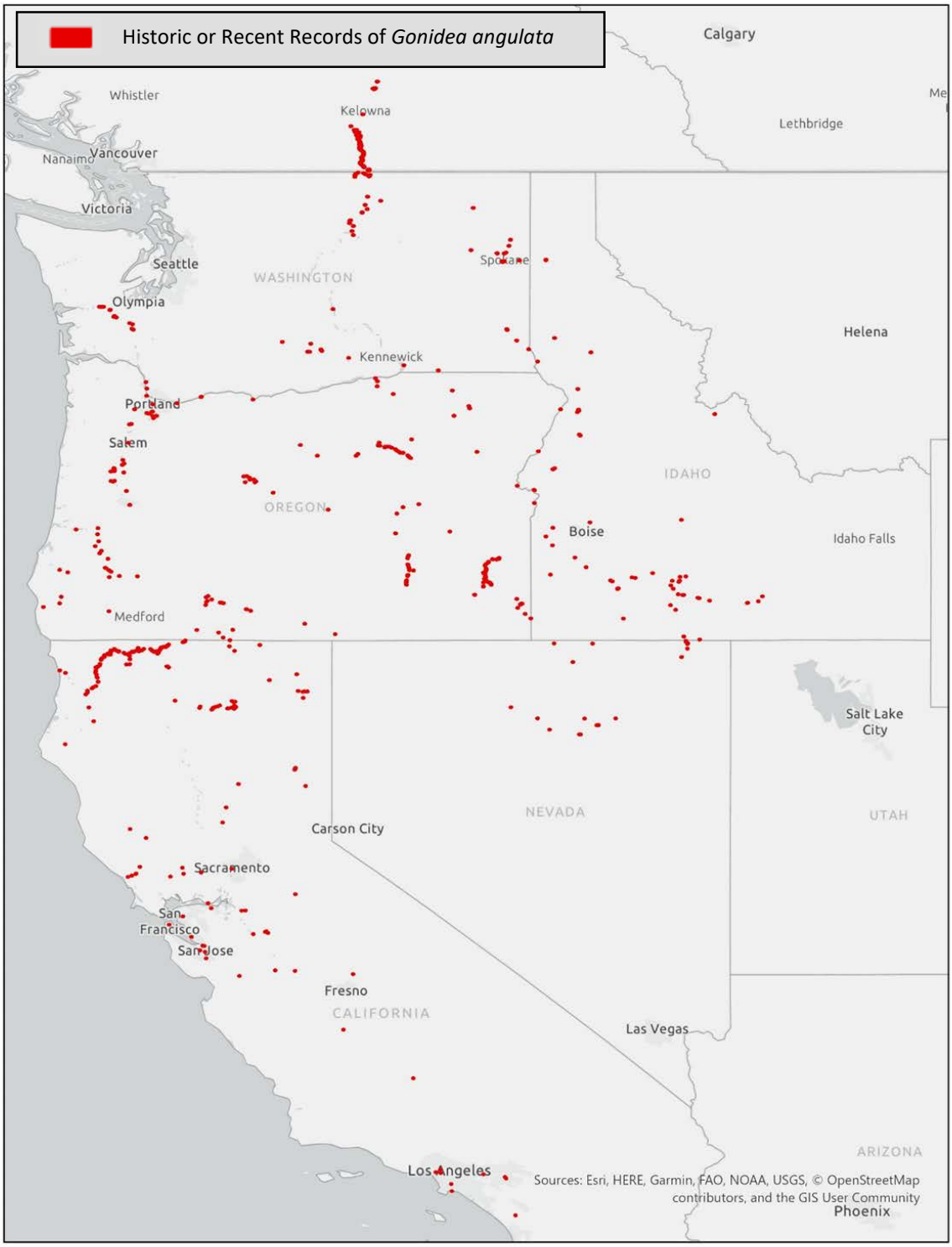


Figure 1. Observations (either shells or live animals) of *Gonidea angulata* from 1838-2020 (Xerces/CTUIR 2020).

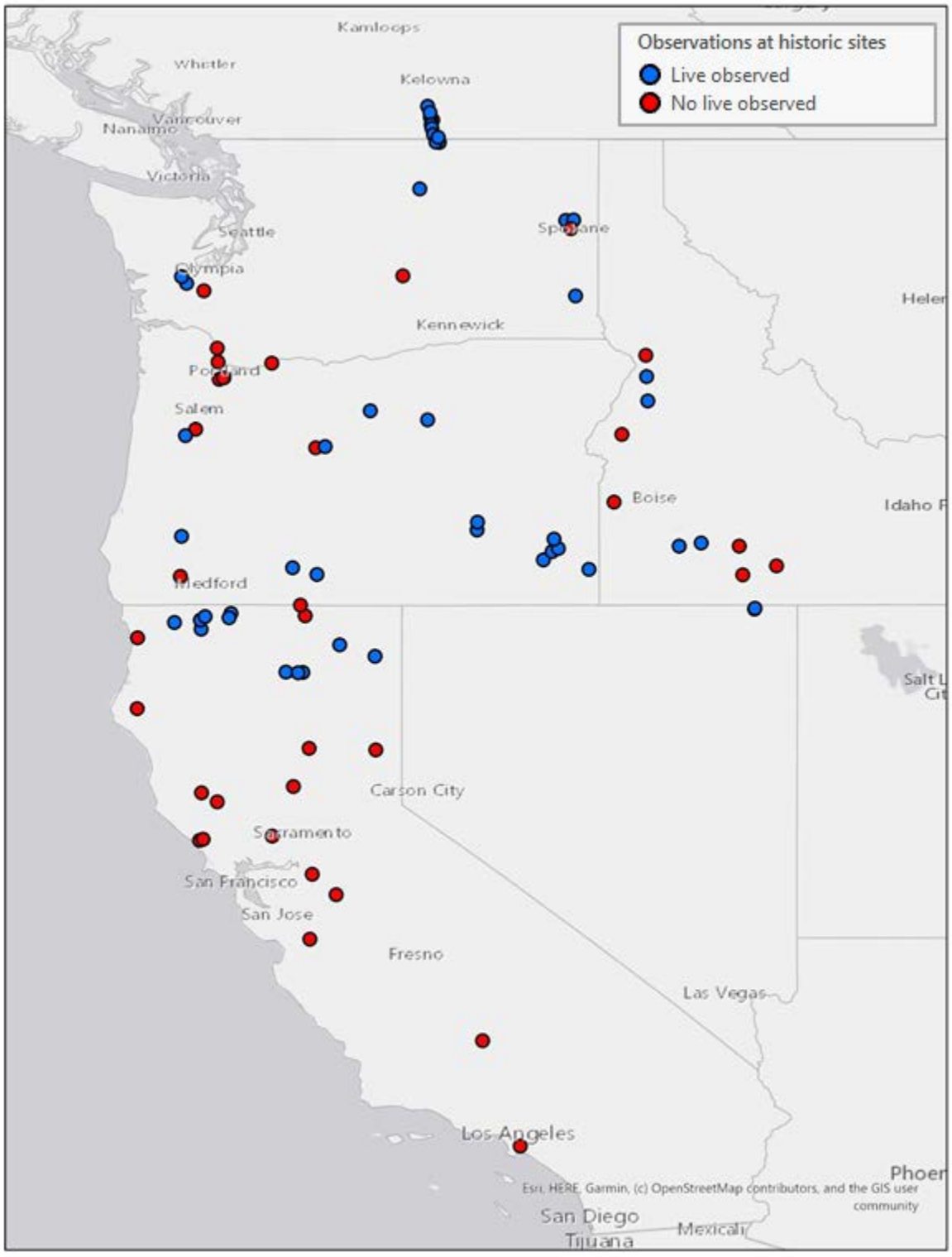


Figure 2. Of the 87 historic western ridged mussel sites that have been resurveyed in recent years (red and blue circles), live western ridged mussels were not detected at nearly half of those sites (40, red circles).

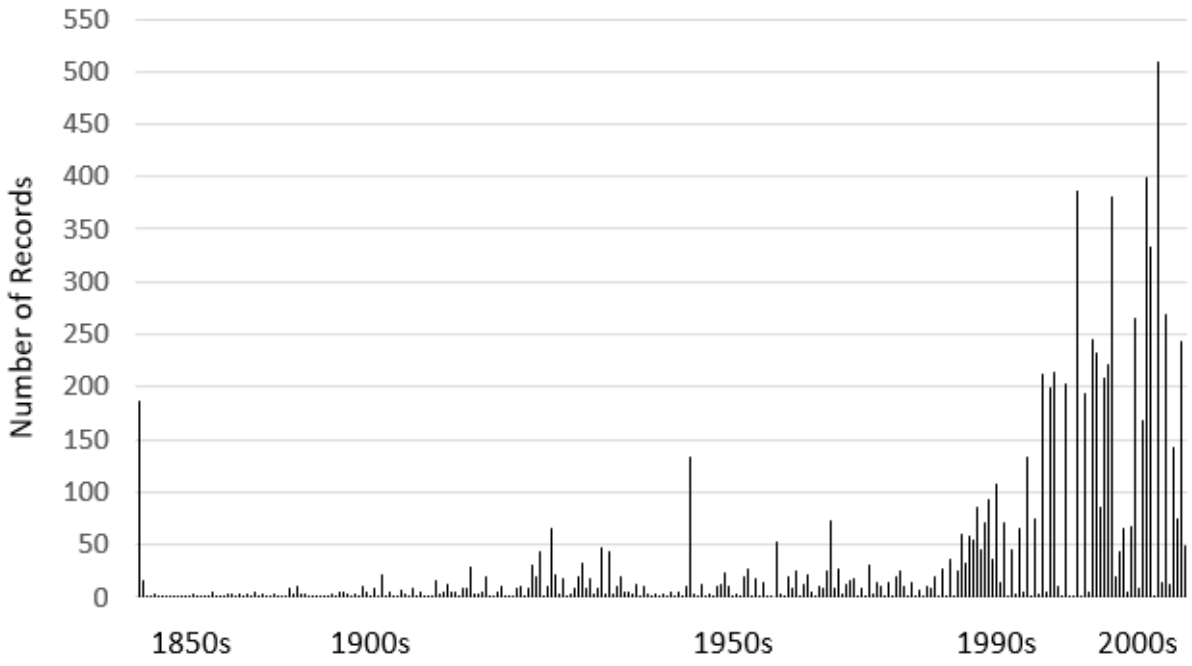


Figure 3. Specimen and observation records of western freshwater mussel species aggregated from museum collections, the published literature, and surveys indicate that search effort for freshwater mussels has greatly increased in recent years. Refer to Xerces/CTUIR (2020) for source data.

1. Recent Mussel Bed Die-Offs

In addition to the range contraction and absence of live mussels at nearly half of historic sites revisited, western ridged mussels have more recently been subject to large-scale die-offs in multiple rivers in the western U.S. The causes of freshwater mussel die-offs, where entire beds of mussels are nearly or totally extirpated, sometimes quite rapidly, are poorly understood and understudied. There has been a recent increase in interest and study of these phenomena, primarily by members of the Freshwater Mollusk Conservation Society, who, in 2018, convened a symposium to establish methods and collaborative partnerships to improve response to and study of die-offs.

Western ridged mussel die-offs have recently been reported from or observed in at least four western U.S. rivers (the Chehalis, Crooked, Middle Fork John Day, and Grande Ronde), with three potential other die-offs (also possibly the John Day, Weiser, and Owyhee) and have impacted populations spanning more than 50 miles in at least one of these rivers (Table 1; Figure 4). Because freshwater mussels are cryptic, and because western ridged mussel populations are not routinely monitored or studied across the species' range in the U.S., die-offs may go unnoticed. Additionally, it can be difficult to interpret field observations of empty mussel shells remaining in situ (as opposed to having washed ashore or downstream) in rivers or large numbers of mussels unburied and lying on the riverbed (as compared to their natural state being snugly burrowed into the sediment throughout their entire lives) (Figure 5). However, information on two better-studied die-off locations, the Chehalis River in southwestern Washington and the Crooked River in central Oregon, is provided below. In each case, thousands

of freshwater mussels had already died by the time biologists observed and reported the impacts, as evidenced by numerous dead and empty mussel shells observed at each site. Samples of freshwater mussels from these two locations have also been included in a national study effort to examine the potential causal or associated factors of mussel die-offs (Leis et al. 2018).

Table 1. Summary of observations at four western ridged mussel die-off locations and three potential die-off locations. Freshwater mussel die-offs affecting other mussel species in the region only, such as *Margaritifera falcata*, are not reported here.

Location	Year First Reported	Observations of Mussel Die-Offs or Potential Die-Offs
Chehalis River, WA	2015	Observed Die-Off: Many tens of thousands of dead freshwater mussels (evidenced by empty shells within the substrate where live animals were observed two years prior), including western ridged mussels, are estimated over ~50 river miles. Recent observations by Xerces Society and WA state fish and wildlife biologists have revealed that impacts of the die-off have migrated upriver since it was first reported.
Crooked River, OR	2014	Observed Die-Off: First reported by PNW Mussel Workgroup member. Site snorkeled by Xerces Society biologist in 2018. Many thousands of shells still present and apparently unhealthy mussels observed unburied and atop the riverbed next to buried, live mussels. Additional unburied mussels were observed over the course of three visits during 2018.
Grande Ronde basin, OR	2017	Observed Die-Off: A biologist with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Mussel Project observed and reported dead mussel beds at two sites in the Grand Ronde basin on private lands. Die-off appeared recent and spanned at least one mile at one site, with no live western ridged mussels. Thousands of dead western ridged mussels were observed at a second site with live floater mussels.
Middle Fork John Day, OR	2008	Observed Die-Off: The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Mussel Project documented a die-off at a western ridged mussel bed, underway in 2008 (Maine et al. 2019). The bed was completely gone by 2010. Follow-up surveys have not demonstrated bed recovery since the die-off.
John Day River, OR	2020	Potential Die-Off: A biologist with USFWS observed and reported hundreds of western ridged mussel shells and only one live adult mussel. The shells were scattered across the river bottom as well as observed in the substrate in place.
Owyhee River, OR	2017	Potential Die-Off: Public report of shells in 2017 spurred a 2019 survey by Xerces Society and OR state fish biologists. During the 2019 survey of ~49 RMs, many unburied mussels and numerous shells were observed throughout, although live western ridged mussels were also present throughout the survey area. Further monitoring is needed to determine if a die-off is occurring.
Weiser River, ID	2018	Potential Die-Off: A brief 30-minute survey by a Xerces Society biologist documented western ridged mussel shells in place and many other scattered. No live western ridged mussels were observed. Further monitoring is needed to determine if a die-off is occurring.

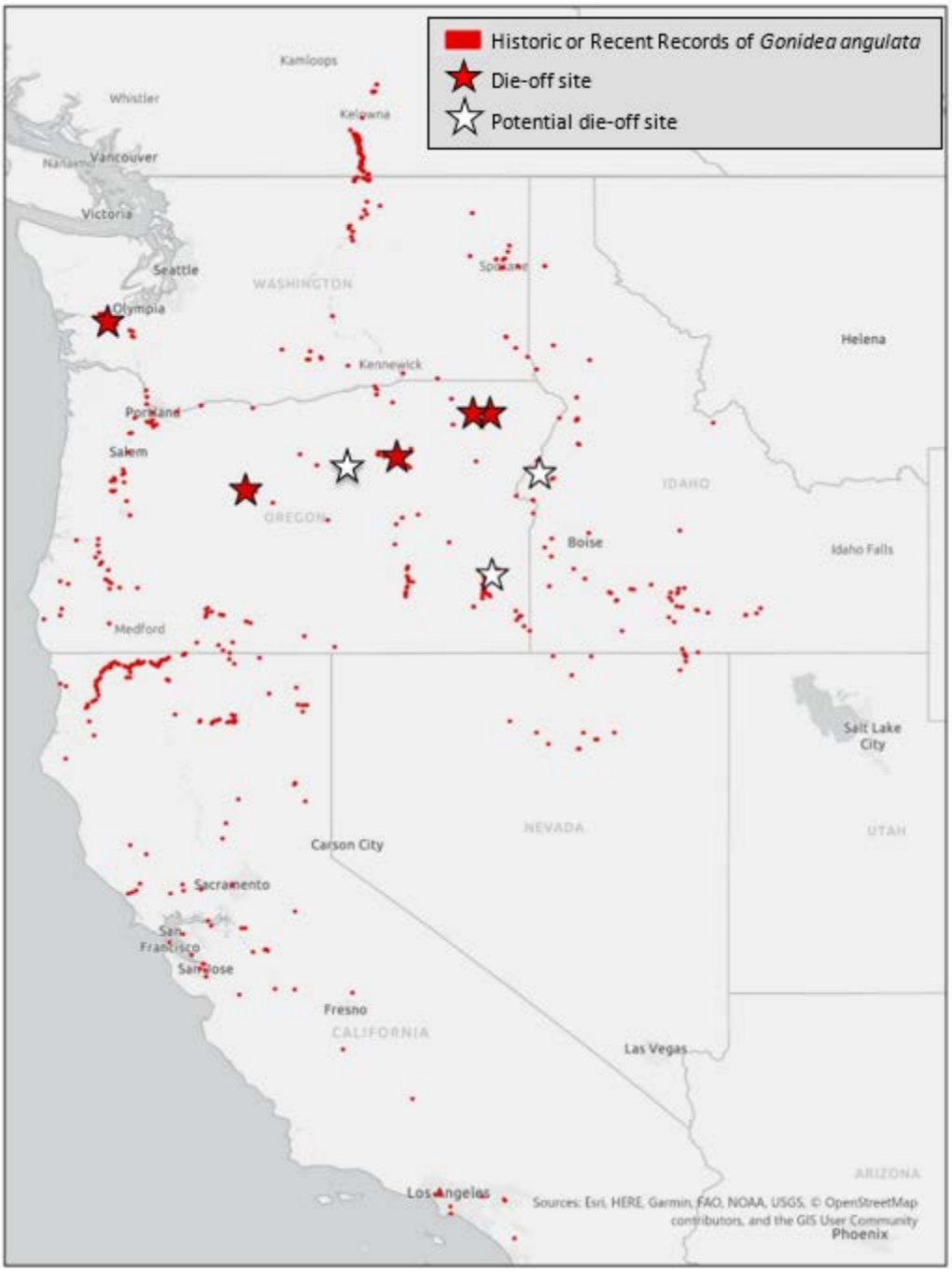


Figure 4. Enigmatic die-offs of western ridged mussel populations have been recently (since 2005) observed at locations in Oregon, Washington, and potentially Idaho.

Figure 5. Examples of observations at a potential die-off location in the Weiser River (top) and at a documented die-off location in the Crooked River (bottom) during mussel snorkel surveys. Top: Dead western ridged mussel shells were observed buried in the river bed as in life, as well as lying along the river bottom (not depicted). Bottom: During repeat visits in the summer of 2018, following the initial die-off report in 2014, mussels displayed abnormal behavior, becoming unburied, lying on the surface of the substrate, and apparently dying over the course of the season. Photo credits: Xerces Society/Emilie Blevins.

a) Chehalis River, WA

The Xerces Society was first alerted to a large-scale die-off of freshwater mussels, including the western ridged mussel, as well as *Margaritifera falcata* and *Anodonta oregonensis*, in the Chehalis River of southwest Washington in 2015 (Figures 6 and 7), following observations by a Washington state fish biologist. The original location of the observation was between Oakville and Porter, approximately river mile (RM) 43 to RM 33. Follow-up surveys in the summer of 2017 revealed that the die-off extended to a mussel bed comprised of western ridged mussels and *Margaritifera falcata* downstream near RM 24, where 46 western ridged mussel shells were found scattered among a small number of live western ridged mussels. Additional resurveys in 2019 at RM 24 and RM 33 did not successfully relocate any live western ridged mussels, despite having observed 21 live animals at RM 24 and 5 live animals at RM 33 in 2017.

Surveys were also conducted at RM 76 in 2017, documenting a large bed of *Margaritifera falcata* numbering in excess of 100,000 mussels. Upon resurveying the site in 2019, evidence of substantial die-off was obvious, with an estimated 42% mortality of *Margaritifera falcata* in sample quadrats, although a small number of live and dead western ridged mussel was also observed. Follow-up surveys should be conducted at the site and upstream to determine if the die-off has further impacted mussel populations, particularly given the pattern observed at downstream locations. Additionally, preliminary results have identified a novel virus with epidemiological effects suggesting a connection with the die-offs (T. Goldberg, unpublished data), and research regarding the virus and die-off continues through a collaboration with the USFWS, WDFW, USGS, UW - Madison, and the Xerces Society.

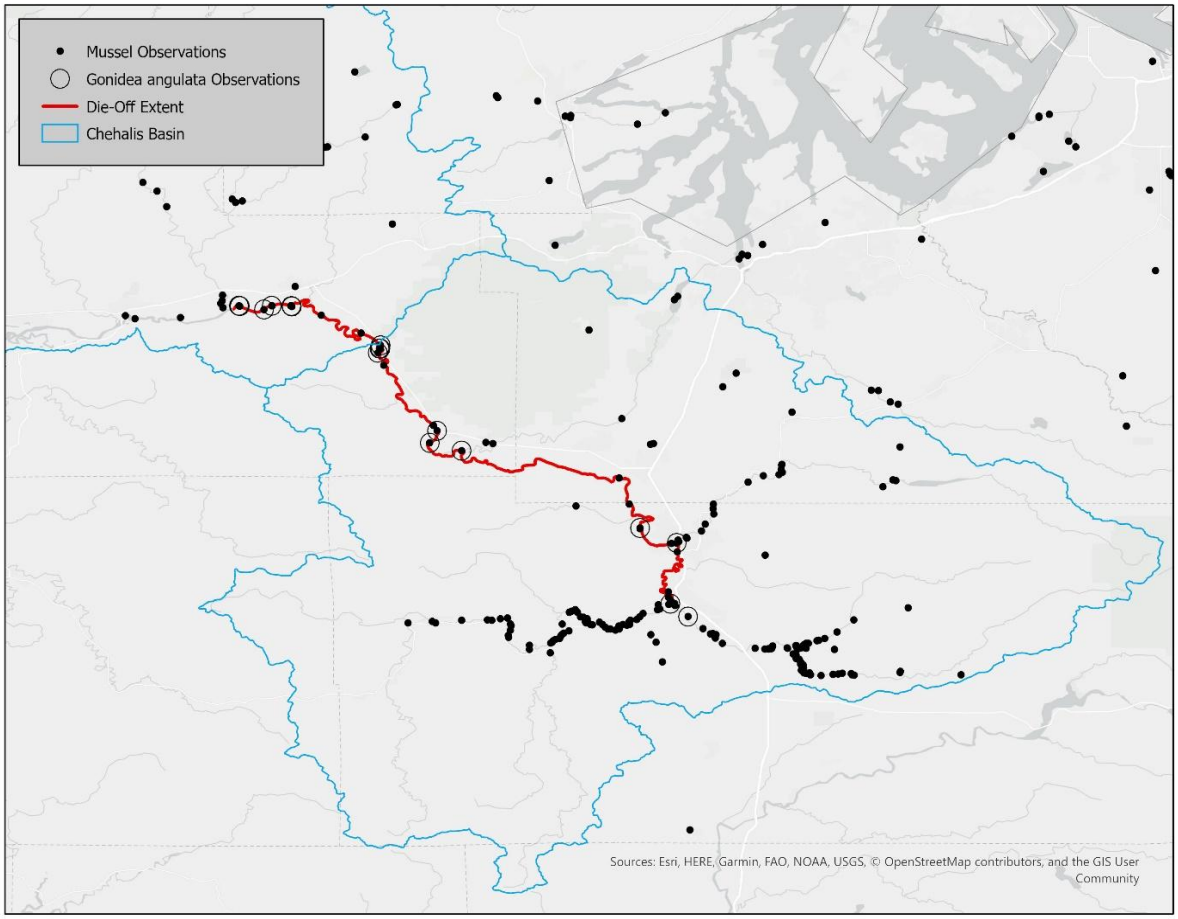


Figure 6. Extent of the die-off observed in the Chehalis River, Washington state (topmost left star in Figure 4), as of fall 2019. Measuring approximately 50 miles, the die-off is inclusive of nearly all known western ridged mussel beds in the basin. This population also represents a genetically-distinct population of the western ridged mussel relative to other populations (Mageroy et al. 2017).

Figure 7. Images from the Chehalis River mussel die-off. Clockwise from top left: 1. Shells scatter the bottom of the river where a large number of freshwater mussels have recently died. 2. Western pearlshell shells have accumulated near RM 24. 3. A recently-dead western ridged mussel, as well as 46 empty western ridged mussel shells and 21 live western ridged mussels, were observed at RM 24 in 2017. 4. A western ridged mussel shell can remain lodged in the sediment where it died for some time after death. Photo credits: Xerces Society/Emilie Blevins.

b) Crooked River, OR

A die-off observation in the Crooked River at Smith Rock State Park was first reported to the Pacific Northwest Native Freshwater Mussel Workgroup in 2014 by one of the workgroup's members. The site was known to have an abundance of western ridged mussels, likely numbering in the thousands or tens of thousands, based on the number of shells observed. A Xerces Society biologist visited the site of the reported die-off in the summer of 2018 and was able to both confirm the presence of live western ridged mussels at the site, as well as an apparently continuing die-off, with multiple adult western ridged mussels uncharacteristically unburied and lying atop the substrate (Figure 5, bottom). A subsequent site visit later in the summer also documented additional fresh shells and apparently sick mussels, several of which were collected for pathogen testing. The remaining number of live western ridged mussels at the site is unknown, as is the annual mortality rate. It is also unknown whether the population is reproducing at this time. As with the Chehalis, preliminary results have identified the same novel

virus in mussels sampled from the Crooked River (T. Goldberg, unpublished data), and research regarding the virus and die-off continues through a collaboration with the USFWS, USGS, UW - Madison, and the Xerces Society.

2. Recent Distribution by State and Province

a) Washington

Washington state is the northernmost extent of the species' range in the United States, where either shells or live animals have been reported recently (since 1990) from the Similkameen and Okanogan River watersheds, the Chehalis River watershed, the lower Snake River watershed, the Spokane River watershed, the lower Yakima River watershed, the Colville River watershed, and the Columbia River near Bridgeport (Xerces/CTUIR 2020). Frest and Johannes (1992) report finding the species represented only by shells at two of five surveyed locations and only in low abundance at two other locations on the Snake River. In a study by Krueger et al. (2007), the authors report that the species has been extirpated from some locations in Washington in the Columbia and Snake basins. Decline of two populations of the western ridged mussel in the Little Spokane River (extirpation of one and near-extirpation of the other) were reported by Brian Lang in 2000 (Jepsen and LaBar 2012). A 2018 search in the Lewis River, the type locality for the species, by Xerces Society staff also did not recover any evidence of the species' recent presence. Additional observations of distribution, abundance and declines are reported for two watersheds below.

(1) Similkameen Basin—

The western ridged mussel was documented at 24 surveyed reaches in the Similkameen River watershed by Krueger et al. (2007), but abundance was reported as "often low (10's of individuals observed in a mesohabitat unit)," despite having the potential to occur in greater abundance (10's to 1,000s), as observed at a subset of sites. Notably, this study documented the negative impacts of suction dredge mining on the species, an activity which the authors also observed in the river during the study.

(2) Chehalis Basin—

The western ridged mussel populations in the Chehalis River, where more intensive mussel surveys have occurred since 2017, have experienced widespread and sudden decline from at least river mile 21 to river mile 76, discussed in greater detail above. Surveys in tributaries to the mainstem Chehalis have also resulted in only a single western ridged mussel observed in the Newaukum River and none in the Skookumchuck River, a river from which the species was historically documented, despite documentation of another species of mussel, *Margaritifera falcata*, spanning approximately 7 river miles in the Newaukum and 21 river miles in the Skookumchuck.

b) Oregon

Historic or recent observations of the species in Oregon (shells or live animals) have been reported from river basins spanning Oregon's three major freshwater ecoregions. However recent occupancy (since 1990) in most rivers is represented by observations of only a handful of shells or live mussels, or they occur in rivers that have also experienced sudden declines. The species

can occur in abundance, as has been observed in the Donner und Blitzen and Owyhee Rivers. The following examples detail declines in several of the major river basins of Oregon.

(1) Willamette Basin—

In the mainstem Willamette River, recent observations of the western ridged mussel by Pacific Northwest Native Freshwater Mussel Workgroup members have been limited to five sites (Xerces/CTUIR 2020). Among these, at one site (Willamette River, near RM55), only seven animals were originally observed, but during a return visit three years later, only two shells were observed, while just upstream in 2003, only a single live western ridged mussel was observed within a bed of *Margaritifera falcata*. At another site (Willamette River, near RM135), one live animal was reported in 2000 by a Pacific Northwest Native Freshwater Mussel Workgroup member, but when revisited in 2018, only shells were observed. Other recent observations from the Willamette River include a single live mussel (RM177.5), a single shell (one each near RM30, RM 131, and RM 113) or multiple shells (between RM 131.5 and 122) (Xerces/CTUIR 2020).

Recent observations in tributaries to the Willamette have similarly resulted in documentation of few populations and low abundance. For example, only shell fragments have been observed by a Pacific Northwest Native Freshwater Mussel Workgroup member in the Tualatin River at two sites (Fields Bridge and near Fanno Creek), despite recent surveys and observations of other species of freshwater mussels there and elsewhere in the river (Xerces/CTUIR 2020). In the Calapooia River, a single shell was observed in 2018 by a Xerces Society biologist near the site of a 1994 USGS record, approximately 3 miles from the mouth. Additional surveys for the species at six sites in the lower river in 2019 resulted in observation of just 6 live western ridged mussels by USFWS biologists. Single western ridged mussel beds have each been observed by Pacific Northwest Native Freshwater Mussel Workgroup members in the Long Tom River (near the mouth), the Coast Fork Willamette River (near the mouth), and Muddy Creek (east of the Willamette near Junction City). Environmental DNA samples (eDNA) from a historic site at Lake Oswego collected by Utah State University staff did not pick up evidence that the species still occurs there, while eDNA samples from Muddy Creek (west of the Willamette River between Monroe and Corvallis) collected by a biologist at the BLM have indicated the species is present, although actual abundance is unknown.

(2) Crooked Basin—

In the mainstem Crooked River in the lower river and in the upper river near the Crooked River Canyon, recent observations of the western ridged mussel include multiple locations where only shells or shell fragments have been observed, as well as one live animal (Vinson 2005; Vinson 2008; Xerces/CTUIR 2020). Beyond the mainstem, only a single live mussel and several shells have been observed at a single site in the South Fork Crooked River by Xerces Society staff and an Oregon state fish biologist in 2019. Live mussels were observed in abundance in the lower river prior to 2014 at Smith Rock State Park. However, the main documented bed, occurring within Smith Rock State Park, has since undergone a sudden die-off, with continuing attrition of remaining live mussels annually as a result of a yet-unknown cause (discussed above in more detail).

(3) Upper John Day Basin—

The western ridged mussel is recently known in the upper John Day Basin from locations in the Middle Fork and North Fork, and John Day mainstem (Xerces/CTUIR 2020). Surveys by CTUIR (Brim Box et al. 2006) reported the western ridged mussel as comprising just 8% of the mussel fauna by total numbers of animals, the lowest of the three genera present in the John Day basin. Hegeman (2012) also conducted surveys in multiple reaches in the Middle Fork John Day River, and found the western ridged mussel to be the least abundant mussel species where it comprised <1% of mussel abundance by species. In 2003, just 21 animals were observed across all surveyed reaches in the North Fork John Day River (Brim Box et al. 2006). Maine et al. (2017) also found that in repeat surveys of western ridged mussel beds in the Middle Fork John Day between 2003 and 2015, mussel abundance had declined. One monitoring site ("*Gonidea* Bed") that had density estimates of 500 western ridged mussels per square meter had evidence of a die-off beginning in 2008, with western ridged mussels absent by 2010 (Maine et al. 2019). Another potential die-off consisting of hundreds of shells and one live western ridged mussel was reported at the Priest Hole recreation site on the mainstem John Day River in 2020 (Figure 8). These locations are denoted in Figure 4 as "observed" and "potential" die-off locations.

Figure 8. Western ridged mussel shells at the John Day River potential die-off site scattered (left) and in place (right). Photo credits: Teal Waterstrat.

(4) Owyhee Basin—

The western ridged mussel is known historically and recently from the Owyhee River, including from surveys conducted by O'Brien et al. (2004) and in 2018 and 2019 by Xerces Society biologists and OR state fish biologists. O'Brien et al. (2004) documented the species in dense beds of >100 individuals in just 4 of 15 surveyed locations. Surveys were conducted in 2018 and 2019 in response to a citizen report of a potential die-off between 22 and 25 river miles below the bridge at Rome, OR. During the 2018 surveys near Three Forks, the western ridged mussel was observed in beds from the mouth of Warm Springs Canyon downstream to Three Forks. However, multiple mussels were observed unburied and lying atop the substrate, which is uncharacteristic of the western ridged mussel and has been frequently observed at locations where die-offs have occurred. Surveys were again conducted in the summer of 2019 via kayak from the bridge at Rome downstream to the Birch Creek takeout, a distance of ~50 river miles.

The western ridged mussel was apparently present throughout much of this stretch of river, including both younger and older age classes, but observations also included an abundance of shells throughout all surveyed reaches, as well as numerous mussels uncharacteristically lying atop the substrate, unburied. The abundance of shells and unburied mussels warrants further investigation into the health and long-term resilience of this population. This location is denoted in Figure 4 as a "potential" die-off location.

c) Nevada

The western ridged mussel is recently reported from three basins in northern Nevada: the Humboldt River basin, the South Fork Owyhee River basin, and the Salmon Falls basin. Records in the Western Freshwater Mussel Database (Xerces/CTUIR 2020) provide little information on the status of these populations, although live mussels have been recently reported at several sites. The species is reported from a single shell in at least one waterbody (Maggie Creek, Humboldt basin). Hovingh (2004) observed a population near Carlin in 1993, but the current status of this population is also unknown.

d) Idaho

The western ridged mussel is recently reported from nine rivers in Idaho (the Jarbridge River, Bruneau River, Clearwater River, Malad River, Salmon Falls Creek, Little Salmon River, Salmon River, Snake River, and Weiser River), although more than half of all observations are from the Snake River, and only shells at a potential die-off site were observed in the Weiser River. Records in the Western Freshwater Mussel Database (Xerces/CTUIR 2020) provide little information on the status of these populations, although Frest and Johannes (1995) reported that the species was "known to be extirpated from many of the old sites, including much of Snake system, but still common in some areas…Formerly in Little Granite Reservoir (Frest & Johannes 1992b); but this population is believed to have been extirpated by the 1993 drawdown." Vannote and Minshall (1982) observed that the western ridged mussel was more abundant in a reach of the Salmon River, ID ("upper 40-km canyon reach of the 'River of No Return' of the Salmon River") as compared to *Margaritifera falcata*, but the current status of the population is unknown. A survey at a site in the Little Salmon River near New Meadows, ID by Xerces Society staff in 2018 resulted in observation of just 12 western ridged mussels. The only recent observation from the Weiser River resulted in documentation of many scattered shells and no living individuals by Xerces Society staff in 2018. Shell arrangement at this site in the Weiser River (empty but in situ, "burrowed" as in life; Figure 5, top) suggested mussels may have died in-place, a common observation at other locations where sudden die-offs of the species has been observed. This location is denoted in Figure 4 as a "potential" die-off location.

e) California

The western ridged mussel has likely experienced its greatest range decline in California. In 1981, malacologist Dwight Taylor reported the species' status as "Probably eradicated in much or most of original range in California." The species is recently known from just 17 waterbodies in 13 river basins in California (Table 2), or approximately one-third of the species' historic distribution in the state. Further, nearly 80% of all recent records come from just two rivers (the Klamath River and Pit River), and the species is found in abundance in the Klamath River. Taylor (1981) and Coney (1993) previously reported that the species was likely extirpated from southern California and most of the Central Valley. Extensive surveys by Howard (2008, 2010) at historic locations where mussels occurred, summarized in Howard et al. (2015), as well as

recent survey data submitted to the Western Freshwater Mussel Database, have found no evidence that the species still occurs in southern California. Howard et al. (2015) also report the total loss of several California historical sites, which are either now dry or have been permanently altered. In northern California, Howard (2010) reported that when found, western ridged mussels were often "sparsely dispersed and not found in dense beds," with exceptions at sites in the Klamath and Pit Rivers. As part of surveys of 52 sites in California, O'Brien (2019) located just 3 western ridged mussels. These individuals occurred in only 2 of the 9 historic sites surveyed for the species, and all were older individuals with no evidence of recruitment at the sites.

At the recent southern extent of the species' range, approximately 475 miles north of the historic southern extent, records from the Napa River and Lake Berryessa are based on collections of shells only, while records from the Russian River are based on observations of just three live animals (O'Brien 2019; Xerces/CTUIR 2020). Statewide, Howard et al. (2015) documented that the species is extant at only 55% of resurveyed historical locations.

Table 2. Waterbodies and watersheds with recent (since 1990) observations of live western ridged mussels in California, with the exception of the Lake Berryessa and Napa River, which are based on observations or collections of shells (Xerces/CTUIR 2020).

Waterbody	Watershed
Last Chance Creek	East Branch North Fork Feather
Lost River (Clear Lake Reservoir)	Lost
Klamath River	Lower Klamath
Fall River	Lower Pit
Hat Creek	Lower Pit
Pit River	Lower Pit
Tule River	Lower Pit
Russian River	Russian
Salmon River	Salmon
Napa River (shells only)	San Pablo Bay
Scott River	Scott
Shasta River	Shasta
South Fork Trinity River	South Fork Trinity
Klamath River	Upper Klamath
Pit River	Upper Pit
South Fork Pit River	Upper Pit
Lake Berryessa (shells only)	Upper Putah

f) British Columbia

The western ridged mussel is classified as "Endangered" in British Columbia, as a result of its limited distribution, continued decline at a number of sites, and a high risk of continued decline (COSEWIC 2010). The species is recently known from just six waterbodies in a single basin (Okanagan).

IV. CURRENT AND POTENTIAL THREATS – SUMMARY OF FACTORS FOR CONSIDERATION

The following factors pose substantial threats to the survival of the western ridged mussel: *A. The present or threatened destruction, modification, or curtailment of its habitat or range; B. Overutilization for commercial, recreational, scientific, or educational purposes; C. Disease or Predation; D. The inadequacy of existing regulatory mechanisms; and E. Other natural or manmade factors affecting its continued existence*. Below we summarize the rationale and available evidence for each factor.

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

Freshwater mussels require adequate conditions for multiple life stages consisting of abundant, connected aquatic habitats with stable substrates, perennial inundation, and protection from scour and deposition (Haag 2012). Indeed, habitat for the western ridged mussel includes rivers with wide floodplains, low slope, large components of sand and gravel substrate, and large boulders (reviewed in Blevins et al. 2016). The western ridged mussel, like other freshwater mussels, faces a wide range of threats occurring in aquatic ecosystems. These include direct habitat destruction and modification, including activities that disturb shoreline, channel, and bank habitats, such as dredging and mining, straightening and armoring of channels, and construction activities that alter existing habitat directly or indirectly. Even aquatic habitat restoration activities that change aquatic conditions without considering freshwater mussels that occur can pose a significant threat to western ridged mussels. Threats also include indirect impacts to mussel habitat. These may occur through reductions in water availability (quantity) and dewatering or drawdown of water levels, changes to the natural flow and level regimes (timing, volume, rate, and temperature) and connectivity, impacts to water quality, as well as the impacts of climate change. Introduction of invasive species also threatens the habitat and range of the western ridged mussel.

1. Habitat Destruction and Modification

Findings in the recent national assessment of fish habitat in the United States by Crawford et al. (2016) demonstrate that key basins where the western ridged mussel occurs or historically occurred are at a high risk of aquatic habitat degradation, including California's Central Valley, Oregon's Willamette Valley, southeast Washington (Walla Walla to Spokane), parts of western Washington (Portland, OR to Seattle), and the Snake River Plain in Idaho. In one portion of the species' range, the Okanagan Basin of British Columbia, there have been marked changes to hydrology and declines in water quality, increased development and alteration of shoreline habitat, and channelization and stabilization of riverine habitat (COSEWIC 2010). Such alterations are well-documented in many other river basins within the species' historic range, including the Willamette (Hulse et al. 2002), the Chehalis (ASRP Steering Committee 2019), the Snake (USEPA 2002; NWPCC 2004; SRSRB 2011), and the Klamath (CRS 2012). Indeed, Howard et al. (2015) reported the total loss of several river sites historically occupied by the western ridged mussel, which are either now dry or have been permanently altered. In the species' range in Canada, it is believed that historically the greatest impacts to the species were through the creation of dams and concrete weirs at sites in the Okanagan River, as well as

channelization of river habitat, resulting in the destruction or degradation of habitat (COSEWIC 2010).

Habitat destruction and modification continues to impact the species. For example, suction dredge mining has historically occurred in freshwater mussel habitat across the species' range. Although California, Oregon, and Washington all have restrictions or requirements placed on suction dredge mining, Oregon, Washington, Idaho, and Nevada still allow the practice in areas where western ridged mussels have potential to occur. Suction dredge mining (Figure 9) and other activities that disturb stream beds can kill mussels that become buried and destroy habitat (Krueger et al. 2007). Disturbance can also result in abortion of eggs by brooding females (Haley et al. 2007).

Figure 9. Example of an active mining claim (in 2017) adjacent to a western pearlshell mussel bed, in the North Fork John Day River, OR, where the western ridged mussel also occurs. The newly-constructed sluice was established within an existing long-term mussel monitoring plot. Photo credit: Xerces Society/Sarina Jepsen.

Restoration and Other In-Stream Construction Activities

In-stream construction activities, including restoration projects and transportation or other anthropogenic activities that do not purposefully protect freshwater mussels, pose a threat to western ridged mussel populations.

Hundreds of millions of dollars are spent annually to restore aquatic habitat for salmonids in the Pacific Northwest (Barnas et al. 2015) and numerous projects, such as more than 1,000 culvert replacement projects in Washington state alone, are anticipated in the future.[3] Yet, restoration projects often proceed without knowledge of whether or not freshwater mussels occur within the project area, since freshwater mussel surveys are not required by permitting agencies (Blevins et al. 2017b). In many cases, dense freshwater mussel beds are discovered only once rivers are dewatered, for example in channel re-meandering or floodplain connection projects or during culvert replacement projects (EB and SJ personal observation; Blevins et al. 2017b). At this point, hasty attempts may be made to save the animals, but these unplanned efforts are rarely successful (summarized in Blevins et al. 2019). Given the importance of freshwater mussels to salmonids and other aquatic life, restoration projects may be doing more harm than good when they overlook this ecologically important, yet cryptic, group of animals. Restoration projects that occur in western ridged mussel habitat and fail to consider them in project planning and implementation pose a significant threat to the continued survival of this species.

Restoration and other in-stream construction activities can directly or indirectly impact mussels in a number of ways. Since mussels are cryptic, they are often overlooked and go unnoticed in the planning phase of projects, particularly a species like the western ridged mussel, which burrows deeply. They have multiple characteristics that make them vulnerable during in-stream construction work, including the fact that they: are extremely sedentary, require perennial inundation of fresh water, must interact with a host fish during the release of larval mussels to complete the life cycle, and rely on habitat that remains relatively stable year-round and for a time span of decades (Blevins et al. 2016). Restoration and other in-stream construction activities can impact the species' ability to burrow into suitable habitat; result in crushing, smothering, drying out, and other causes of direct mortality; reduce the availability of suitable habitat; alter patterns of scour, which can result in later dislodgement and mortality of burrowed juvenile and adult mussels; reduce breeding success by causing stress, which may lead to abortion of developing eggs, or alter host-fish/mussel interactions during the limited breeding period (Haley et al. 2007; Levine et al. 2007; Peck et al. 2007; reviewed in Blevins et al. 2017b). Repeated disturbances or disturbances that last for an extended period may cumulatively impact mussel beds, given the relatively sedentary nature of freshwater mussels.

2. Impacts to Water Quantity, Natural Flow and Temperature Regimes, and Quality

Water Quantity

Water quantity has been described as one of the most important emerging issues in freshwater mussel conservation (Haag and Williams 2014). Freshwater mussels rely on perennial flows that support native fish and aquatic ecosystems, yet Grantham and Viers (2014) found that water rights allocations in California total approximately five times the state's annual runoff, while in

[3] https://www.wsdot.wa.gov/Projects/FishPassage/default.htm

some major river basins allocations exceed available natural surface water by as much as 1,000%. Reduction in water flows and levels directly destroy and modify habitat for freshwater mussels, which require wetted habitat to persist, grow, and reproduce. Indeed, impacts to water availability were recognized early on for their negative effects on freshwater mussels like the western ridged mussel and species with which it co-occurs. For example, malacologists noted that "the draining of ponds and lagoons and the use of river waters for irrigation so threaten to exterminate [the floater mussel] that in a few years it will be almost impossible to obtain an adequate idea of its former distribution" (Hannibal 1912). Dewatered habitat can result in direct mortality of freshwater mussels (Haley et al. 2007; Nedeau et al. 2009; Clarke 2010). Dwight Taylor wrote in 1981 that threats to the western ridged mussel included "pollution; lowering of water-table through agricultural development; changes in stream flow through damming or increased flooding due to overgrazing or logging; elimination of natural fish hosts on which life cycle depends (Taylor 1981). Continued and future impacts to western water availability are anticipated as a result of ever-increasing demand and changes to historic patterns of rainfall and snowmelt under climate change (Dettinger et al. 2015), and are likely to negatively impact the persistence of the western ridged mussel.

Natural Flow and Level Regimes and Connectivity

The natural flow and level regimes of freshwater ecosystems (including magnitude, frequency, duration, timing, and rate of change; Poff et al. 1997) are similarly vital to the western ridged mussel and other species of freshwater mussels. However, impacts to these regimes in freshwater habitats have resulted from construction and operation of dams and water diversions throughout the species' range (Kondolf and Batalla 2005; Poff et al. 2007; Richter et al. 2016; Zimmerman et al. 2017). Freshwater mussels depend on flows to support respiration, feeding, and reproduction, and habitats that dry as a result of water level fluctuation can exclude mussels. Negative effects of altered regimes, for example from pulsed flows, could disrupt reproduction in the species, due to a relatively short gravid period and the potential for high flows to disrupt spawning, the release of glochidia, or excystment and establishment of juveniles (Haley et al. 2007). For example, spates occurring shortly after juvenile settlement could reduce recruitment (Layzer and Madison 1995). Discharge is also known to influence the species' growth (Black et al. 2015). In other U.S. rivers, dams have disrupted connections between mussels and their host fish (Watters 1996; Galbraith et al. 2018), and western ridged mussels may similarly be at risk.

Water Quality (Contaminants)

Contaminants (pesticides, nutrients, metals, ions, and/or industrial or pharmaceutical compounds) may affect mussels directly via mortality or via sublethal effects. In addition, contaminants may affect mussels indirectly, through impacts to their food sources or reproductive host species (USEPA 2007). Pollutants can impact mussels through multiple mechanisms, including by altering growth, respiration, metabolism, reproduction (including feminization), recruitment, and direct mortality (Cope et al. 2008; Strayer 2008; Haag 2012). Because of their complex life history, freshwater mussels have multiple routes of exposure to contaminants, including: water (glochidia, encysted, juveniles and adults); sediments (juveniles and adults); pore water (juveniles and adults); fish hosts (glochidia, encysted); and diet (juveniles and adults) [Buczek and Cope 2017].

Decline in water quality as a result of waste discharges and nonpoint source pollution has had a large impact on freshwater mussel populations (Strayer 2008; Haag 2012). As a result of exposure, which may be intensified in mussels given their relatively sessile nature, mussels can

develop a pollutant "burden" (Hartmut and Gerstmann 2007), which can impact mussels at all life stages, though pollutants can also have disproportionate effect on younger life stages (Bringolf et al. 2007; Wang et al. 2007; Moore and Bringolf 2018).

Negative effects are reported to freshwater mussels for salts (Wang et al. 2018); nitrates (Moore and Bringolf 2018); ammonia, sulfate, copper, nickel, and zinc (Wang et al. 2017); and a wide range of other chemicals present in the environment (Bryan 2016; Archambault et al. 2017). While toxicity effects data is quite limited for most Unionidae, freshwater mussels are known to be especially sensitive to particular pesticides, nutrients, metals and ions (Raimondo et al. 2016; Conners and Black 2004; Milam et al. 2005; Bringolf et al. 2007; Wang et al. 2010). For example, multiple freshwater mussel species were found to be more sensitive than other aquatic species (including cladocerans whose toxicity responses are typically used in setting aquatic life benchmarks and water quality standards) to alachlor, metolachlor, ammonia, potassium, chloride, sulfate, copper, and nickel (Wang et al. 2015). Several of these contaminants (and others) have been detected, sometimes at concerning levels, in recent monitoring results within the basins that have exhibited die-offs.

A wide variety of pesticides are frequently detected in the waters and sediments of rivers and streams of Oregon and Washington (ODEQ 2015; ODEQ 2020; Noland et al. 2019; Nickelson 2018). Certain widespread active ingredients, including pyrethroids, and organochlorines (e.g. DDT), are lethal to mussels at low concentrations below 10 parts per billion. Numerous other pesticides may kill or result in abnormal development to fifty percent (EC50, LC50) of mussel test subjects, especially larval and juvenile life stages, at slightly higher levels (USEPA 2017).

Contaminants at concerning levels are documented within or near many of the river segments where die-offs are known to have happened. These include contaminant impairments under 303(d) of the Clean Water Act. For example, the Chehalis River mainstem and lower tributaries near the die-off site contain Category 5 303(d) listings for PCBs and mercury. Numerous metals, nutrients and pesticides, some above state water quality criteria, have also been detected in Oregon watersheds where die-offs have occurred, even though monitoring efforts in those watersheds have been sparse. In addition, a tributary of the Chehalis is designated by the state as a "moderate" level nitrate priority area; this tributary empties into the mainstem where mussels have recently died off. Recent USGS monitoring on a lower portion of a tributary near the Chehalis die-off site also documented concerning levels of total nitrogen, total phosphorous and contaminants in sediment.

In the western U.S., freshwater mussels encounter pollutants as they filter water, such as DDT residues and PCBs (Claeys et al. 1975); chromium, cobalt, copper, cadmium, tin, and lead (Norgaard et al. 2013); and microcystins (Kann et al. 2010), although research has been limited, and thus the full magnitude of risk of pollutants to western ridged mussel population viability is largely undocumented.

Water Temperatures and the Impacts of Climate Change

Other impacts to water quality include alterations to the natural thermal regime of rivers (Caissie 2006) as a result of dams and other river modifications. For example, chronically low water temperatures have been shown to eliminate mussel populations (Miller et al. 1984), while high water temperatures can also have dramatic effects on mussel populations and their habitats (see next section on Climate Change).

The western ridged mussel is at particular risk of habitat destruction, modification, and curtailment as a result of climate change impacts. The species has already declined significantly throughout much of its range in lower latitudes, where water availability and quality has been impacted (Hannibal 1912; Taylor 1981). Temperature impairments and dissolved oxygen impairments (dissolved oxygen drops as temperature increases) for aquatic life are currently widespread in rivers and streams across the historic and current range of the western ridged mussel, including within the areas for which die-offs have been recently documented (ODEQ 2020; WDOE 2020). Climate change is altering precipitation patterns and is predicted to increase the severity and variability of floods or droughts, as well as increase air and water temperatures (Bates et al. 2008). In the western U.S., this will result in further alterations to flow regimes (Tohver et al. 2014; DeBano et al. 2016). Reduced snowpack results in diminished late season flows, while decreased summer precipitation will exacerbate low flows. Increased precipitation in other months can result in greater flood risk (Tohver et al. 2014).

These impacts to warming temperatures and changing patterns of precipitation are modified by management of aquatic ecosystems, water resources, and infrastructure at the local level. For example, water quality is affected both by ambient temperatures and volume of water, and where dams alter the storage and release of flows or water diversions reduce instream flow, mussels may locally experience exacerbated conditions. Fish passage barriers can also limit access of both host fish and mussels to upstream habitats, which may provide cold water refugia. Research suggests that freshwater mussels may already be experiencing their thermal limit as waters have warmed (Pandolfo et al. 2010). This is concerning as high water temperatures and low flows have been demonstrated to have multiple impacts to freshwater mussels, including leading to direct mortality of individuals and population extirpation (Golladay et al. 2004; Haag and Warren 2008), affecting the burrowing ability of mussels, which enables mussels to avoid emersion and escape predation (Archambault et al. 2013), and influencing host-fish/mussel interactions and species distributions (Terui et al. 2014; Archambault et al. 2018).

3. Invasive Species

Aquatic invasive species have the potential to dramatically alter ecosystems by modifying habitat, altering nutrient cycles, competing for resources, and directly harming native species. A major freshwater invader, the zebra mussel (*Dreissena polymorpha*) has caused large declines in native freshwater mussel populations in eastern North America. First introduced to the Great Lakes in the 1980s, the species rapidly spread through eastern waterways, resulting in major impacts to native freshwater mussel abundance and distribution, with regional extinction rates of North American freshwater mussels accelerating by 10-fold (Ricciardi et al. 1998). Zebra mussels have the potential to form dense populations rapidly, resulting in biofouling, which can smother native mussels and affect movement and feeding (reviewed in Haag 2012).

Although zebra mussels have not yet established in western waterways, the threat remains that populations could be introduced and become widespread as occurred in eastern North America. In 2019 alone, 18 boats stopped in Washington state were found to be contaminated with zebra mussels.[4] In 2018, zebra mussel larvae were detected in Tiber Reservoir in Montana, resulting in a declared natural resource emergency for the state's waterbodies.[5] Zebra mussel introduction

[4] https://wdfw.wa.gov/news/record-year-washington-prevention-aquatic-invasive-species

[5] http://dnrc.mt.gov/divisions/cardd/docs/misac-docs/113016-eo-on-aquadic-invasive-task-force.pdf

and establishment is considered the most serious, plausible threat to the western ridged mussel in Canada (COSEWIC 2010). The introduced Asian clam (*Corbicula fluminea*) also has the potential to impact western ridged mussel. This species has become established throughout many rivers in western North America. It has the potential to reach very high densities and to succumb to periodic mass die-offs, which could affect food availability and water quality (Strayer 1999; Haag 2019). Indeed, an abundance of Asian clam shells have been documented at a site in the Tualatin River (Fields Bridge) where western ridged mussel shells have been historically reported, but where no live western ridged mussels have been observed recently despite observations of other species of western freshwater mussels in 2019 by staff at the Xerces Society.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

To the best of the petitioners' knowledge, the western ridged mussel is not produced or sold commercially. However, recreational harvest of freshwater mussels by the general public, including the western ridged mussel, does occur.[6] Unregulated recreational harvest of long-lived species, like the western ridged mussel, can have especially damaging impacts, particularly when mussel beds consist of few individuals as discussed in Section II.B.2. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) is working to restore freshwater mussels, including the western ridged mussel, to restore ecological function and sustainable tribal harvest opportunities in the future. Tribal harvest is a reserved treaty right, but CTUIR's mussel project work has found that few populations of mussels are currently robust enough to withstand harvest at any level. Critical uncertainties regarding tissue contaminant or pollutant loads are also a factor affecting tribal harvest. The inadequacy of regulations pertaining specifically to recreational harvest is discussed further in Section D.

C. Disease or Predation

Enigmatic die-offs are a highly significant emerging concern for the western ridged mussel and pose a substantial threat to the continued persistence of the species. Large, unexplained kills of western ridged mussel beds have been observed in at least four rivers in Oregon and Washington, and possibly three other rivers in Oregon and Idaho, respectively, beginning as early as 2005 (Figure 4). Die-offs of freshwater mussels have also been recently reported in other North American Rivers affecting large numbers of a variety of freshwater mussel species, including Wisconsin, Ohio, and Virginia (Leis et al. 2018). These die-offs differ from other spill-related causes of mussel mortality, such as that observed in the Clinch River in 1998. However, many of the attributes of enigmatic die-offs observed elsewhere have been observed in western ridged mussel die-offs, including an apparent seasonal nature of intensity, continuing die-offs across mussel beds and species, and advancement of die-off impacts upriver.

To investigate potential causes of the die-offs, samples of live western ridged mussels and *Margaritifera falcata* were collected from two die-off locations (the Crooked River, OR and Chehalis River, WA respectively) and analyzed for bacteria and virus associations. Preliminary results have identified a novel virus with epidemiological effects suggesting a connection with the die-offs (T. Goldberg, unpublished data). It is hypothesized that any disease found to cause die-offs in *Margaritifera falcata* in the Chehalis River would also be responsible for the

[6] https://www.idahopress.com/boiseweekly/food_and_drink/year_of_idaho_food/demystifying-gem-state-seafood/article_53e1ec7e-5f82-5092-b64d-4f982681b5d7.html

simultaneous die-off effects observed in the western ridged mussel and in *Anodonta oregonensis*. In the case of the Chehalis River, western ridged mussel specimens were not targeted for collection because there were few animals and there was concern that collection of specimens would further impact the apparently small population. Further work is necessary to understand the characteristics of a potential disease and the role of other potentially-contributing factors. Should a virus be responsible for the observed die-offs, this pathogen could be spread to other waterbodies, and threaten western ridged mussel populations anywhere that it spreads.

Although predation of the western ridged mussel has been documented through observations of animal shell middens along riverbanks, presumably those of otters or other mammalian predators, it is not understood to be a substantial threat to the survival of the species.

D. The Inadequacy of Existing Regulatory Mechanisms

Existing regulations fail to protect the western ridged mussel from threats it faces from habitat loss or modification (see also discussion in the section: ***Restoration and Other In-Stream Construction Activities***), including impacts to instream flows; recreational harvest, handling, or collection; pollution; and disease. For example, suction dredge mining, which has the potential to kill freshwater mussels and damage their habitat (Krueger et al. 2007), is variably regulated and insufficient to protect the species or its habitat. California, Oregon, and Washington all have restrictions or requirements placed on suction dredge mining that specifically address impacts to freshwater mussels. However, although suction dredge miners are directed to avoid areas with freshwater mussels in Oregon and Washington, many members of the public are unfamiliar with freshwater mussels and may not notice or recognize a mussel bed in an area selected for mining. Idaho's EPA General Permit for suction dredge mining actually allows the activity in the Bruneau River below Hot Creek, in a portion of the Spokane River, in parts of Jordan Creek, and in Shoshone Creek, all of which are areas where the western ridged mussel has historically or recently been documented. Nevada's dredging permit does not address any protections to freshwater mussels, just restrictions intended to protect species of fish.

There are no federal or state-level requirements that mussel surveys be conducted or that harm be minimized or mitigated prior to implementation of in-stream construction activities, including aquatic habitat restoration work. In-stream construction activities that do not survey for freshwater mussels prior to in-stream work have already resulted in the destruction of Pacific Northwest freshwater mussel beds (Blevins et al. 2017b) and pose a significant threat to the future survival of the western ridged mussel.

Other regulations may have potential to protect the species, but their existence and application is limited. For example, Washington state does require a Hydraulic Project Approval (HPA) permit for projects that "use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state,"[7] and includes provisions for protecting "fish life," which is also inclusive of shellfish species and the habitat that supports fish life.[8] However, freshwater mussels remain relatively unknown among many biologists involved in work requiring an HPA, and its actual application to reduce impacts to freshwater mussels is limited, given that the western ridged mussel is not included in the state's Priority Habitat and Species list. Without more direct

[7] https://apps.leg.wa.gov/wac/default.aspx?cite=220-660-010&pdf=true

[8] https://apps.leg.wa.gov/wac/default.aspx?cite=220-660-030&pdf=true

protections for freshwater mussels, existing regulations are inadequate to protect the western ridged mussel and its habitat.

A patchwork of regulations regarding recreational harvest by the general public is also insufficient to protect the species. For example, although recreational harvest of western freshwater mussels by the general public is prohibited in Washington and Oregon's fishing regulations, Nevada, Idaho, and California do not prohibit recreational harvest. Indeed, recreational harvest of freshwater mussels in Idaho by the general public, including recreational harvest of western ridged mussel, is allowed.[9] Even in states that restrict recreational harvest, it may still occur.[10] In comparison, scientific collection or take permits are required for freshwater mussels in Washington, Oregon, Nevada, Idaho, and California. However, these permits are generally restricted to activities related to scientific, educational, or display purposes. These permits do not protect freshwater mussels from take activities not involving science or education, such as take resulting from dewatering or habitat alteration.

Freshwater mussels are sensitive to pollutants present in and discharged to waterbodies (see discussion of water quality above) and may not be sufficiently protected by existing water quality standards, as was demonstrated for many species of mussels with respect to ammonia standards (USEPA 2013a,b). Existing regulations are also insufficient to protect the western ridged mussel from disease. Recent enigmatic die-offs have been observed in multiple river basins, with resultant devastating declines in abundance, and possibly resulting in extirpation of some populations. These die-offs are currently the subject of epidemiological investigations (Leis et al. 2018), with preliminary results suggesting a newly-discovered virus contributing to die-offs in at least one river. Very little is known about disease in freshwater mollusks, and the potential impacts of disease spread among western ridged mussel populations is unknown but likely devastating to the species' future viability. No regulations are in place to protect mussels from disease spread among rivers, particularly the transfer of a virus between rivers via clothing, footwear, and aquatic gear.

The bulk of the western ridged mussel's range is located in the U.S., but the northernmost portion of its range extends into southern British Columbia in Canada, where it is listed as Endangered by the province (COSEWIC 2010) and is being considered for uplisting from Special Concern, Schedule 1 to Endangered at the national level (SARA 2019). These designations protect the species only in the Canadian portion of its range, which constitutes approximately only 3% of its historic range, making these designations insufficient to provide meaningful protection to the species as a whole.

E. Other Natural or Manmade Factors Affecting its Continued Existence

1. Reproduction and Population Demographic Factors

Dispersal within populations and colonization of new habitat is dependent on successful attachment of larval mussels to host fish (see Section VII.), but barriers to fish passage, including undersized culverts and dams, and impacts to host fish habitat probably limit the western ridged mussel's capacity to disperse and reproduce. The mussel-host fish interaction is highly important

[9] https://www.idahopress.com/boiseweekly/food_and_drink/year_of_idaho_food/demystifying-gem-state-seafood/article_53e1ec7e-5f82-5092-b64d-4f982681b5d7.html

[10] http://www.dailyventure.com/travel/Camping-on-the-Willamette-River

for mussel reproduction. If mussel densities and host fish densities are reduced to the point where they no longer connect, mussel reproduction will decline or completely fail (Downing et al. 1993). The current rate of reproduction, survival, or mortality is unknown for nearly all populations of western ridged mussel. However, in other species of freshwater mussels, including *Margaritifera falcata*, with which this species can co-occur, limited or nonexistent recruitment has been documented and is a concerning issue limiting the future viability of populations (Howard and Cuffey 2006). Low levels of recruitment have been documented in some western ridged mussel beds by Mageroy (2015) in the Okanagan Basin, B.C., where recruitment levels are below the minimum threshold estimated for maintenance of populations. COSEWIC (2010) notes that, in one Canadian population, only about 5 to 10% of mussels of a dense bed were observed releasing conglutinates in synchrony. O'Brien (2019) documented no evidence of recruitment at sites at the current southern extent of the species range. Further, reproductive success may be dependent on a minimum bed density, as observed in other mussel species (Downing et al. 1993).

Equilibrium mussel species, like the western ridged mussel, characterized by long lifespans, slow growth, long time to maturity, and low annual reproduction, tend also to have low adult mortality and accumulate in high abundance where habitat remains undisturbed (Haag 2012). However, a number of remaining sites have low abundance and may lack recruitment entirely. The cause(s) of apparently higher adult mortality and low recruitment in the species remain unstudied with the exception of recent mussel bed die-offs, but may have great impact on the continued existence of the species.

2. Genetic Diversity

Recent genetic analyses of western ridged mussel populations at sites in the Okanagan basin in Canada, and the Chehalis, Klamath, Pit, and Columbia basins in the U.S. by Mageroy et al. (2017) did not reveal large differences in the population genetics between Canadian and U.S. western ridged mussels. However, the Chehalis, WA sample did contain a haplotype not found in other sampled basins. Since the Chehalis River population appears to be genetically unique among other western ridged mussel populations, the potential extirpation of that population as a result of the present die-off will reduce the species' viability and representation across the landscape. The limited connectivity of populations such as those inhabiting coastal basins, as compared to those located in larger basins like the Columbia, may further impact the species' viability.

V. TAXONOMIC STATUS

The western ridged mussel was first described by Lea (1838), and originally assigned to the genus *Anodonta*. The genus *Gonidea* was established by Conrad (1857), to which the western ridged mussel was reassigned by Simpson (1900). The western ridged mussel is the only extant species belonging to that genus, and is genetically differentiated from other North American freshwater mussel species, with its closest genetic relationships to mussel species in Turkey, Italy, and China (Lopes-Lima et al. 2017). The western ridged mussel is a valid species; its status was upheld by Williams et al. (2017).

VI. SPECIES DESCRIPTION

The western ridged mussel is a bivalve mollusk in the family Unionidae. It is characterized by an outer shell consisting of two valves reaching up to five inches in length. The outer color is yellowish-brown to black, and the shell is generally thick and obovate to trapezoidal in shape (Burch 1972; Clarke 1981; Nedeau et al. 2009). The interior of the shell, consisting of the nacre (mother-of-pearl) may vary in color from "livid bluish white or with a salmon-colored flush in the concavity of the valve, all salmon-colored, or elegant purple partially or throughout" (Dall 1908). An angular ridge runs from the beak of the shell to the posterior margin, which varies in prominence; some specimens may almost entirely lack the ridge (var. *subangulata*, Hemphill 1891; var. *haroldiana*, Dall 1908) or there may be two prominent ridges (*biangulata*; Sowerby 1869). Mantle papillae are present at the incurrent aperture and are "bifid, branched and non-uniform" and often a pinkish or purplish color (Blevins et al. 2019).

VII. SPECIES LIFE HISTORY

The western ridged mussel is reported to live 20 to 60 years, though published observations appear to underestimate maximum age (e.g., Black 2012). In many mussel beds, western ridged mussels burrow deeply into sediment, where often only their incurrent and excurrent apertures are visibly flush with the bottom substrate, although they may also be only partially buried where sediment is coarser (Hemphill 1891; Vannote and Minshall 1982; Haley et al. 2007; Mageroy 2015). They, like other freshwater mussels, are filter feeders, filtering bacteria, phytoplankton and zooplankton, fungal spores, and algae from the water (Haag 2012).

The species may reach sexual maturity around the age of seven years, although estimates are based on growth rate observations, which may vary significantly among populations (Mageroy 2015). Regardless of sexual maturity, some mussel populations have maximum growth/length in certain habitats (Haag 2012). O'Brien et al. (2013) reported that western ridged mussel releases glochidia in the spring when daily average water temperatures warmed above 11°C. CTUIR field observations have recorded gravid western ridged mussel in the Middle Fork John Day River between late June and late July at water temperatures from 17-23°C (Maine et al. 2019). Host fish usage by western ridged mussel includes hardhead (*Mylopharodon conocephalus*), Pit sculpin (*Cottus pitensis*), tule perch (*Hysterocarpus traski*) (Haley et al. 2007), and margined and shorthead sculpin (O'Brien et al. 2013). O'Brien et al. (2013) speculated that conglutinates were released at night based on host fish feeding ecology, and any glochidia that had not attached by midday did not survive. Encystment on host fish lasts between 10 and 13 days (O'Brien et al. 2013; Mageroy 2015).

VIII. IMPORTANCE OF MUSSELS TO AQUATIC ECOSYSTEMS

Freshwater mussels, including the western ridged mussel, improve water quality by acting as biofilters. They are powerful filter feeders that can remove a significant amount of particles suspended in the water column and from the interstitial spaces of the benthos (Vaughn et al. 2008; Welker and Walz 1998). In high densities, collectively they can filter a substantial quantity of water, increasing water clarity for salmonids and other fishes. Research on floater mussels that co-occur with the western ridged mussel has shown that mussels can remove pharmaceuticals, personal care products, herbicides, flame retardants, and *E. coli* as they filter, storing them in their tissues or excreting them as biodeposits (Ismail et al. 2014). Other research has shown that

freshwater mussels can reduce bacterial populations in the water, resulting in lower fish mortality and increased fish growth (Othman et al. 2015).

Freshwater mussels also directly provide habitat and modify habitat -- the physical structure created by mussel shells in a river bed provides habitat for other organisms. Algae grows on mussel shells, which is consumed by macroinvertebrate grazers. Hard mussel shells provide habitat in areas with softer substrates; crevices in and between shells provide invertebrates with protection from predators and strong flows. Empty shells of dead mussels also provide habitat (reviewed in Vaughn 2017). In western Oregon, for example, crayfish are often observed residing in dead mussel shells. Indeed, freshwater mussel beds have been shown to host a higher abundance and diversity of macroinvertebrates--an important source of food for juvenile salmonids and other organisms--than similar habitat without mussels.

Dense mussel beds can serve as biodiversity hotspots in a river system. When mussels consume, excrete, and deposit nutrients, this can lead to an increase in benthic algae, which then leads to an increase in macroinvertebrates (Vaughn and Spooner 2006; Spooner et al. 2012). Research in northern California demonstrated that benthic macroinvertebrate abundance was greater in the presence of western pearlshell mussel beds, a species that co-occurs with the western ridged mussel, as mussels remove food particles from the water column and excrete these nutrients as biodeposits, making them more available for consumption by the benthic macroinvertebrate community (Howard and Cuffey 2006). Pacific lamprey larvae are also known to grow faster when found near western pearlshell mussel beds, which capture, concentrate, and deposit food near their burrows (Limm and Power 2011). Vertebrate species, such as river otters, rely on freshwater mussels for sustenance, especially when other prey is scarce (Scordino et al. 2016).

As mussels feed, they recycle nutrients by consuming and storing them in their tissues, or converting them to feces or pseudofeces, or to dissolved nutrients (Strayer 2014). En masse, mussels can significantly improve water quality through this process, abating excess nutrients. When mussels excrete soluble nutrients, they are consumed by algae and heterotrophic bacteria, and those nutrients cascade up aquatic food webs.

IX. CONCLUSION

Freshwater mussels are important components of aquatic ecosystems, yet as a group, face widespread declines in the U.S. Although the western ridged mussel was historically distributed from southern California north to southern British Columbia and east to Idaho and Nevada, the species inhabits closer to half of its historic range. Yet, in many of the rivers where it has recently been documented, it is often known from only a few live individuals or shells. In other rivers where it has recently occurred in abundance or across multiple reaches, enigmatic die-offs pose an incredible threat to the species' viability. These observations, combined with numerous threats to the species' aquatic habitats, indicate that the species should be listed as an Endangered Species under the U.S. Endangered Species Act in order to prevent extinction.

X. REFERENCES CITED

[ASRP Steering Committee] Aquatic Species Restoration Plan Steering Committee 2019. Chehalis Basin Strategy Aquatic Species Restoration Plan. Phase I: November 2019. Publication #19-06-009.

Archambault, J.M., W.G. Cope, and T.J. Kwak. 2013. Burrowing, byssus, and biomarkers: behavioral and physiological indicators of sublethal thermal stress in freshwater mussels (Unionidae). Marine and freshwater behaviour and physiology 46:229–250.

Archambault, J.M., C.M. Bergeron, W.G. Cope, P.R. Lazaro, J.A. Leonard, and D. Shea. 2017. Assessing toxicity of contaminants in riverine suspended sediments to freshwater mussels. Environmental Toxicology and Chemistry 36:395–407.

Archambault, J.M., W.G. Cope, and T.J. Kwak. 2018. Chasing a changing climate: Reproductive and dispersal traits predict how sessile species respond to global warming. Diversity & distributions 46:229.

Barnas, K., S. Katz, D. Hamm, M. Diaz, C. Jordan. 2015. Is habitat restoration targeting relevant ecological needs for endangered species? Using Pacific Salmon as a case study. Ecosphere. 6.

Barnhart, M.C., W.R. Haag, and W.N. Roston. 2008. Adaptations to host infection and larval parasitism in Unionoida. Journal of the North American Benthological Society 27:370–394.

Bates, B.C., Z.W. Kundzewicz, S. Wu, and J.P. Palutikof, editors. 2008. Climate change and water. Technical paper of the intergovernmental panel on climate change. Geneva: IPCC Secretariat.

Black, B. 2012. Sclerochronological analyses of a freshwater mussel mortality event in the John Day River, Oregon. Report for the Confederated Tribes of the Umatilla Indian Reservation Mussel Project.

Black, B.A., J.B. Dunham, B.W. Blundon, J. Brim Box, and A.J. Tepley. 2015. Long-term growth-increment chronologies reveal diverse influences of climate forcing on freshwater and forest biota in the Pacific Northwest. Global change biology 21:594–604.

Blevins, E., S. Jepsen, J. Brim Box, and D. Nez. 2016. *Gonidea angulata*. The IUCN Red List of Threatened Species 2016: e.T173073A114146359. http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T173073A62905403.en

Blevins, E., L. McMullen, S. Jepsen, M. Blackburn, A. Code, and S. Hoffman Black. 2019. Mussel-Friendly Restoration: A Guide to the Essential Steps for Protecting Freshwater Mussels in Aquatic and Riparian Restoration, Construction, and Land Management Projects and Activities. The Xerces Society for Invertebrate Conservation.

Blevins, E., S. Jepsen, J. Brim Box, D. Nez, J. Howard, A. Maine, and C. O'Brien. 2017a. Extinction risk of western North American freshwater mussels: *Anodonta nuttalliana*, the *Anodonta oregonensis/kennerlyi* clade, *Gonidea angulata*, and *Margaritifera falcata*. Freshwater Mollusk Biology and Conservation 20:71–88.

Blevins, E., L. McMullen, S. Jepsen, M. Blackburn, A. Code, and S.H. Black. 2017b. Conserving the Gems of Our Waters: Best Management Practices for Protecting Native Western Freshwater Mussels During Aquatic and Riparian Restoration, Construction, and Land Management Projects and Activities. Xerces Society for Invertebrate Conservation.

Brim Box, J., J. Howard, D. Wolf, C. O'Brien, D. Nez, and D. Close. 2006. Freshwater Mussels (Bivalvia: Unionoida) of the Umatilla and Middle Fork John Day Rivers in Eastern Oregon. Northwest Science 80:95–107.

Bringolf, R.B., W.G. Cope, S. Mosher, M.C. Barnhart, and D. Shea. 2007. Acute and chronic toxicity of glyphosate compounds to glochidia and juveniles of *Lampsilis siliquoidea* (Unionidae). Environmental Toxicology and Chemistry 26:2094–2100.

Bryan, R. 2016. Development and Synthesis of a Native Freshwater Mussel Toxicity Database. North Carolina State University. MS Thesis.

Buczek, S., and W.G. Cope. 2017. Water Quality Constituents Relevant to Freshwater Mussels: Progress and State of the Science. Presentation to the Texas Freshwater Mussel Conservation and Stakeholder Summit, Austin, Texas, Nov. 14-15, 2017. https://www.fws.gov/southwest/es/Documents/R2ES/AUES_Mussel_Summit_0_Program.pdf

Burch, J.B. 1972. Freshwater sphaeriacean clams (Mollusca: Pelecypoda) of North America. Biota of Freshwater Ecosystems Identification Manual No. 3. USEPA Water Pollution Control Research Series.

Caissie, D. 2006. The thermal regime of rivers: a review. Freshwater Biology 51:1389–1406.

[CDFW] California Department of Fish and Wildlife. 2015. California State Wildlife Action Plan, 2015 Update: A Conservation Legacy for Californians. Edited by Armand G. Gonzales and Junko Hoshi, PhD. Prepared with assistance from Ascent Environmental, Inc., Sacramento, CA.

[CNDDB] California Department of Fish and Wildlife, Natural Diversity Database. August 2019. Special Animals List. Periodic publication. 67 pp.

Claeys, R.R., R.S. Caldwell, N.H. Cutshall, and R. Holton. 1975. Chlorinated pesticides and polychlorinated biphenyls in marine species, Oregon/Washington coast 1972. Pesticides Monitoring Journal 92:2–10.

Clarke, A.H. 1981. The Freshwater Molluscs of Canada. National Museum of Natural Sciences.

Clarke, L.R. 2010. Population Density and Growth of the Freshwater Mussel *Anodonta californiensis* in a Flow-Fragmented Stream. Journal of Freshwater Ecology 25:179–192.

[COSEWIC] Committee on the Status of Endangered Wildlife in Canada. 2003. COSEWIC Assessment and Status Report on the Rocky Mountain Ridged Mussel *Gonidea angulata* in Canada. Committee on the Status of Endangered Wildlife in Canada.

[COSEWIC] Committee on the Status of Endangered Wildlife in Canada. 2010. COSEWIC assessment and status report on the Rocky Mountain Ridged Mussel *Gonidea angulata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 56 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Coney, C.C. 1993. Freshwater Mollusca of the Los Angeles River: past and present status and distribution. In The Biota of the Los Angeles River: an overview of the historical and present plant and animal life of the Los Angeles River drainage. Natural History Museum of Los Angeles County. K.L. Garrett. Pp. C1-C25.

Connors, D.E., and M.C. Black. 2004. Evaluation of lethality and genotoxicity in the freshwater mussel *Utterbackia imbecilis* (Bivalvia: Unionidae) exposed singly and in combination to chemicals used in lawn care. Environmental Contamination and Toxicology 46:362–371.

Conrad, T.A. 1857. Descriptions of two new genera of shells. Proceedings of the Academy of Natural Sciences of Philadelphia 9:165–166.

Cope, W.G., R.B. Bringolf, D.B. Buchwalter, T.J. Newton, C.G. Ingersoll, N. Wang, T. Augspurger, F.J. Dwyer, M.C. Barnhart, R.J. Neves, and E. Hammer. 2008. Differential exposure, duration, and sensitivity of unionoidean bivalve life stages to environmental contaminants. Journal of the North American Benthological Society 27:451–462.

Crawford, S., G. Whelan, D.M. Infante, K. Blackhart, W.M. Daniel, P.L. Fuller, T. Birdsong, D.J. Wieferich, R. McClees-Funinan, S.M. Stedman, K. Herreman, and P. Ruhl. 2016. Through a Fish's Eye: The Status of Fish Habitats in the United States 2015. National Fish Habitat Partnership. Available at http://assessment.fishhabitat.org/. (Accessed: 7 March 2017).

[CRS] Congressional Research Service. 2012. Klamath River Basin: Background and Issues. Report prepared for members and committees of Congress. R42158. Available at: https://crsreports.congress.gov/product/pdf/R/R42157.

[CTUIR] Confederated Tribes of the Umatilla Indian Reservation. 2015. River Mussels Through Time. Color Press Publishing, Walla Walla, Washington for the Confederated Tribes of the Umatilla Indian Reservation.

Dall, W.H. 1908. Notes on *Gonidea angulata* Lea, a freshwater bivalve, with description of a new variety. Smithsonian Miscellaneous Collections 50:499–500.

Dettinger, M.D., B. Udall, and A.P. Georgakakos. 2015. Western water and climate change. Ecological Applications 25:2069–2093.

DeBano, S.J., D.E. Wooster, J.R. Walker, L.E. McMullen, and D.A. Horneck. 2016. Interactive influences of climate change and agriculture on aquatic habitat in a Pacific Northwestern watershed. Ecosphere.

Downing, J., Y. Rochon, M. Pérusse, and H. Harvey. 1993. Spatial aggregation, body size, and reproductive success in the freshwater mussel *Elliptio complanata*. Journal of the North American Benthological Society 12(2):148-156.

Downing, J.A., P. Van Meter, and D.A. Woolnough. 2010. Suspects and evidence: a review of the causes of extirpation and decline in freshwater mussels. Animal Biodiversity and Conservation 33.2:151–185.

Frest, T.J., and E.J. Johannes. 1992. Effects of the March, 1992 Drawdown on the Freshwater Molluscs of the Lower Granite Lake Area, Snake River, SE WA & W. ID. Deixis Consultants, Seattle, Washington.

Frest, T.J., and E.J. Johannes. 1995. Interior Columbia Basin Mollusk Species of Special Concern, Final Report. Prepared for: Interior Columbia Basin Ecosystem Management Project.

Galbraith, H.S., J.L. Devers, C.J. Blakeslee, J.C. Cole, B. St. John White, S. Minkkinen, and W.A. Lellis. 2018. Reestablishing a host-affiliate relationship: migratory fish

reintroduction increases native mussel recruitment. Ecological Applications 28:1841–1852.

Gagnon, P.M., S.W. Golladay, W.K. Michener, and M.C. Freeman. 2004. Drought Responses of Freshwater Mussels (Unionidae) in Coastal Plain Tributaries of the Flint River Basin, Georgia. Journal of Freshwater Ecology 19:667–679.

Golladay, S.W., P. Gagnon, M. Kearns, J.M. Battle, and D.W. Hicks. 2004. Response of freshwater mussel assemblages (Bivalvia:Unionidae) to a record drought in the Gulf Coastal Plain of southwestern Georgia. Journal of the North American Benthological Society 23:494–506.

Grantham, T.E. and J.H. Viers. 2014. 100 years of California's water rights system: Patterns, trends and uncertainty. Environmental Research Letters 9.

Haag, W.R. 2012. North American Freshwater Mussels: Natural History, Ecology, and Conservation. 1st edition. Cambridge University Press.

Haag, W.R. 2019. Reassessing Enigmatic Mussel Declines in the United States. Freshwater Mollusk Biology and Conservation 22:43.

Haag, W.R., and M.L. Warren Jr. 2008. Effects of Severe Drought on Freshwater Mussel Assemblages. Transactions of the American Fisheries Society 137:1165–1178.

Haag, W.R., and J.D. Williams. 2014. Biodiversity on the brink: an assessment of conservation strategies for North American freshwater mussels. Hydrobiologia 735:45–60.

Haley, L., M. Ellis, and J. Cook. 2007. Reproductive timing of freshwater mussels and potential impacts of pulsed flows on reproductive success. Spring Rivers Ecological Sciences, LLC. Prepared for: California Energy Commission Public Interest Energy Research Program.

Hannibal, H. 1912. The Aquatic Molluscs of Southern California and Adjacent Regions, A Transition Fauna. Bulletin of the Southern California Academy of Sciences 11910:18–46.

Hartmut, F., and S. Gerstmann. 2007. Declining Populations of Freshwater Pearl Mussels (*Margaritifera margaritifera*) Are Burdened with Heavy Metals and DDT/DDE. AMBIO 36:571–574.

Hegeman, E.E. 2012. Modeling freshwater mussel distribution in relation to biotic and abiotic habitat variables in the Middle Fork John Day River, Oregon. Utah State University. M.S. thesis.

Hemphill, H. 1891. A collector's notes on variation in shells, with some new varieties. Zoe 1:321–337.

Hovingh, P. 2004. Intermountain freshwater mollusks, USA (*Margaritifera, Anodonta, Gonidea, Valvata, Ferrissia*): geography, conservation and fish management implications. Monographs of the Western North American Naturalist 2: 109-135.

Howard, J. 2008. Strategic Inventory of Freshwater Mussels in the Northern Sierra Nevada Province. Prepared for: USDA Forest Service, Pacific Southwest Region.

Howard, J.K. 2010. Sensitive Freshwater Mussel Surveys in the Pacific Southwest Region: Assessment of Conservation Status. Prepared for USDA Forest Service, Pacific Southwest Region.

Howard, J.K., and K.M. Cuffey. 2006. Factors controlling the age structure of *Margaritifera falcata* in 2 northern California streams. Journal of the North American Benthological Society 25:677–690.

Howard, J.K., Furnish, J.L., Brim Box, J. and Jepsen, S. 2015. The decline of native freshwater mussels (Bivalvia: Unionoida) in California as determined from historical and current surveys. California Fish and Game 101: 8-23.

Hulse, D., S. Gregory, and J. Baker. 2002. Willamette River Basin Planning Atlas: Trajectories of Environmental and Ecological Change. Pacific Northwest Ecosystem Research Consortium. Corvallis: OSU Press.

[IDFG] Idaho Department of Fish and Game. 2017. Idaho State Wildlife Action Plan, 2015. Boise (ID): Idaho Department of Fish and Game. Grant No.: F14AF01068 Amendment #1. Available from: http://fishandgame.idaho.gov/. Sponsored by the US Fish and Wildlife Service, Wildlife and Sport Fish Restoration Program.

[IUCN] International Union for Conservation of Nature. 2012. IUCN Red List Categories and Criteria: Version 3.1, 2nd ed. Gland, Switzerland and Cambridge, UK: IUCN. 32 pp.

Ismail, N.S., C.E. Müller, R.R. Morgan, and R.G. Luthy. 2014. Uptake of contaminants of emerging concern by the bivalves *Anodonta californiensis* and *Corbicula fluminea*. Environmental Science & Technology 48:9211–9219.

Jepsen, S., and C. LaBar. 2012. *Gonidea angulata* (Lea, 1838) Western ridged mussel Bivalvia: Unionidae. The Xerces Society for Invertebrate Conservation.

Kann, J., S. Corum, and K. Fetcho. 2010. Microcystin Bioaccumulation in Klamath River Freshwater Mussel Tissue: 2009 Results. Aquatic Ecosystem Sciences LLC. Technical Memorandum.

Kondolf, G.M., and R.J. Batalla. 2005. Hydrological effects of dams and water diversions on rivers of Mediterranean-climate regions: examples from California. Pages 197–211 in C. Garcia and R. J. Batalla, editors. Catchment Dynamics and River Processes. Elsevier.

Kreeger, D.A. 2011. Physiological processing of suspended matter by freshwater mussels in rivers of eastern Oregon. A final report for the freshwater mussel research and restoration project. Prepared for: Confederated Tribes of the Umatilla Indian Reservation and U.S. Department of Energy Bonneville Power Administration.

Krueger, K., P. Chapman, M. Hallock, and T. Quinn. 2007. Some Effects of Suction Dredge Placer Mining on the Short-term Survival of Freshwater Mussels in Washington. Northwest Science 81:323–332.

Layzer, J.B., and L.M. Madison. 1995. Microhabitat use by freshwater mussels and recommendations for determining their instream flow needs. Regulated Rivers: Research & Management 10:329–345.

Lea, I. 1838. Description of new freshwater and land shells. Transactions of the American Philosophical Society 6: 1-154.

Leis, E., D. Waller, S. Knowles, T. Goldberg, J. Putnam, J. Richard, S. Erickson, E. Blevins, and J. Weinzinger. 2018. Building a Response Network to Investigate Potential Pathogens Associated with Unionid Mortality Events. Ellipsaria 20(4):44–45.

Levine, J.F., C.B. Eads, W.G. Cope, L.F. Humphries, R.B. Bringolf, P.R. Lazaro, D. Shea, J.V. Pluym, D. Eggleston, M.A. Merril, J. Gregory, and A.E. Bogan. 2007. A comparison of the Impacts of Culverts versus Bridges on Stream Habitat and Aquatic Fauna. Submitted To: North Carolina Department of Transportation.

Limm, M.P., and M.E. Power. 2011. Effect of the western pearlshell mussel *Margaritifera falcata* on Pacific lamprey *Lampetra tridentata* and ecosystem processes. Oikos 120:1076–1082.

Lopes-Lima, M., E. Froufe, V.T. Do, M. Ghamizi, K.E. Mock, Ü. Kebapçı, O. Klishko, S. Kovitvadhi, U. Kovitvadhi, O.S. Paulo, J.M. Pfeiffer 3rd, M. Raley, N. Riccardi, H. Şereflişan, R. Sousa, A. Teixeira, S. Varandas, X. Wu, D.T. Zanatta, A. Zieritz, and A.E. Bogan. 2017. Phylogeny of the most species-rich freshwater bivalve family (Bivalvia: Unionida: Unionidae): Defining modern subfamilies and tribes. Molecular Phylogenetics and Evolution 106:174–191.

Mageroy, J. 2015. Rocky Mountain ridged mussel (*Gonidea angulata*) in the Okanagan Valley, BC: Final report on juvenile recruitment, host fish field sampling, and the impact of rototilling against Eurasian watermilfoil (*Myriophyllum spicatum*). University of British Columbia – Okanagan.

Mageroy, J., J. Walton, G. Wilson, S. Brownlee, and K. Mock. 2017. Genetic Analyses. In: Rocky Mountain ridged mussel (*Gonidea angulata*) in the Okanagan Valley, B.C.: Final report on host fish field sampling, mussel surveys, genetic analyses, and maximum age determination. J. Mageroy and I.R. Walker (eds) On behalf of the University of British Columbia—Okanagan Campus. pg. 20-27.

Maine, A., C. O'Brien, and D. Nez. 2019. *Gonidea angulata* (western ridged mussel) life history and status on CTUIR ceded territory, Oregon. Poster presented at: Freshwater Mollusk Conservation Society Symposium. San Antonio, Texas.

Milam, C.D., J.L. Farris, F.J. Dwyer, and D.K. Hardesty. 2005. Acute toxicity of six freshwater mussel species (Glochidia) to six chemicals: implications for Daphnids and *Utterbackia imbecillis* as surrogates for protection of freshwater mussels (Unionidae). Archives of environmental contamination and toxicology 48:166–173.

Miller, A.C., L. Rhodes, and R. Tippit. 1984. Changes in the naiad fauna of the Cumberland River below Lake Cumberland in Central Kentucky. Nautilus 98:107-110.

Moore, A.P., and R.B. Bringolf. 2018. Effects of nitrate on freshwater mussel glochidia attachment and metamorphosis success to the juvenile stage. Environmental pollution 242:807–813.

NatureServe. 2004. Element Occurrence Specifications, EO Specifications ID: 1068, Group Name: Freshwater Mussels. NatureServe Explorer: An online encyclopedia of life [web application]. Arlington. Available at: http://explorer.natureserve.org. (Accessed: 28 April 2020).

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Arlington. Available at: http://explorer.natureserve.org. (Accessed: 25 November 2019).

Nedeau, E.J., A.K. Smith, J. Stone, and S. Jepsen. 2009. Freshwater Mussels of the Pacific Northwest, Second Edition. The Xerces Society for Invertebrate Conservation.

[NNHP] Nevada Natural Heritage Program. 2020. At Risk Plant and Animal Tracking List January 2020. Nevada Natural Heritage Program, Department of Conservation and Natural Resources. Available at: http://heritage.nv.gov/sites/default/files/library/2020-01%20Track%20List%20Jan%202020.pdf.

Norgaard, K.M., S. Meeks, B. Crayne, and F. Dunnivant. 2013. Trace Metal Analysis of Karuk Traditional Foods in the Klamath River. Journal of Environmental Protection 4:319–328.

[NWPCC] Northwest Power and Conservation Council. 2004. Upper Snake Province Assessment. Available at: https://www.nwcouncil.org/subbasin-plans/upper-snake-headwaters-closed-basin-subbasins-plan.

O'Brien, C., J. Brim Box, and D. Wolf. 2004. Freshwater mussel survey of the Owyhee, Malheur, and Quinn rivers in eastern Oregon. Prepared for The Bureau of Land Management Vale District. 19 pp.

O'Brien, C, D. Nez, D. Wolf, and J. Brim Box. 2013. Reproductive Biology of *Anodonta californiensis*, *Gonidea angulata*, and *Margaritifera falcata* (Bivalvia: Unionoida) in the Middle Fork John Day River, Oregon. Northwest Science 87(1): 59–72.

O'Brien, C. 2019. Freshwater mussel status survey Coastal Range and Central Valley Northern California. Final report to the California Department of Fish and Wildlife.

[ODFW] Oregon Conservation Strategy. 2016. Oregon Department of Fish and Wildlife, Salem, Oregon. Available at: http://www.oregonconservationstrategy.org/.

[ODEQ] Oregon Department of Environmental Quality. 2015. Statewide Water Quality Toxics Assessment Report. Available at: https://www.oregon.gov/deq/FilterDocs/WQToxicsAssessmentReport.pdf

[ODEQ] Oregon Department of Environmental Quality. 2020. "2018/20 Integrated Report: Fact Sheet." Available at: https://www.oregon.gov/deq/wq/Documents/irFS1820.pdf.

[ODEQ] Oregon Department of Environmental Quality. 2020. Water Quality Toxics Monitoring. Available at: https://www.oregon.gov/deq/wq/Pages/WQ-Monitoring-Statewide.aspx

[ORBIC] Oregon Biodiversity Information Center. 2019. Rare, Threatened and Endangered Species of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon. 133 pp.

Nickelson, A. 2018. Pilot Study of Pesticides in Washington State Stream Sediments. Washington Department of Agriculture. Available at: https://cms.agr.wa.gov/getmedia/344de5c2-6656-443f-8b15-3520ff730180/741-PesticidesInSedimentReport.pdf

Noland, K, M. Bischof, M. Drennan, A. Nickelson, and G. Tuttle. 2019. Ambient Monitoring for Pesticides in Washington State Surface Water: 2016 Technical Report. Washington Department of Agriculture. Available at:

https://cms.agr.wa.gov/WSDAKentico/Documents/Pubs/629-SWMPTechnicalReport-2016.pdf?/629-SWMPTechnicalReport-2016

Othman, F., M.S. Islam, E.N. Sharifah, F. Shahrom-Harrison, and A. Hassan. 2015. Biological control of streptococcal infection in Nile tilapia *Oreochromis niloticus* (Linnaeus, 1758) using filter-feeding bivalve mussel *Pilsbryoconcha exilis* (Lea, 1838). Zeitschrift fur Angewandte Ichthyologie = Journal of Applied Ichthyology 31:724–728.

Pandolfo, T.J., W.G. Cope, C. Arellano, R.B. Bringolf, M.C. Barnhart, and E. Hammer. 2010. Upper thermal tolerances of early life stages of freshwater mussels. Journal of the North American Benthological Society 29:959–969.

Peck, A., J.L. Harris, J.L. Farris, and A.D. Christian. 2007. Assessment of Freshwater Mussel Relocation as a Conservation Strategy. UC Davis: Road Ecology Center. Available at https://escholarship.org/uc/item/2106r97j.

Poff, N.L., J.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestegaard, B.D. Richter, R.E. Sparks, and J.C. Stromberg. 1997. The Natural Flow Regime. Bioscience 47:769–784.

Poff, N.L., J.D. Olden, D.M. Merritt, and D.M. Pepin. 2007. Homogenization of regional river dynamics by dams and global biodiversity implications. Proceedings of the National Academy of Sciences of the United States of America 104:5732–5737.

Raimondo, S., C.R. Lilavois, L. Lee, T. Augspurger, N. Wang, C.G. Ingersoll, C. Bauer, E. Hammer, and M.G. Barron. 2016. Assessing Variability in Chemical Acute Toxicity of Unionid Mussels: Influence of Intra- and Interlaboratory Testing, Life Stage, and Species. Environmental Toxicology and Chemistry / SETAC 35 (3): 750–58.

Ricciardi, A., R.J. Neves, and J.B. Rasmussen. 1998. Impending extinctions of North American freshwater mussels (Unionoida) following the zebra mussel (*Dreissena polymorpha*) invasion. The Journal of Animal Ecology 67:613–619.

Richter, B.D., E.M. Powell, T. Lystash, and M. Faggert. 2016. Protection and Restoration of Freshwater Ecosystems. Pages 81–106 in K.A. Miller, A.F. Hamlet, D.S. Kenney, and K.T. Redmond, editors. Water Policy and Planning in a Variable and Changing Climate. CRC Press, New York.

Sada, D.W., and G.L. Vinyard. 2002. Anthropogenic Changes in Biogeography of Great Basin Aquatic Biota. Pages 75–234 *in* Hershler R Madsen Db, editor. Great Basin Aquatic Systems History.

Scordino, J.J., P.J. Gearin, S.D. Riemer, and E.M. Iwamoto. 2016. River otter (*Lontra canadensis*) food habits in a Washington Coast watershed: Implications for a threatened species. Northwestern Naturalist 97:36–47.

[SARA] Species At Risk Act: Order Amending Schedule 1 to the Species at Risk Act. 2019. Canada Gazette, Part I, Volume 153(12). Available at: http://gazette.gc.ca/rp-pr/p1/2019/2019-03-23/html/reg1-eng.html.

Simpson, C.T. 1900. Synopsis of the naiades, or pearly fresh-water mussels. Proceedings of the United States National Museum 22:501–1044.

Sowerby, III, G.B. 1869. Monograph of the Genus *Anodon*. in L. A. Reeve, editor. Conchologia Iconica: with Illustrations of the Shells of Molluscous Animals.

[SRSRB] Snake River Salmon Recovery Board. 2011. Snake River Salmon Recovery Plan for SE Washington. Technical Document Prepared for the Washington Governor's Salmon Recovery Office. Available at: https://snakeriverboard.org/reports/.

Spooner, D.E., C.C. Vaughn, and H.S. Galbraith. 2012. Species traits and environmental conditions govern the relationship between biodiversity effects across trophic levels. Oecologia 168: 533–548.

Strayer, D.L. 1999. Effects of alien species on freshwater mollusks in North America. Journal of the North American Benthological Society 18:74–98.

Strayer, D.L. 2008. Freshwater Mussel Ecology: A Multifactor Approach to Distribution and Abundance. Los Angeles: University of California Press.

Strayer, D.L. 2014. Understanding how nutrient cycles and freshwater mussels (Unionoida) affect one another. Hydrobiologia 735: 277–292.

Taylor, D.W. 1981. Freshwater mollusca of California, A distributional checklist. California Fish and Game 67(3): 140-163.

Terui, A., Y. Miyazaki, A. Yoshioka, T. Kadoya, F. Jopp, and I. Washitani. 2014. Dispersal of larvae of *Margaritifera laevis* by its host fish. Freshwater Science 33:112–123.

Tohver, I.M., A.F. Hamlet, and S.-Y. Lee. 2014. Impacts of 21st-Century Climate Change on Hydrologic Extremes in the Pacific Northwest Region of North America. Journal of the American Water Resources Association 50:1461–1476.

[USEPA] U.S. Environmental Protection Agency. 2002. Ecological Risk Assessment for the Middle Snake River, Idaho. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, EPA/600/R-01/017.

[USEPA] U.S. Environmental Protection Agency. 2007. Risks of Atrazine Use to Three Federally Listed Endangered Freshwater Mussels: Pesticide Effects Determination. Available at: https://www3.epa.gov/pesticides/endanger/litstatus/effects/080803-effects-determ-3-lstd-mussels.pdf

[USEPA] U.S. Environmental Protection Agency. 2013a. Aquatic Life Ambient Water Quality Criteria For Ammonia – Freshwater. EPA 822-R-18-002.

[USEPA] U.S. Environmental Protection Agency. 2013b. Flexibilities for States Applying EPA's Ammonia Criteria Recommendations. EPA-820-F-13-001.

[USEPA] U.S. Environmental Protection Agency. 2017. Office of Pesticide Programs (OPP) Pesticide Ecotoxicity Database. Available at: https://ecotox.ipmcenters.org/

[USGS] U.S. Geological Survey National Water Information System: Mapper. Available at: https://maps.waterdata.usgs.gov/mapper/index.html

Vannote, R.L., and G.W. Minshall. 1982. Fluvial processes and local lithology controlling abundance, structure, and composition of mussel beds. Proceedings of the National Academy of Sciences 79:4103–4107.

Vaughn, C.C. 2017. Ecosystem services provided by freshwater mussels. Hydrobiologia:1–13.

Vaughn, C.C., and D.E. Spooner. 2006. Unionid mussels influence macroinvertebrate assemblage structure in streams. Journal of the North American Benthological Society 25: 691–700.

Vaughn, C.C., S.J. Nichols, and D.E. Spooner. 2008. Community and foodweb ecology of freshwater mussels. Journal of the North American Benthological Society 27: 41–55.

Vinson, M. 2005. A characterization of the aquatic invertebrate assemblages of the Crooked River, Jefferson County, Oregon. Prepared for the USDI Bureau of Land Management, Prineville District, Prineville, OR.

Vinson, M. 2008. A characterization of the aquatic invertebrate assemblages of selected springs along the Crooked and Deschutes Rivers, Deschutes and Jefferson Counties, Oregon. Prepared for the USDI Bureau of Land Management Prineville District, Prineville, OR.

Wang, N., C.G. Ingersoll, D.K. Hardesty, C.D. Ivey, J.L. Kunz, T.W. May, F.J. Dwyer, A.D. Roberts, T. Augspurger, C.M. Kane, R.J. Neves, and M.C. Barnhart. 2007. Acute toxicity of copper, ammonia, and chlorine to glochidia and juveniles of freshwater mussels (Unionidae). Environmental Toxicology and Chemistry 26:2036–2047.

Wang, N., C.G. Ingersoll, C.D. Ivey, D.K. Hardesty, T.W. May, T. Augspurger, A.D. Roberts, E. van Genderen, and M.C. Barnhart. 2010. Sensitivity of Early Life Stages of Freshwater Mussels (Unionidae) to Acute and Chronic Toxicity of Lead, Cadmium, and Zinc in Water. Environmental Toxicology and Chemistry / SETAC 29 (9): 2053–63.

Wang, N., C.D. Ivey, C.G. Ingersoll, W.G. Brumbaugh, D. Alvarez, E.J. Hammer, C.R. Bauer, T. Augspurger, S. Raimondo, and M.C. Barnhart. 2017. Acute sensitivity of a broad range of freshwater mussels to chemicals with different modes of toxic action. Environmental toxicology and chemistry / SETAC 36:786–796.

Wang, N., J.L. Kunz, R.A. Dorman, C.G. Ingersoll, J.A. Steevens, E.J. Hammer, and C.R. Bauer. 2018. Evaluation of chronic toxicity of sodium chloride or potassium chloride to a unionid mussel (*Lampsilis siliquoidea*) in water exposures using standard and refined toxicity testing methods. Environmental Toxicology and Chemistry 37:3050–3062.

[WDFW] Washington Department of Fish and Wildlife. 2015. Washington's State Wildlife Action Plan: 2015 Update. Washington Department of Fish and Wildlife, Olympia, Washington, USA.

[WDOE] Washington Department of Ecology. 2020. Water quality assessment and 303(d) list. Available at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d

Watters, G.T. 1996. Small dams as barriers to freshwater mussels (Bivalvia, Unionoida) and their hosts. Biological Conservation 75:79–85.

Welker, M., and N. Walz. 1998. Can mussels control the plankton in rivers? A planktological approach applying a Langrangian sampling strategy. Limnology and Oceanography 43: 753–762.

Williams, J.D., A.E. Bogan, R.S. Butler, K.S. Cummings, J.T. Garner, J.L. Harris, N.A. Johnson, and G.T. Watters. 2017. A revised list of the freshwater mussels (Mollusca: Bivalvia:

Unionida) of the United States and Canada. Freshwater Mollusk Biology and Conservation 20:33–58.

[Xerces/CTUIR] The Xerces Society for Invertebrate Conservation and the Confederated Tribes of the Umatilla Indian Reservation Mussel Project. 2020. Western Freshwater Mussel Database. List of contributors available at: http://www.xerces.org/western-freshwater-mussel-database-contributors/. Available upon request from the Xerces Society: Email mussels@xerces.org for a copy of this database.

Zimmerman, J.K.H., D.M. Carlisle, J.T. May, K.R. Klausmeyer, T.E. Grantham, L.R. Brown, and J.K. Howard. 2017. Patterns and magnitude of flow alteration in California, USA. Freshwater Biology:1–15.

AGENDA ITEM REQUEST

Date:

02/21/25

Meeting date desired:

02/26/25

Subject:

Review appointment process for Committtee Membership

Background and policy implications:

Currently 1 vacany exists on the County's NRAC. Applications for appointment close on Friday, Feb. 28. Review and recommendation by the Committee to the Board of Commissioner will occur on Monday, March 3. Recommendation will be before the Board on March 5 meeting.

Budget/fiscal impacts:

None

Requested by:

Tim Deboodt, Coordinator
Crook County Natural Resources

Presenters:

Tim Deboodt

Legal review (only if requested):

NA

Elected official sponsor (if applicable):

NA

AGENDA ITEM REQUEST

Date:
2/19/2025

Meeting date desired:
2/26/2025

Subject:
Ag Extension Advisory Board Positions

Background and policy implications:
3 Positions to be filled on Ag. Advisory Board with the the support remaining board members.

Budget/fiscal impacts:
NA

Requested by:
Rebecca Keegan | Crook County Extension Office Manager
rebecca.keegan@crookcountyor.gov | 541-447-6228

Presenters:
Rebecca Keegan

Legal review (only if requested):
We will work with legal office to ensure information is documented and filed appropriately if needed.

Elected official sponsor (if applicable):
N/A

AGENDA ITEM REQUEST

Date:
2/18/2025

Meeting date desired:
Feb 26, Mar 5

Subject:
Crook County Ambulance Service Plan

Background and policy implications:
Each county in Oregon is responsible for ensuring efficient and effective provision of ambulance services through the development and enforcement of an Ambulance Service Plan (ORS 682.062).

Seeking adoption of Crook County plan and associated Advisory Committee.

Budget/fiscal impacts:
None

Requested by:
Katie Plumb, Health & Human Services Director
kplumb@crookpublichealthor.gov 541-447-5165

Presenters:
Katie Plumb, Health & Human Services Director

Legal review (only if requested):
Yes

Elected official sponsor (if applicable):

Crook County, Oregon

Ambulance Service Area Plan

260 NW 2nd Street
Prineville, Crook County OR 97754

Publication Date:

Crook County, Oregon

Signature of Acceptance Page

Date	Director Katie Plumb, Crook County Health & Human Services
Date	Commissioner Seth Crawford, Crook County
Date	Commissioner Brian Barney, Crook County
Date	Commissioner Susan Hermreck, Crook County

We, the above-signed officials, certify pursuant to Oregon Administrative Rule 333-260-0020 that:

1. Each subject or item contained in the Crook County Ambulance Service Area Plan has been addressed and considered in the adoption of the plan by this body.
2. In this governing body's judgement, the Ambulance Service Areas established in the plan provide for efficient and effective provision of ambulance services.
3. To the extent they are applicable, the County has complied with Oregon Revised Statutes (ORS) 682.062 and 682.071 and existing local ordinances and rules.

Record of Changes

Summary of Changes	Date
Document created	2008
Feedback received from Oregon Health Authority	12/2023
Created Cover Page	05/2024
Created Table of Contents	05/2024
Definitions – updated, added	05/2024
Updated Census information to reflect current status	05/2024
Updated “court” to “commissioners” to reflect current governance structure	05/2024
Updated “Mass Casualty Incident Plan” to include “Mass Care Plan and Medical Countermeasures Plan” to reflect Crook County Health & Human Services Current Emergency Response Plans, as well as referenced information within East Cascades Emergency Medical Services Council’s Central Oregon Mass Casualty Plan.	05/2024
Updated who maintains Crook County Emergency Response Plans and where they can be found	05/2024
Added Maps to plan aligning with their description, rather than in appendices for readability,	05/2024
Provided updates received from Oregon Health Authority, 12/2023	05/2024
Updated when ASA Committee was established (2009)	05/2024
Removed repetitive paragraphs	05/2024
Updated the status of Rager Emergency Services	05/2024
Replaced “Director of County Emergency Management” with “County Emergency Manager”	05/2024
Updated format	05/2024
Authority quick reference added	05/2024
Updated maps to remove ASA 1(a) with CC GIS	07/2024
Added information about authorized emergency transfers and servicing of special events by other Ambulance Service Providers	09/2024
Removed Geographic Legal Description of boundaries (narrative description aligns with requirements within OAR 333-260-0020), updated ASA (1) narrative description	09/2024
Removed requirement for EMS Director to hold an annual meeting due to it not being required in the OAR	09/2024
Updated list of representatives for Advisory Committee	09/2024
Updated information under Radio Communications, removed specific RX/TX due to possibility of changes between updates	09/2024
Removed phone numbers from specialized responses due to changes throughout time, removed non-existent and non-acting response partners.	09/2024
Added dispatch non-emergency number	09/2024
Update Courtroom/Sherrif’s Department address	02/2025
Replace “Health Department” with “Health and Human Services”	02/2025
Clarify role of Rager Emergency Services	02/2025

Change “Emergency Physician” to “Physician in active practice”	02/2025

Table of Contents

Definitions

"Advanced Life Support (ALS)" means the maximum functions that may be assigned to Advanced Emergency Medical Technicians (AEMTs), EMT-Intermediates, or Paramedics in accordance with OAR 847-035-0030.

"Advanced Emergency Medical Technician (AEMT)" means a person who is licensed by Oregon Health Authority (OHA) as an Advanced Emergency Medical Technician.

"Ambulance" or **"Ambulance Vehicle"** means a privately or publicly owned motor vehicle, aircraft, or watercraft that is regularly provided or offered to be provided for the emergency transportation of individuals who are ill, injured, or have disabilities.

"Ambulance Service" includes the transportation of an individual who is ill, injured, or has a disability in an ambulance and, in connection therewith, the administration of prehospital and out-of-hospital medical, emergency, or non-emergency care, if necessary.

"Ambulance Service Area (ASA)" means a geographic area which is served by one ambulance service provider, and may include all or a portion of a county, or all or portions of two or more contiguous counties.

"Ambulance Service License" means the documents issued by the Oregon Health Authority (OHA) to the owner of an ambulance service when the service is to found in compliance with ORS 682.017 to 682.991; OAR Chapter 333, Division 255 and these rules.

"Ambulance Service Plan" means a written document, which outlines a process for establishing a county emergency medical services system. This plan addresses the need for and coordination of ambulance services by establishing ambulance service areas for the entire county and by meeting the other requirements of these rules. Approval of this plan will not depend upon whether it maintains an existing system of providers or changes the system. For example, an plan may substitute franchising for an open-market system.

"ASA Advisory Committee (Committee)" means a committee formed to review standards, make recommendations to or set new standards for the Board of County Commissioners (Commissioners) for all matters regarding Emergency Medical Services (EMS) and review and make recommendations regarding the soundness of the ASA.

"Basic Life Support (BLS)" means the maximum functions that may be assigned to an Emergency Medical Responder (EMR) or Emergency Medical Technician (EMT) in accordance with OAR 847-035-0030.

"Communications System" means two-way radio communications between ambulances, dispatchers, hospitals, and other agencies as needed. A two-channel multi-frequency capacity is minimally required.

"Crook County Commissioners" means the elected officials that have jurisdiction over the Crook County ASA Plan.

"Emergency Care" means the performance of acts or procedures under emergency conditions in the observation, care, and counsel of persons who are ill, injured, or who have disabilities in the administration of care or medications prescribed by a licensed physician or naturopathic physician, insofar as any of these acts based upon knowledge and application of the principles of biological, physical, and social science as required by a completed course utilizing an approved curriculum or prehospital emergency care. "Emergency Care" does not include acts of medical diagnosis or prescription of therapeutic or corrective measures.

"Emergency Medical Service (EMS)" means those pre-hospital functions and services whose purpose is to prepare for and respond to medical emergencies, including rescue and ambulance services, patient care, communications and evaluation.

"EMS Medical Director" or **"Supervising Physician"** means a physician licensed under ORS 677.100 to 677.228 actively registered and in good standing with the Oregon Medical Board, who provides direction of emergency or non-emergency care provided by emergency medical services providers.

"Emergency Medical Technician" means a person who is licensed by Oregon Health Authority (OHA) as an Emergency Medical Technician.

"Emergency Medical Technician – Intermediate (EMT-Intermediate)" means a person who is licensed by the Oregon Health Authority as an EMT-Intermediate.

"Emergency Medical Services Provider" means a person who has received formal training in prehospital and emergency care, and is licensed to attend to any person who is ill, injured, or has a disability.

"Effective Provision of Ambulance Services" means ambulance services provided in compliance with is Ambulance Service Plan provisions for boundaries, coordination and system elements for provider selection. Services of secondary providers must be considered as having been provided by the franchise holder for the purpose of evaluating the performance of the assigned ambulance provider.

"Health Officer" means the Crook County Health Officer.

"Intermediate Life Support (ILS)" means the maximum functions that may be assigned to EMT-Intermediates in accordance with OAR 847-035-0030.

"License" means those documents issued by the Oregon Health Authority to the owner of an ambulance service and ambulance, when the service and ambulance are found to be in compliance with ORS 682.017 to 682.991 and OAR Chapter 333, Division 255.

"Notification Time" means the length of time between the initial receipt of the request for emergency medical service by either a provider or a Public Safety Answering Point (PSAP), and the notification of all responding emergency medical service personnel.

"Oregon Administrative Rules (OAR)" means the regulations that state agencies adopt to carry out statutes from the Legislature.

"Oregon Revised Statutes (ORS)" means the laws enacted by the legislature and governor, or passed by a vote of the people through the initiative process.

"Owner" means the person having all the incidents of ownership in an ambulance service or an ambulance vehicle where the incidents of ownership are in different persons, the person, other than a security interest holder or lessor, entitled to the possession of an ambulance vehicle or operation of an ambulance service under a security agreement for a lease for a term of 10 or more consecutive days.

"Paramedic" means a person who is licensed by the Oregon Health Authority as a Paramedic.

"Patient" means a person who is ill, injured, or has a disability and receives emergency or non-emergency care from an emergency medical services provider.

"Provider" means any public, private, or volunteer entity providing Emergency Medical Services.

"Provider Selection Process" means the process established by the county for selecting an ambulance service provider or providers.

"Public Safety Answering Point (PSAP)" means a communications facility established as an answering location for emergency calls originating with a 9-1-1 service area.

"Quick Response Team (QRT)" means an agency that provides initial response and basic life support care without transportation capabilities by certified First Responders.

"Response Time" means the length of time between the notification of each provider and the arrival of each provider's emergency medical service unit(s) at the incident location.

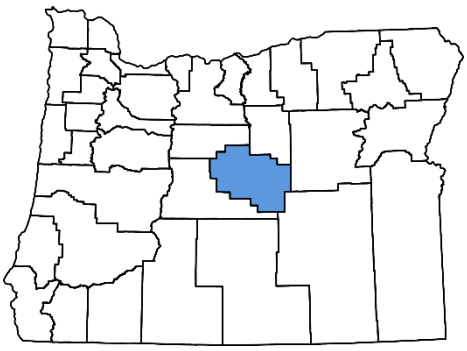
"Secondary Provider" means a provider of EMS which operates in support of assigned ambulance service providers. Secondary providers must meet or exceed the quality and performance standards required of the ambulance service franchise holder and be approved by the Commissioners.

"System Response Time" means the elapsed time from when the PSAP receives the call until the arrival of the appropriate provider unit(s) on the scene.

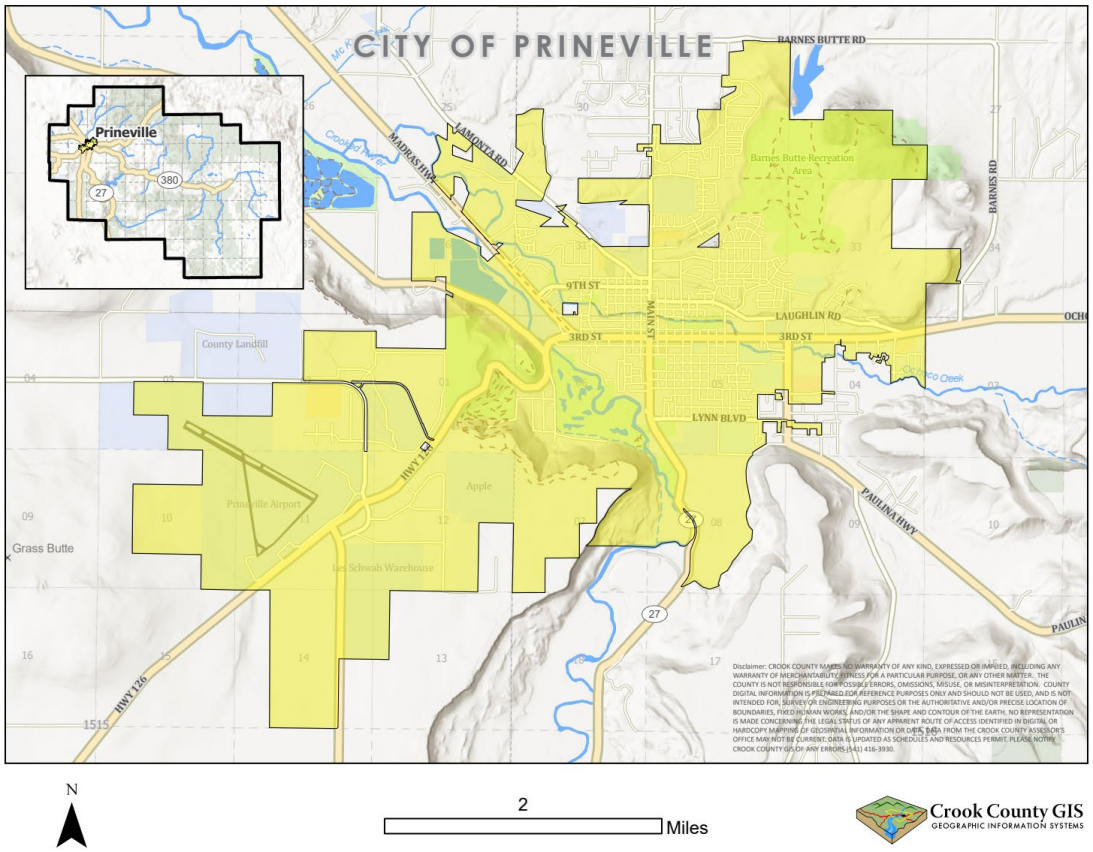
Authorities & References

Statute or Rule	Quick Reference
ORS Chapter 192	Records; Public Reports and Meetings
ORS Chapter 677	Regulation of Medicine, Podiatry and Acupuncture
ORS 682.017-682.991	Regulation of Ambulance Services and Emergency Medical Services Providers
ORS 628.062	County Plan for Ambulance and Emergency Medical Services; Rules
ORS 682.071	Exchange of Services Agreement for Ambulance and EMS
OAR 333-255-0060	Ground Ambulance Vehicle Construction Criteria for Initial Licensure
OAR 333-255-0070	Ground Ambulance Staffing and Response Requirements
OAR 333-255-0072	Ground Ambulance Equipment Requirements
OAR 333-260-0020	Procedures for Adoption and Approval of Ambulance Service Plans
OAR 847-035-0025	Emergency Medical Services Providers and Supervising Physicians/Medical Director; Supervision
Crook County Ordinance Chapter 5.16.090-120	Application for Ambulance Franchise, Existing Ambulance Service Providers, Review of Application for Franchise, Action on Application for Franchise

Overview of Crook County



Crook County is located in the geographic center of the state. The county is bordered on the west by Deschutes and Jefferson Counties, on the north by Jefferson and Wheeler Counties, on the east by Grant and Harney Counties, and on the south by Harney and Deschutes Counties. Crook County covers 2,978 square miles. The population in Crook County as of the 2023 Census was 26,952. The County Seat, the City of Prineville, as of the 2022 Census was 11,497 which is at the junction of U.S. Highway 26 and State Route 126. Crook County also consists of Post, Paulina, Powell Butte, and other unincorporated populated areas. The majority of Crook County's population lives within a ten-mile radius of Prineville. Additional information about Crook County can be found on the United States Census Bureau website https://www.census.gov/quickfacts/fact/table/crookcountyoregon/PST045222.



County Seat

The Crook County Courthouse is located at 260 NW 2nd Street, Prineville, OR 97754

Website: https://co.crook.or.us/

Established: October 24th, 1882

Elevation: 2,868 feet

Assessed Value: $3,127,764,578 as of the 2023 Tax Year

Forest products, agriculture, technology, advanced manufacturing, livestock, and recreation provide the basis of the county's economy.

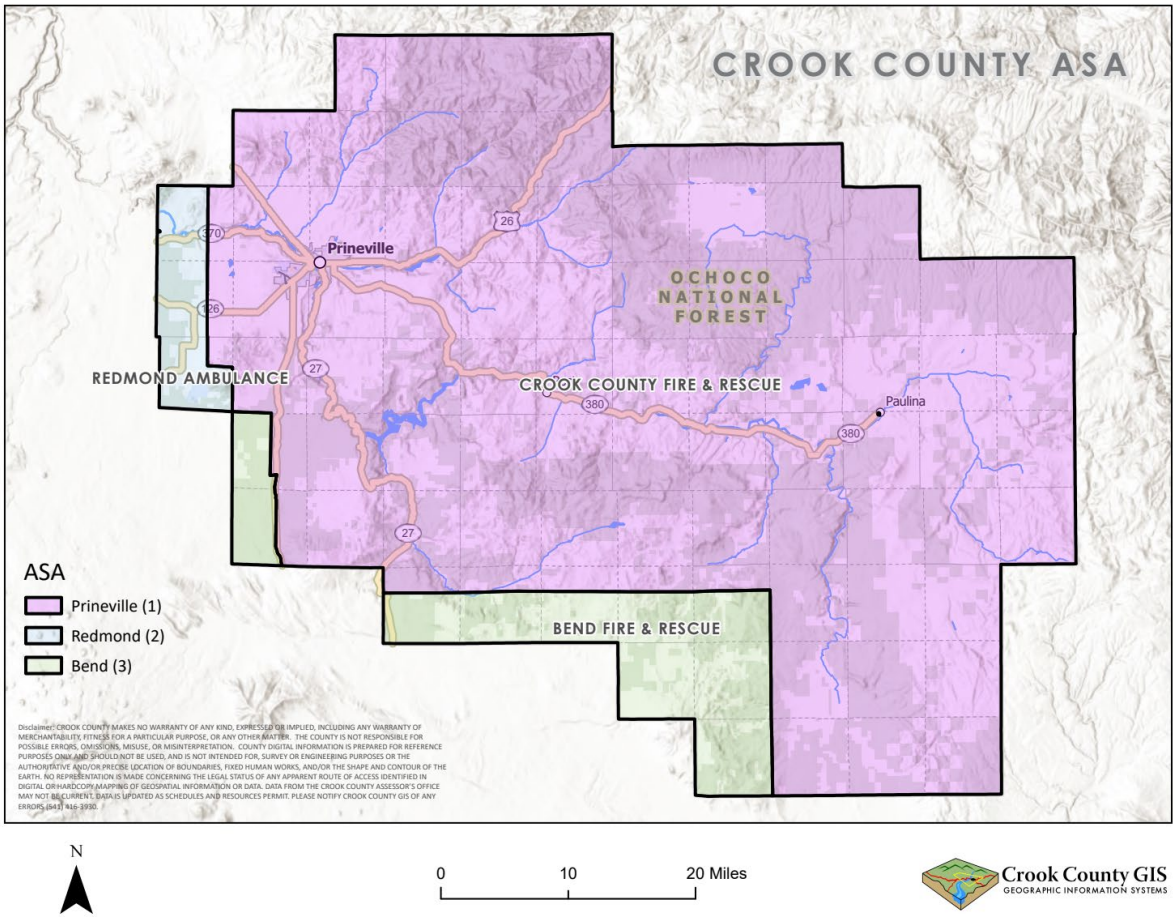
Crook County has many natural barriers, this includes mountains, lakes, rivers, wilderness, and large roadless areas. A large number of roads are gravel or dirt. In remote areas, some medical evacuations may require air ambulance resources or assistance from Search and Rescue personnel. Ambulance service area boundaries, for the most part, were established several years ago by prehospital care providers in the region and have proven effective.

Boundaries

Crook County is divided into three separate Ambulance Service Areas covering the entire 2,978 square miles of Crook County. Most of the ASA areas are comprised of either the Ochoco National Forest or Bureau of Land Management lands.

The three ASAs are:

1. Prineville Area
2. Powell Butte Area west of Reif Road
3. Southwest Corner of Crook County West of Millican Road and the southwest corner of Crook County north of Brothers.



Ambulance Service Area 1

ASA (1) is assigned to Crook County Fire and Rescue. ASA (1) covers roughly 88% of Crook County and the boundary starts in the northwest Corner at the northern bounds of TR 1414 between Section 03 and 02. From the northern bounds of TR 1414 between Section 03 and 02 heading south 14.12 miles until the eastern half quarter of TR 1614 Section 15. East 2 miles until the western bounds of TR 1615. South until the county boundary and the southwest corner of TR 1615. East 3 miles until OHV trail 10 (0.17 miles east of the northwest corner of TR 1715 Section 03). South roughly following OHV trail 10 and a set of transmission lines until Reservoir Road. Follow Reservoir Road east until George Millican Road. Follow George Millican Road south until the county boundary (approximately 270 feet east of the southeast corner of TR 1815 Section 34. East along the county boundary until the Crooked River Highway. South until the southwest corner of TR 1917 Section 07. Eastward ASA (1) covers the northern 2 sections of TR 1917, 1918, 1919, 1920, and 1921. South until the most southernly edge of the county boundary between TR 2121 and 2122. ASA (1) covers all lands eastward. The bounds follow the county line until the beginning description point.

Ambulance Service Area 2

ASA (2) is assigned to Redmond Fire and Rescue. ASA (2) covers roughly 2.5% of Crook County and the boundary starts in the northwest corner of TR 1414 Section 06, heading south approximately 11.88 miles to the southwest Corner of TR 1514 Section 31. East 0.25 miles to the northwest Corner of TR 1614 Section 06. South 5.5 miles to the southwest corner of TR 1614 Section 31. East 5.75 miles to the southwest corner of TR 1614 Section 36. North 3.5 miles to the Eastern half quarter of TR 1614 Section 13. West 2 miles to the western half quarter of TR 1614 Section 14. North approximately 14.13 miles until the County boundary and the northern boundary of TR 1414 between Section 03 and Section 02. Then west 4 miles until the beginning description point.

Ambulance Service Area 3

ASA (3) is assigned to Bend Fire and Rescue. This area covers roughly 9% of Crook County. It includes the first portion of west George Millican Road, starting at the northwest corner of TR

1715, east along the section line to the high-tension powerlines in TR 1715 Section 03, then south along the powerlines to Reservoir Road; then along Reservoir Road to the intersection of Reservoir Road and southwest George Millican Road in TR 1715 Section 27; then in a southern direction along George Millican Road along the Deschutes and Crook County border, then west along the Deschutes and Crook County border following the border back to the starting location. The second portion of ASA (3) starts in the southwest corner of TR 1917 Section 07 at the Deschutes and Crook County border, heading east along the section line to the southwest corner of TR 1922 Section 07, then south along the section line to the Deschutes and Crook County border, then west along the Deschutes and Crook County border to the starting location.

System Elements

Response Limitations

Heavily forested, mountainous terrain and severe winter weather conditions in Crook County present difficult access and long response time to ground ambulances. In situations where these conditions are present when an urgent response is indicated, the PSAP will work with the nearest appropriate agencies and resources, and at their request, place on standby or activate rotary-wing air ambulances. Crook County Search and Rescue may also be activated to assist with an incident.

In addition, a tiered response system is used to provide the best available patient care when maximizing available resources. It is critical to consider scarcity as well as expense when requesting initial response resources. Some frontier areas have medical response personnel, considered a "Quick Response Team" (QRT), allowing for improved initial care and early on-scene size-ups that can relay patient information and clarifying the need for continued response. Rager Emergency Services serve as one such medical provider in Crook County. Rager Emergency Services provides pre-hospital care before the arrival of an ambulance under supervision of a Medical Director. Rager does not provide emergency transportation services.

In some instances, for various reasons, a secondary provider or an ambulance service provider from an adjoining county's ASA could respond quicker to an incident. This would be covered under a signed Mutual Aid Agreement (MAA) and would be at the discretion of the PSAP.

9-1-1 Dispatched Calls & Pre-Arranged Non-Emergency Transfers

An ASA Provider operating in Crook County must provide services and required life support levels for all 9-1-1 dispatched calls. ASA Providers will acknowledge and respond to 9-1-1 dispatched calls according to standards set forth in this plan. Pre-arranged and non-emergency transfers and interfacility transfers will be handled as crews are available. However, an ambulance service operating in Crook County may decide, based on limited workforce and financial resources, not to handle non-emergency transfers and interfacility transport. It is the

responsibility of the hospital or facility requesting non-emergency and inter-facility transfers to locate an alternate ambulance service. Each ASA Provider is authorized to permit, by written agreement, non-emergency and interfacility ambulance transports of stable patients originating within that territory by another licensed Ambulance Service Provider. Such authorization will last no longer than the term of the written agreement, or until the current ASA Provider ceases operations.

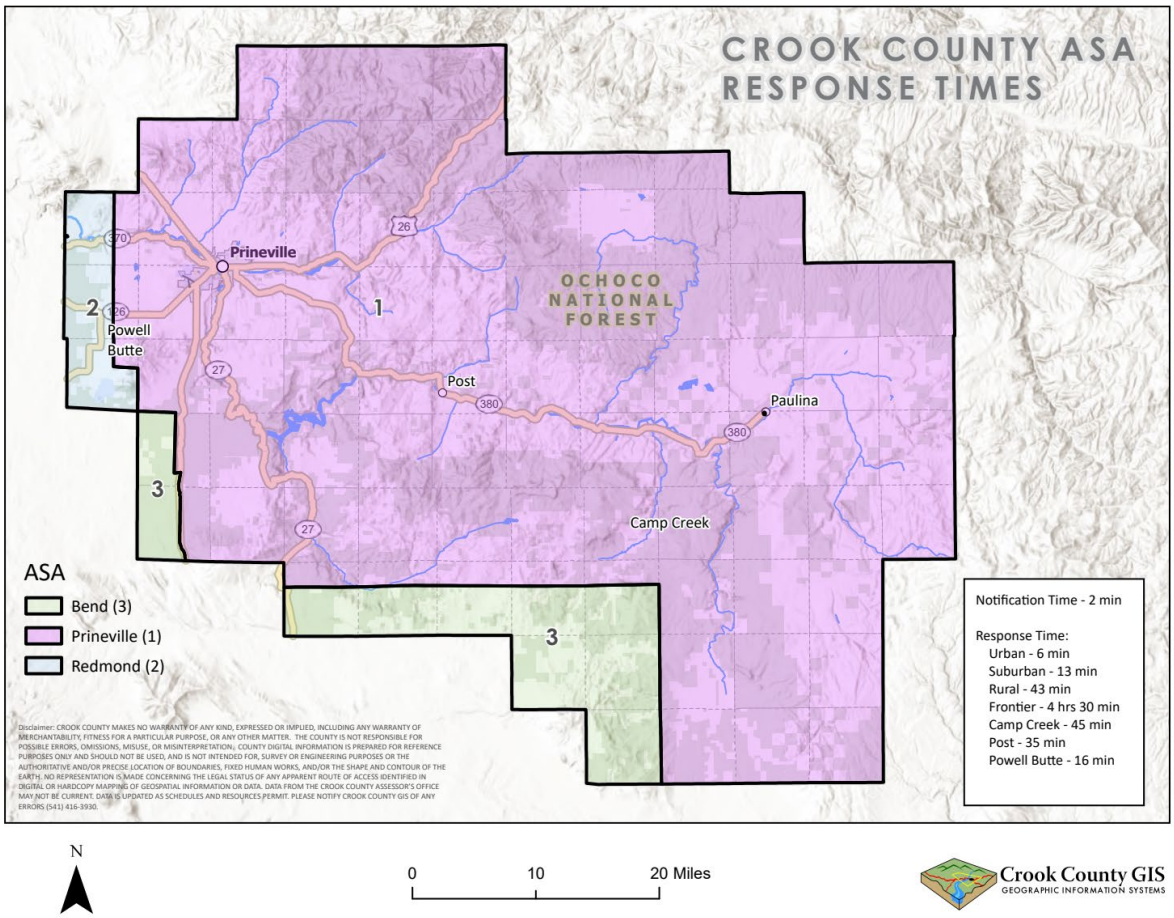
In cases of special events in Crook County, the ASA Provider may grant permission to another licensed Ambulance Service Provider for the purpose of servicing special events or occasions. Permission must be set forth in writing and state the duration of the event or occasion and whether ambulance transport will be permissible.

Response Times

The Crook County ASA system response times must be as depicted on the Crook County Time Zone Map 90% of the time, barring inclement weather or other extraordinary conditions or circumstances.

Notification times for ambulances must be within two (2) minutes for 90% of the calls.

Location	Provider Response Times	System Response Times
Urban	6 minutes	8 minutes
Suburban	13 minutes	15 minutes
Rural	43 minutes	45 minutes
Frontier	4 hours, 28 minutes	4 hours, 30 minutes



Monitoring of notification and response times will be accomplished by the following:

1. Information received from the public, PSAP, prehospital care providers, hospitals, or county EMS administration.
2. Types of information received are written or verbal complaints, patient care report forms, radio transmission tapes, notification and response time incident cards, trauma registry forms, etc.

Level of Care

An ambulance operating in Crook County and providing Basic Life Support (BLS) level care must consist of a qualified driver, at least one certified EMT. The EMT must always be with the patient in the patient compartment of the ambulance.

An ambulance operating in Crook County and providing Intermediate Life Support (ILS) level care must consist of one certified EMT and one certified EMT-Intermediate. The EMT-Intermediate must always be with the patient in the patient compartment of the ambulance whenever intermediate level care is required or rendered.

An ambulance operating in Crook County and providing Advanced Life Support (ALS) level care must consist of an EMT and a Paramedic. The Paramedic must always be with the patient in the patient compartment of the ambulance when ALS care is required or being rendered.

Personnel

All ASA providers in Crook County must staff licensed ambulances with licensed personnel in accordance with OAR 333-255-0070 and OAR 333 Division 265.

The practice of staffing an ambulance on a part-time basis with EMS providers licensed to a higher level of care than is possible at other times does not construe a requirement that the ambulance provide the same level of care on a regular basis.

Medical Supervision

Each EMS agency utilizing EMS providers must be supervised by a physician licensed under ORS Chapter 677, actively registered and in good standing with the Board of Medical Examiners as a Medical Doctor (MD) or Doctor of Osteopathic Medicine (DO). The physician also must be approved by the Oregon Medical Board as an EMS Medical Director.

Each EMS agency or ambulance service may have its own EMS Medical Director.

The EMS Medical Director must:

1. Comply with the requirements listed in OAR 847-035-0025;
2. Designate an EMS coordinator who will conduct case reviews in the physician's absence and send summaries of the reviews and problems identified and proposed problem resolution to the physician; and

3. Provide or authorize at least one case review meeting for all EMS Providers quarterly.

Patient Care Equipment

Patient care equipment must meet or exceed the Oregon Health Authority's requirements as specified in ORS 682.017 to 682.991 and OAR 333-255-0072. The ambulance service provider must maintain a list of equipment for their ambulances, which will be furnished to the Commissioners upon their request.

Vehicles

All ambulances must be either Type I, II, or III and be licensed by the Oregon Health Authority. All ambulances must meet or exceed the requirements as set forth in ORS 682.017 to 682.991 and OAR 333-255-0060. An up-to-date list of each provider's ambulance will be furnished to the Commissioners upon their request.

Training

The ambulance service provider in Crook County may provide assistance (via tuition, exam fees, textbooks, etc.) for prospective ambulance personnel taking initial Emergency Medical Provider training and continuing medical education which meets recertification standards specified by the Oregon Health Authority. Ambulance Service provider license renewal and continuing medical education will be obtained through in-house training programs and seminars that are sponsored by local EMS agencies or teaching institutions. When classes are not available within the county, it may require an individual to augment their continuing education by attending classes, workshops, and conferences outside of the ASA and/or county.

Advisory Committee

Quality Assurance

In order to ensure the delivery of efficient and effective pre-hospital emergency medical care, an EMS quality assurance program is established through an Ambulance Service Area Advisory Committee.

Structure

"Crook County Ambulance Service Area Advisory Committee" consists of representative(s) from each of the following agencies or organizations:

1. EMS Medical Director who is a Physician in active practice
2. Ambulance Service Provider(s)
3. City of Prineville
4. Crook County Sheriff's Office
5. Crook County Health & Human Services
6. Member(s) of the Community

The principal function of the Committee is to monitor EMS systems within Crook County and will convene as needed.

Review Process

The Commissioners, in order to ensure the delivery of the most efficient and effective prehospital emergency care possible with the available resources, has directed that the ASA Advisory Committee be established.

Quality assurance in Crook County will be accomplished through frequent case review and periodic review by the EMS Medical Director and/or ambulance governing bodies. Complaints regarding violation of this ASA Plan or questions regarding prehospital care provided must be submitted in writing to the Commissioners and forwarded to the Committee. The Committee will then review the matter and make recommendations or changes on such complaints or questions

to the Commissioners. Ongoing input may be provided by consumers, providers, or the medical community to any Commissioner or member of the of the Committee. This individual, in turn, will present the complaint, concern, or suggestion to the Commissioners for consideration.

Problem Resolution

Problems involving protocol deviation by EMS Providers or dispatchers must be referred to the respective medical director or dispatch supervisor. Problems involving a non-compliant provider must be referred to the Commissioners. The Commissioners may seek background data and recommendations from the Committee in such instances. However, any member of the Committee who may have a conflict of interest in the matter must declare such conflict and refrain from participating in providing any recommendations.

Sanctions for Non-Compliant Personnel or Providers

Upon a recommendation by the Committee or upon its own motion, the Commissioners may suspend or revoke the assignment of an ASA based on a finding that the provider has:

1. Willfully violated provisions of an ordinance, the Crook County ASA Plan, or provisions of the State or Federal laws and regulations; or
2. Materially misrepresented facts or information given in the application for assignment of an ASA or as part of the review of performance of service furnished by the provider.

In lieu of the suspension or revocation of assignment of an ASA, the Commissioners may order that the violation be corrected and make the suspension or revocation contingent upon compliance with the order, within the period of time stated. Notice of the Commissioner's action will be provided to the holder of the assignment which must specify the violation, the action necessary to correct, the violation and date by which action must be taken. If the holder of assignment fails to take corrective action within the time required, the Commissioners will notify the holder that the assignment is suspended or revoked upon receipt of the notice.

Individuals receiving a notice of assignment, denial, suspension, revocation, or contingent suspension of an ASA may request a hearing before the Commissioners by filing a written

request for a hearing within fourteen (14) days of the decision. The request must set forth reasons for the hearing and issues proposed to be reviewed. The filing of a hearing request must stay the action, pending the hearing and finalized determination of the decision, unless a change is required due to an immediate hazard to public safety. The Commissioners will set a time and place for the hearing, and within fourteen (14) days after the conclusion of the hearing, the Commissioners will affirm, reverse, or modify its original decision.

Penalties

Any person who violates any provision of this ASA Plan or County Ordinance is guilty of a violation. Failure from day-to-day to comply with the terms of this ASA Plan or Ordinance must be a separate offense for each such day. Failure to comply with any provision of the Ordinance must be a separate offense for each such provision.

Nothing in this plan is intended to revoke the authority of the Oregon Health Authority regarding penalties for non-compliant personnel or providers under state rules, orders, or laws. The Commissioners reserve the right to enforce monetary and civil penalties on any ASA provider failing to maintain compliance with this plan. Violations of the provisions of this ASA Plan or Ordinance are punishable, upon conviction, by a fine of no more than Five Hundred Dollars ($500) per day per violation.

Coordination

Authority for Ambulance Service Area Assignments

The Commissioners have authority to assign an ASA with Crook County in compliance with ORS 682.017 to 682.991. Applications by new providers and requests for assignment change or revocation will be considered for approval if they will improve efficient service delivery and benefit public health, safety, and welfare. Cities have the authority to develop and apply ambulance licensing ordinances within their jurisdictional boundaries – nothing in this plan is intended to revoke that authority.

Future updates to this plan and proposals for assignment changes will be the responsibility of the Commissioners. The Commissioners will receive all requests for changes and present those requests to the Committee for their review and recommendations. Upon completing their review, the Committee will present their recommendations to the Commissioners. In addition, the Commissioners have the authority to review service providers' records and initiate an assignment change or service area revocation. For the purposes of this plan, the Commissioners recognize the Committee as an advisory group.

The Crook County ASA Plan was prepared with a great deal of input from all county pre-hospital care providers. The plan requires that the ambulance service providers maintain service records in order for the County to carry out its ASA Plan responsibilities.

Administering Entity

The Crook County ASA Advisory Committee was established with the adoption of the initial version of this plan (2009). The Committee will serve as the principal entity to administer and accept written proposals for amendments to this plan. The Committee will be activated at any time a concern is submitted, in writing, to the Commissioners, or when deemed appropriate by the Committee.

This Committee, as with any governmental body, will be subject to the Oregon Open Meeting Law (ORS Chapter 192), but may temper its activities, within legal limits, according to the sensitivity of the EMS matter involved. Appeals from the Commissioners, in any case where the Commissioners would otherwise have the final decision at the county level, must be directed to the appropriate state regulatory agency, or a Circuit Court, as appropriate.

The Committee will submit a brief written report of its activities or recommendations periodically to the Commissioners.

Existence of this Committee will:

1. Prevent needless attention of state regulatory agencies to problems that can be resolved locally;
2. Increase local awareness of potential problems that may exist; and
3. Increase the awareness of ambulance medical directors regarding area concerns and activities.

Mutual Aid Agreements (MAAs)

Each ambulance service provider must have in place a mutual aid agreement (MAA) with the other providers in the county and with other providers in adjoining counties to respond with needed personnel and equipment in accordance with the agreement.

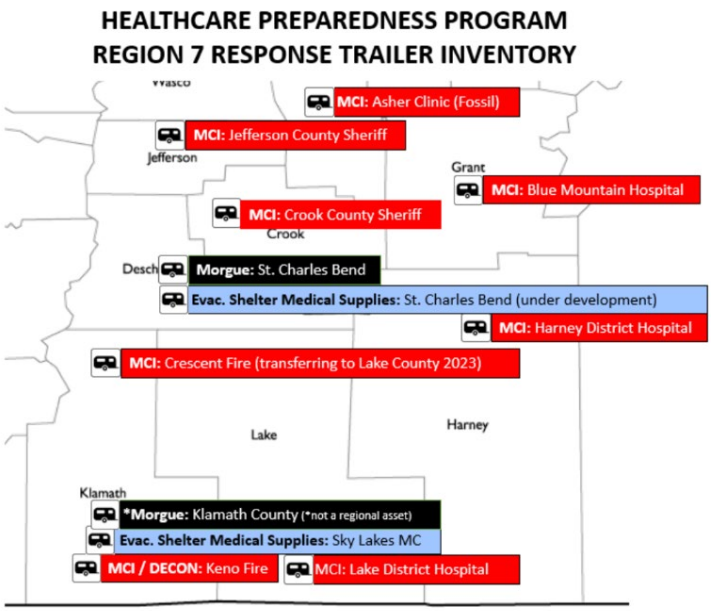
All requests for mutual aid must be made through the appropriate PSAP. All MAAs will be reviewed annually and modified as needed my mutual consent of all parties. MAAs can be accessed in the agency's administration office.

Disaster Response

The Committee will coordinate the EMS medical function of disaster planning with any formal Emergency Operations Plan developed by the Crook County Emergency Manager or other Crook County authorities.

The Mass Care and Medical Countermeasures Plans are maintained by Crook County Health & Human Services Public Health Emergency Preparedness Coordinator, and include specific information about county response to Mass Casualty Incidents (MCIs). A copy of each of these plans can be found in the Public Health Emergency Preparedness Coordinator's Office, Public Health Director's Office, as well as the County Emergency Manager's Office. East Cascades Emergency Medical Services Council's Central Oregon Mass Casualty Plan can be found on the East Cascade's Emergency Medical Services website, which is currently housed at https://eastcascadeems.org/protocols.

Crook County maintains a Mass Casualty Incident Trailer which is located at the Crook County Emergency Operations Center (EOC). There is also a Morgue Trailer located at the St. Charles Hospital in Bend. Crook County Health & Human Services can monitor inventories of resources stored at hospitals, including hospital bed capacity, through the Oregon Capacity System (OCS) webpage.



The purpose of the Mass Care and Medical Countermeasures Plans include providing guidance to emergency response personnel in the coordination of response activities relating to MCIs in Crook County. These plans are intended to be used when any single incident or combination of incidents deplete the resources of any single provider or providers during the normal course of operations or at the request of the Health Officer.

The purpose of the East Cascades Emergency Medical Services Council's Central Oregon Mass Casualty Plan is to provide guidance and structure during a Mass Casualty Incident, including providing a coordinated and unified response by multiple agencies and facilities in order to avoid

overwhelming any single agency or facility during an MCI. The proper use of the plan should ensure the adequate care and orderly distribution of patients to appropriate hospitals.

The Committee may periodically review the Crook County Health & Human Services. Mass Care and Medical Countermeasures Plans as well as the East Cascades Emergency Medical Services Council's Central Oregon Mass Casualty Incident Plan in relation to Emergency Medical Services and provide revisions to the Public Health Emergency Preparedness Coordinator to meet the County's needs within Crook County Health & Human Services plans. Following the review and changes, the County Emergency Manager will be asked to update the reflected changes in coordination with the Public Health Emergency Preparedness Coordinator within the County Emergency Operations Plan (EOP).

Medical Emergencies

In the event of a medical emergency in an inaccessible or remote location, the County Emergency Manager who coordinates Search and Rescue Operations will determine the appropriate deployment of resources.

The EMS Provider in charge at the scene will have overall responsibility for patient care; they will work closely with the Incident Commander (IC). The on-scene command frequency and staging area will be determined by the IC. The appropriate PSAP will advise responding units of the staging area location.

The EMS Provider on the first EMS unit to arrive at the scene will become the triage officer and:

1. Assess the nature and severity of the incident;
2. Advise appropriate PSAP of the situation;
3. Request appropriate fire and police services, if not already at the scene;
4. Request initiation of EMS mutual aid, as needed;
5. Alert the area hospital of the situation; and
6. Establish and organize the transportation of all injured or ill patients.

Additional EMS units arriving on the scene will:

1. Check in with the IC
2. Conduct needed response, as trained and equipped;
3. Provide emergency medical care and transport patient(s) to the appropriate hospital(s).

Specialized Responses

Emergency medical response calls may require specialized equipment and specially trained personnel. These calls include, but are not limited to, hazardous materials calls, search and rescue requests, and extrication.

Response to a terrorism-related event would be coordinated through the respective law enforcement, fire, and ambulance service utilizing the National Incident Management System (NIMS). Emergency Operations Plans can be activated to assist with response to events but the primary lead agency for non-medical response would be the respective law enforcement agency.

County Resources Other than Ambulances

When resources other than ambulances are required for the provision of emergency medical services during a disaster, a request for additional resources must be made through the appropriate PSAP to the County Office of Emergency Management.

The County Emergency Manager will work with Incident Command coordinating all EMS resources any time that the Mass Care Plan or Medical Countermeasures Plan is implemented. The County Emergency Manager will work with local agencies, departments, and governments to coordinate necessary resources during any implementation of the Mass Care Plan or Medical Countermeasures Plan, or Central Oregon Mass Casualty Plan in relation to mass casualty incidents.

Out of County Resources

When resources from outside of Crook County are required for the provision of emergency medical services during a disaster, a request for those resources will be made through the appropriate PSAP to the County Office of Emergency Management.

Supporting Response Agencies

The following personnel and equipment resources are available to support the ambulance service provider:

AirLink (Rotary-Wing Air Ambulance & Fixed-Wing Air Ambulance) – Bend, Oregon
LifeFlight (Rotary-Wing Air Ambulance) – Redmond, Oregon
Oregon Air National Guard – Oregon
Jefferson County Fire & EMS (Ground Ambulance) – Madras, Oregon
Redmond Fire & Rescue (Ground Ambulance) – Redmond, Oregon
Bend Fire & Rescue (Ground Ambulance) – Bend, Oregon
Mitchell Volunteer Ambulance – Mitchell, Oregon
Oregon HazMat Region 13 – Salem, Oregon

The following personnel and equipment resources are available to support the ambulance service provider regarding hazardous materials and search and rescue needs:

Crook County Fire & Rescue (HAZMAT, Extrication) – Prineville, Oregon
Redmond Fire & Rescue (HAZMAT, Extrication) – Redmond, Oregon
Bend Fire & Rescue (Extrication) – Bend, Oregon
Oregon Emergency Response System (HAZMAT) – Salem, Oregon
Crook County Sheriff (Search & Rescue) – Prineville, Oregon
Jefferson County Sheriff (Search & Rescue) – Madras, Oregon
Deschutes County Sheriff (Search & Rescue) – Bend, Oregon
Wheeler County Sheriff (Search & Rescue) – Fossil, Oregon
Oregon State Police – Bend, Oregon
Oregon Civil Air Patrol – Eugene, Oregon
Oregon Air National Guard (Specialized Rescue) – Oregon
Crook County Road Department (Extrication – Heavy Equipment) – Prineville, Oregon

The majority of Search and Rescue within Crook County is provided by the Crook County Sheriff's Office through the Office of Emergency Management. They are on-call and available on a 24-hour basis. In many instances, Search and Rescue will act as first responders in remote areas that are inaccessible to conventional ambulances.

Search and Rescue teams have direct radio contact with all local ambulances, hospitals, Air Ambulances, and the PSAP. In winter months, Search and Rescue will respond to remote areas covered with snow and not accessible by the usual ambulance service. When advanced life support is requested, Search and Rescue will transport the ambulance crews to the patient.

Emergency Communications

Crook County 9-1-1 is the PSAP for Crook County. This center will receive all emergency service requests in Crook County. Individuals with access to telephone service will have access to the communications center by dialing 9-1-1, or the non-emergency line 541-447-4168. Upon receipt of a request, all emergency responders in Crook County are dispatched by Crook County 9-1-1.

The appropriate personnel must be notified by the dispatcher via radio within two (2) minutes of receipt of a call 90% of the time. Rager Emergency Services activation requires phone contact with a Rager Emergency Services volunteer.

The dispatcher will obtain from the caller, and relay to the first responders the following:

1. Location of the incident;
2. Nature of the incident; and
3. Any specific instructions or information that may be pertinent to the incident.

EMS personnel will inform the dispatch center by radio when any of the following occurs:

1. They are in-service;
2. They are in-route to the scene or destination and the type of response;
3. Arrival on scene;
4. If they are transporting patient(s) to the hospital or medical facility, the number of patients and the name of facility; and
5. Arrival at receiving facility.

Ambulance personnel will inform the receiving hospital at the earliest possible time of the following:

1. Unit identification number;
2. Age and sex of each patient;
3. Condition and chief complaint of each patient;
4. Vital signs of each patient;
5. Treatment rendered; and
6. Estimated time of arrival.

Radio System

The PSAP will:

1. Restrict access to authorized personnel only;
2. Meet Oregon State Fire Marshal standards;
3. Maintain radio consoles capable of communication directly with all first response agencies dispatched by them;
4. Maintain radio logs which contain all information required by the Federal Communications Commission (FCC) and Oregon Revised Statutes;
5. Utilize plain language or 12-code; and
6. Be equipped with a back-up power source capable of maintaining all functions of the center.

Each ambulance service provider will equip and maintain in each ambulance a transceiver that allows communications with the appropriate dispatch center and with all area hospitals (HEAR System). Each ambulance crew will also have at least one hand held radio with the same capabilities.

Providers are dispatched by the Crook County 9-1-1 via radio, excluding Rager Emergency Services. Unless specifically determined by the nature of the call (i.e., non-emergency patient transfer) the appropriate level of ambulance staffing available at that time will be dispatched. Other resources (i.e. police) will be dispatched as deemed appropriate.

Emergency Medical Services Dispatcher Training

Communications Center dispatchers must successfully complete an Emergency Medical Dispatch (EMD) training course as approved by the Oregon Department of Emergency Management (OEM) and Oregon Department of Public Safety Standards and Training (DPSST). All EMS dispatchers are encouraged to attend any class, course, or program which will enhance their dispatching abilities and skills.

Provider Selection

Initial Assignment of Existing Ambulance Service Providers

Providers assigned to the ASA must meet the standards contained within this plan – specifically, those standards outlining efficiency and effectiveness. Crook County is administering the 2024 ASA Plan with the established ambulance service providers, which include ASA 1 assigned to Crook County Fire and Rescue, ASA 2 assigned to Redmond Fire and Rescue, and ASA 3 assigned to Bend Fire and Rescue.

In the event an ASA provider notifies the Commissioners that they can no longer provide ASA services to Crook County, the County must find an alternative method to provide ambulance services. If an ASA provider is unable to maintain service due to requirements in ORS/OARs, the licensed ambulance service provider has legal authority to request a variance or waiver from the Oregon Health Authority. The Commissioners may delegate authority to current or prospective ASA providers and may allow operations at a lower level of service.

Reassignment of an ASA

In the event that a reassignment of an ASA is necessary, the Committee will make a written recommendation to the Commissioners. The Committee will develop appropriate criteria, utilizing the selection process described in this plan to be presented to the Commissioners for consideration and/or action by the Commissioners. The Commissioners must notify Oregon Health Authority upon reassignment and update this ASA Plan to reflect changes.

Application Process for Applying for an ASA

Crook County Ordinance Chapter 5.16 Ambulance Services states that an applicant must provide information about vehicles, equipment, experience, records, etc. and applications will be reviewed by the Committee and a recommendation by the Committee will be provided to the Commissioners.

Notification of Vacating an ASA

In the event an ASA provider wishes to vacate their ASA, the provider must provide at least sixty (60) days written notice to the Commissioners. The ASA provider must provide notification in accordance with the provisions of the initial service agreement or contract. The Advisory Committee will develop an interim plan for coverage of the ASA using existing ambulance service providers or other available resources can be reassigned.

Maintenance Level of Service

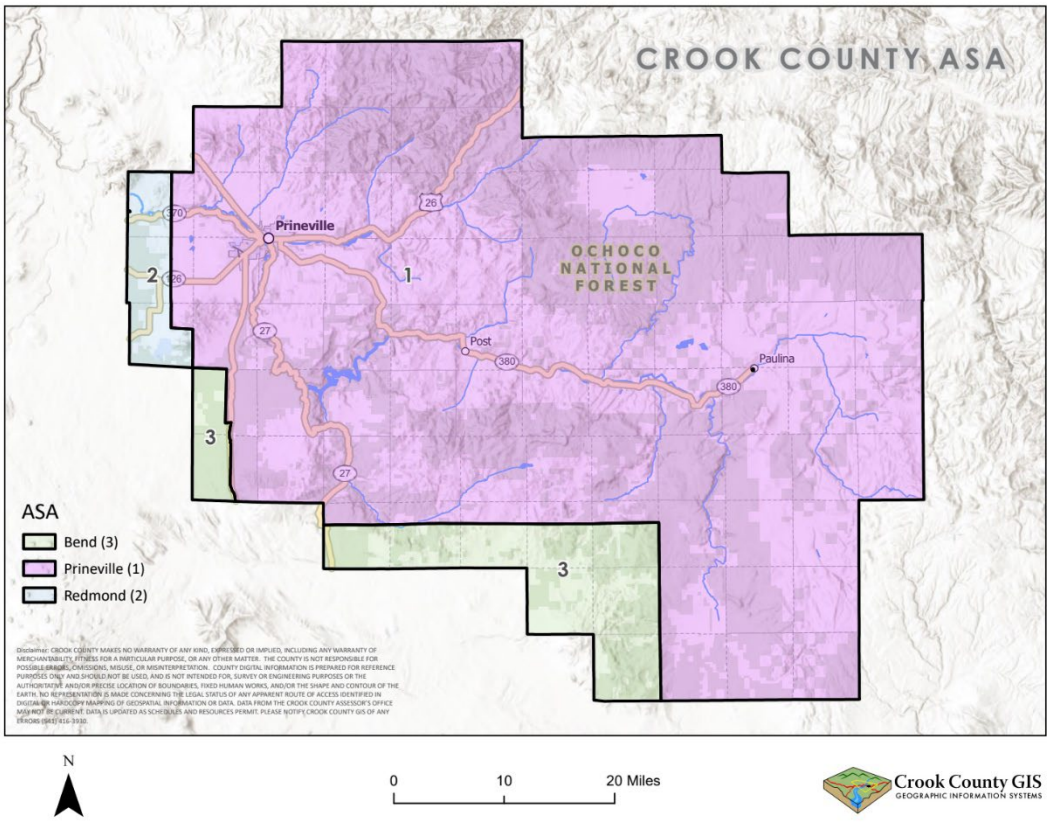
The County is required to ensure that ambulance services will be maintained throughout the County. Ambulance Service Providers, if unable to meet minimum standards outlined in ORS and OARs, must apply for a variance to maintain recognition as the ASA. The County is able to select providers who have applied for and have been granted a variance by Oregon Health Authority as the ASA provider.

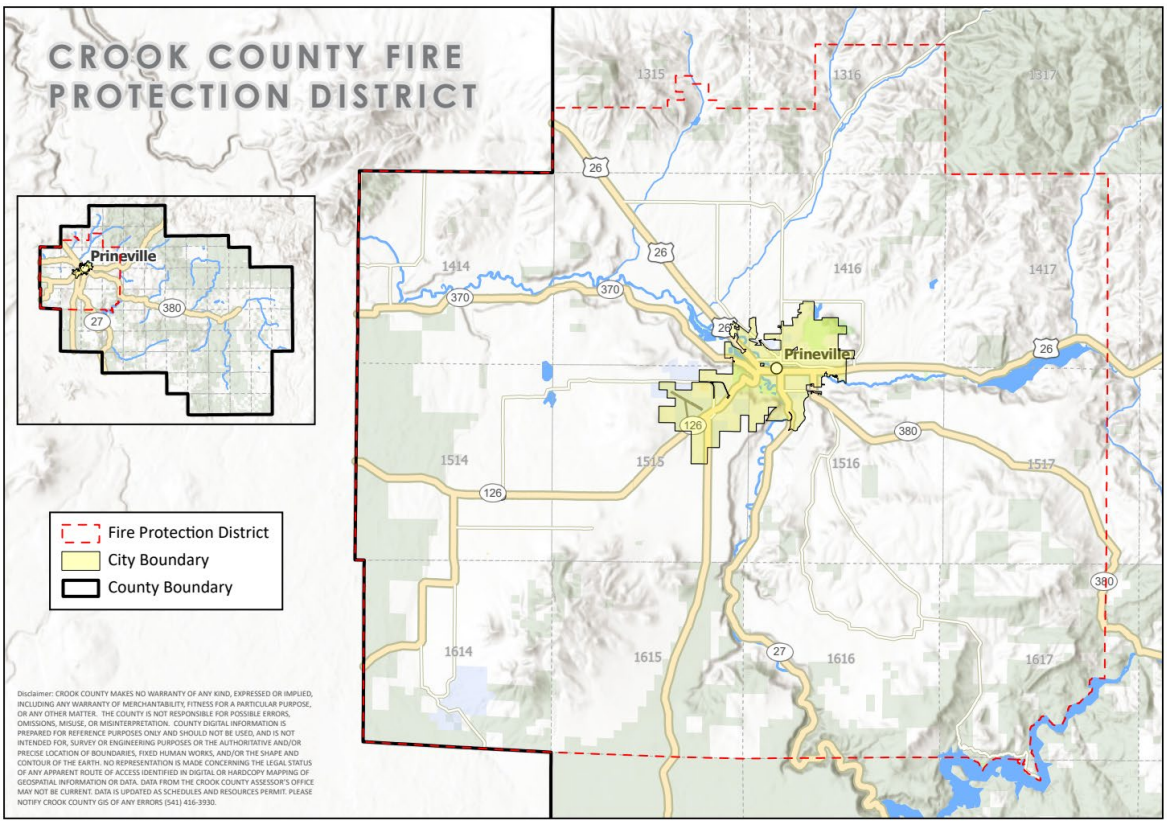
Crook County Ordinance

The Crook County Commissioners maintain Chapter 5.16 of the Crook County Code as the Ambulance Service Ordinance. The Ordinance includes criteria for administering the Crook County Ambulance Service Area Plan; limiting ambulance services that may operate in the County; establishing an application process; ambulance franchise terms; enforcement; preventing interruption of service; appeals, abatement and penalties; duties of the franchisee; and establishing membership and duties of the advisory committee.

Appendices

- Mass Care Plan
- Medical Countermeasures Plan
- East Cascades MCI Plan
- Maps depicting boundaries for the ASAs
- Fire District Map
- Personnel and Equipment
- Mutual Aid Agreement
    - ASA Agreements with Bend & Redmond
- County Geographic Legal Description
    - The geographic legal description begins at the southeast corner of T21S, R24E of Willamette Meridian; thence west along township lines to the southwest corner of T21S, R21E; thence to the NW corner of such township; thence west to the SW corner of T20S, R20E; thence north to the NW corner of such township; thence west along township lines to the SW corner of T19S, R17E; thence north to the NW corner of such township; thence west along township lines to the SW corner of T18S, R15E; thence northerly to the NW corner of T17S, R15E; thence west to the SW corner of T16S, R14E; thence northerly along the range line to the NW corner of T14S, R14E; thence easterly to the NE corner of such township; thence north to the NW corner of T13S, R15E; thence easterly to the SE corner of section 32, T12S, R16E; thence northerly along section lines to the NW corner of section 4 of such township; thence easterly to the NE corner of T12S, R19E; thence south along the range line to the SW corner of S18, T13S, R20E; thence along section lines easterly to the east boundary of R22E; thence south along the range line to the SW corner of T13S, R23E; thence easterly to the SE corner of such township; thence south to the SW corner of T14S, R24E; thence south along such range line to the SE corner of T18S, R25E; thence west to the SW corner of such township; thence south along the west line of R25E to the point of beginning.


CROOK COUNTY ASA
Prineville
OCHOCO NATIONAL FOREST
Post
Paulina
1
2
3
3
ASA
Bend (3)
Prineville (1)
Redmond (2)
N
0
10
20 Miles
Crook County GIS
GEOGRAPHIC INFORMATION SYSTEMS


CROOK COUNTY FIRE PROTECTION DISTRICT
Prineville
Fire Protection District
City Boundary
County Boundary
N
10
Miles
Crook County GIS
GEOGRAPHIC INFORMATION SYSTEMS

AGENDA ITEM REQUEST

Date:

2/19/25

Meeting date desired:

2/26/2025

Subject:

Crook County Library would like to accept the ODOT grant for the purchase of 3 eBikes to add to the Library of Things Collection.

Background and policy implications:

Seeking permission to accept ODOT grant for 3 eBikes, accessories, and LINKA locks.

Budget/fiscal impacts:

Will also be entering into a separate agreement for eBike maintenance. Graybeal has indicated extra insurance will cost approximately $1,000/year. The grant will cover the extra insurance expense and maintenance.

Requested by:

Sarah Beeler- Library Director

Presenters:

Sarah Beeler - Library Director

Legal review (only if requested):

John Eisler has reviewed the grant.

Elected official sponsor (if applicable):

N/A

GRANT AGREEMENT
OREGON DEPARTMENT OF TRANSPORTATION
Innovative Mobility Program E-Bike Lending Library Pilot Program
Recipient: **Crook County Library – Public Agency**

Project Name: Library of Things

THIS AGREEMENT is made and entered into by and between the **State of Oregon**, acting by and through its Department of Transportation, hereinafter referred to as "ODOT" or as the "State", and **Crook County Library,** acting by and through its governing body, herein referred to as "Recipient" and both herein referred to individually or collectively as "Party" or "Parties."

The Innovative Mobility Program (IMP) and IMP ***E-Bike Lending Library Pilot Program*** are authorized by ORS 184.730, which allows ODOT to develop and finance transportation demand management (TDM) projects.

1. **Effective Date.** This Agreement shall become effective on the date all required signatures are obtained and the Agreement is fully executed and approved as required by applicable law (the "Effective Date"). Unless otherwise terminated or extended, the availability of Grant Funds (as that capitalized term is defined in Section 3 below) under this Agreement shall end December 31, 2027 (the "Availability Termination Date"). No Grant Funds are available for any expenditure before the Effective Date or after the Availability Termination Date.

2. **Agreement Documents.** This Agreement consists of this document and the following documents:

   a. Exhibit A: Scope of Work
   b. Exhibit B: Subagreement Insurance Requirements
   c. Exhibit C: **Reserved**

   Exhibits A through C are attached hereto and by this reference made a part hereof this Agreement. In the event of a conflict between two or more of the documents comprising this Agreement, the language in the document with the highest precedence shall control. The precedence of each of the documents comprising this Agreement is as follows, listed from highest precedence to lowest precedence: this Agreement without Exhibits; Exhibit A; Exhibit B; Exhibit C.

3. **Grant Award.** The total estimated costs to complete the Scope of Work described in Exhibit A (the "Project") are **$58,480.67** (the "Project Costs"). In accordance with the terms and conditions of this Agreement, ODOT shall provide Recipient, and Recipient shall accept from ODOT, the award of a grant in the not-to-exceed amount of **$58,480.67** (the "Grant Funds") of the total eligible Project Costs to allow Recipient to perform the Project Tasks set forth in Exhibit A. Recipient shall fund all remaining Project Costs.

4. Project Implementation and Completion.

a. Description. Recipient shall implement and complete the Project in accordance with Exhibit A. In accordance with the provisions of Section 4.b., Recipient shall notify ODOT in writing of all changes in the Scope of Work prior to performing any changes and shall not perform any changes without written prior approval from ODOT.

b. Project Change Procedures. Project changes are permitted only to the Scope of Work and only with the prior written permission of ODOT. If Recipient anticipates a need for project change, Recipient shall submit a request via email to the ODOT contact person identified on the signature page of this agreement ("Innovative Mobility Program Manager"). Innovative Mobility Program Manager may authorize changes to Scope of Work via email.

5. Grant Funds.

a. Use of Grant Funds. The Grant Funds shall be used solely for the Activities described in Exhibit A and shall not be used for any other purpose. Grant Funds may not be used for any changes to the Tasks set forth in Exhibit A unless ODOT approves such changes pursuant to the Project Change Procedures in Section 4.b. or pursuant to the Amendment provisions of Section 15.f.

b. Eligible Project Costs. The Grant Funds may be used only for Grantee's actual Project costs to the extent those costs are: (a) reasonable, necessary and directly used for the Project; (b) eligible or permitted uses of the Grant Funds under, as applicable, federal and State law and this Agreement; and (c) not excluded from reimbursement or payment as a result of any later financial review or audit ("Eligible Project Costs"). Eligible Project Costs do not include any expenditures incurred before the Effective Date or after the Availability Termination Date.

6. Disbursement.

a. Initial Disbursement.

i. Upon execution of this Agreement, ODOT will disburse up to $23,407.79 of the Grant Funds to Recipient to be used for the purchase of e-bikes and other related equipment needed to launch the program in accordance with Exhibit A.

ii. Recipient shall submit to ODOT an expenditure report evidencing Recipient's purchase of e-bikes and other related equipment ("Expenditure Report") within 30 days of Recipient's purchase. The Expenditure Report must include the following information: date of purchase, description of purchase, vendor name and supporting documentation evidencing purchase.

b. Reimbursement.

i. Except for the initial disbursement described in subparagraph (a) of this Section, ODOT will disburse Grant Funds only as reimbursement for Eligible Project Costs paid by Grantee and upon receipt and approval of: (1) Grantee's Expenditure Report; and (2) Grantee's Quarterly Reports and Claims for Reimbursement (along with any required supplementary documents like Residual Value Agreement form, receipts indicating proof of purchase, etc.) submitted in accordance with Section 7 of this Agreement.

ii. Grantee will be reimbursed only for Eligible Project Costs incurred by Grantee after the date set forth in the "Authorization to Proceed" for the Project provided to Grantee by Agency. Grant Funds shall not be used for Project activities previously carried out with the Grantee's own resources with no declared intent to be reimbursed under this Agreement (supplanting). Income earned through services conducted through the Project should be used to offset the cost of the Project and be included in the Budget.

c. Conditions Precedent to Disbursement. ODOT's obligation to disburse Grant Funds to Recipient—whether as an initial disbursement or reimbursement—is subject to the conditions precedent that:

i. ODOT has received funding (including without limitation federal funds), appropriations, limitations, allotments, or other expenditure authority sufficient to allow ODOT, in the exercise of its reasonable administrative discretion, to make the reimbursement;

ii. Grantee is in compliance with the terms of this Agreement and no Grantee Default under Section 13 of this Agreement has occurred or is occurring; and

iii. ODOT has received and approved the Grantee's Expenditure Report and Quarterly Reports and Claims for Reimbursement.

d. Availability of Funds. The funds committed under this Agreement are subject to Agency having sufficient funding, appropriations, limitations, allotments and other expenditure authority to make disbursements.

7. Project Reporting and Management.

a. Quarterly Reports. Recipient shall submit quarterly reports to ODOT using a format that ODOT provides. Recipient must submit the reports to InnovativeMobility@odot.oregon.gov by the first Wednesday of March, June, September, and December.

b. Reimbursement Claims. Recipient shall submit a Claim for Reimbursement within 35 days of the end of the calendar quarter in which expenses were incurred (submit claims no more than monthly), using the form provided by Agency as follows:

i. Residual Value Agreement form, and invoices and/or receipts indicating proof of purchase. Copies of ODOT's pre-approval, invoices and/or receipts for all

specified items must be submitted to Agency upon request with the Claim for Reimbursement.

ii. Claims for Reimbursement may be submitted as often as monthly but must be submitted at least quarterly; and

iii. Claims for Reimbursement must be signed (or electronically signed/approved, if applicable) by the Project Director or the Designated Alternate.

c. Equipment Purchased with Grant Funds.

i. **Residual Value Agreement.** If Grant Funds are used in whole or in part to acquire any single item of equipment costing $1,000 or more (which acquisition is only upon ODOT's pre-approval), Grantee shall complete and submit to Agency an equipment inventory that lists such items and includes Agency's rules governing the removal or release of such items from Grantee's inventory (a "Residual Value Agreement"), in the form provided by Agency. Agency may, at its discretion, require Grantee to execute a Residual Value Agreement for equipment costing less than $1,000 in order to track the tangible equipment purchased with Grant Funds. A copy of the original vendor's invoice indicating quantity, description, manufacturer's identification number and cost of each item will be attached to the signed agreement. All equipment should be identified with the Grantee's property identification number.

d. Final Report. Recipient shall report to ODOT in writing on its completion in performing the Project by submitting a final report ("Final Report") with metrics and social/demographic information on beneficiaries of the grant. This is in addition and distinct from the required Quarterly Report. Recipient shall submit the Final report within 60 days of project completion. The Final Report must include the following elements:

i. **Objective and Activities.** A summary of the Project including problems addressed, objectives, major activities and accomplishments as they relate to the objectives.

ii. **Costs**. A summary of the costs of the Project including the amount of Grant Funds and amounts paid by Grantee, other agencies and private sources. The amount of volunteer time should be identified;

iii. **Implementation.** Discussion of implementation process so that other agencies implementing similar projects can learn from Grantee's experiences; including descriptions of what went as planned, what didn't work as expected, what important elements made the Project successful or as successful as expected;

iv. **Evaluation.** Respond to each of the evaluation questions set forth in Exhibit A, including completing and referencing the Data Table (as applicable);

v. **Completed Data Table.** Completed Data Table (as applicable) by inserting the information in the format required in Exhibit A.

8. Recovery of Grant Funds. Any Grant Funds disbursed to Recipient under this Agreement that

are expended in violation or contravention of one or more of the provisions of this Agreement ("Misexpended Funds") or that remain unexpended ("Unexpended Funds") on the earlier of the Availability Termination Date or termination of this Agreement must be returned to ODOT. Recipient shall return all Misexpended Funds to ODOT no later than fifteen (15) days after ODOT's written demand. Recipient shall return all Unexpended Funds to ODOT no later than 30 days after the earlier of the Availability Termination Date or termination of this Agreement.

9. **General Representations and Warranties of Recipient.** Recipient represents and warrants to ODOT as follows:

a. Organization and Authority. Recipient is duly organized and validly existing under the laws of the State of Oregon and is eligible to receive the Grant Funds. Recipient has full power, authority and legal right to make this Agreement and to incur and perform its obligations hereunder, and the making and performance by Recipient of this Agreement (1) have been duly authorized by all necessary actions of Recipient; (2) do not and will not violate any provision of any applicable law, rule, regulation, or order of any court, regulatory commission, board, or other administrative agency or any provision of Recipient's Articles of Incorporation or Bylaws, if applicable; and (3) do not and will not result in the breach of, or constitute a default or require any consent under any other agreement or instrument to which Recipient is a party or by which Recipient or any of its properties may be bound or affected. No authorization, consent, license, approval of, filing or registration with or notification to any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by Recipient of this Agreement.

b. Binding Obligation. This Agreement has been duly executed and delivered by Recipient and constitutes a legal, valid and binding obligation of Recipient, enforceable in accordance with its terms subject to the laws of bankruptcy, insolvency, or other similar laws affecting the enforcement of creditors' rights generally.

c. Full Disclosure. Recipient has disclosed in writing to ODOT all facts that materially adversely affect its ability to perform all obligations required by this Agreement. Recipient has made no false statements of fact, nor has it omitted information necessary to prevent any statements from being misleading. The information contained in this Agreement is true and accurate in all respects.

d. Pending Litigation. Recipient has disclosed in writing to ODOT all proceedings pending (or to the knowledge of Recipient, threatened) against or affecting Recipient, in any court or before any governmental authority or arbitration board or tribunal, that, if adversely determined, would materially adversely affect the ability of Recipient to perform all obligations required by this Agreement.

e. No Defaults. Recipient has not violated, and has not received notice of any claimed

violation of, any agreement or instrument to which it is a party that would materially adversely affect the ability of Recipient to perform all obligations required by this Agreement. No Defaults or Events of Default exist or will occur upon authorization, execution or delivery of this Agreement.

f. Compliance with Oregon Taxes, Fees and Assessments. Recipient is, to the best of the undersigned's knowledge, and for the useful life of the Project will remain, current on all applicable state and local taxes, fees and assessments.

10. Records Maintenance and Access; Audit.

a. Records, Access to Records and Facilities. Recipient shall make and retain proper and complete books of record and account and maintain all fiscal records related to this Agreement and the Project in accordance with all applicable generally accepted accounting principles, generally accepted governmental auditing standards, and minimum standards for audits of non-profit organizations. Recipient shall ensure that each of its sub-recipients and subcontractors complies with these requirements. ODOT, the Secretary of State of Oregon (Secretary) and their duly authorized representatives shall have access to the books, documents, papers and records of Recipient that are directly related to this Agreement, the funds provided hereunder, or the Project for the purpose of making audits and examinations. In addition, ODOT, the Secretary and their duly authorized representatives may make and retain excerpts, copies, and transcriptions of the foregoing books, documents, papers, and records. Nothing herein is meant to be or will be interpreted to be a waiver of any protection against disclosure of records or communication otherwise provided by law, including protection provided by attorney-client privilege or the attorney work product doctrine.

b. Retention of Records. Recipient shall retain and keep accessible all books, documents, papers, and records, that are directly related to this Agreement, the funds or the Project until the date that is six (6) years following the Availability Termination Date.

c. Expenditure Records. Recipient shall document the expenditure of all Grant Funds disbursed by ODOT under this Agreement. Recipient shall create and maintain all expenditure records in accordance with generally accepted accounting principles and in sufficient detail to permit ODOT to verify how the Grant moneys were expended.

This Section 10 shall survive any expiration or termination of this Agreement**.**

11. Subagreements. Performance of this Agreement shall not be subcontracted in whole or in part, except with the written consent of ODOT. If ODOT provides written consent for Recipient to enter into agreements with subrecipients, contractors or subcontractors (collectively, "subagreements") for performance of this Agreement, the following conditions apply:

a. Subagreements.

1) All subagreements must be in writing executed by Recipient and must incorporate and pass through all of the applicable requirements of this Agreement to the other party or parties to the subagreement(s). Use of a subagreement does not relieve Recipient of its responsibilities under this Agreement.

2) Recipient shall require all of its contractors performing work under this Agreement to name ODOT as a third-party beneficiary of Recipient's subagreement with the contractor and to name ODOT as an additional or "dual" obligee on contractors' payment and performance bonds.

3) Recipient shall provide ODOT with a copy of any signed subagreement upon request by ODOT. This paragraph 11.a.3) shall survive expiration or termination of this Agreement.

4) Recipient must report to ODOT any material breach of a term or condition of a subagreement within ten (10) days of Recipient discovering the breach.

b. Subagreement indemnity; subagreement insurance

1) Recipient's subagreement(s) shall require the other party to such subagreements(s) that is not a unit of local government as defined in Oregon Revised Statute (ORS) 190.003, if any, to indemnify, defend, save and hold harmless the State of Oregon, the Oregon Transportation Commission, and the Oregon Department of Transportation and their respective officers, members, employees and agents from and against any and all claims, suits, actions, losses, damages, liabilities, cost and expenses, including attorneys' fees, caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of the other party to Recipient's subagreement or any of such party's officers, agents, employees or subcontractors ("Claims"). It is the specific intention of the Parties that the State shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the State, be indemnified by the other party to Recipient's subagreement(s) from and against any and all Claims.

2) Any such indemnification shall also provide that neither Recipient's subrecipient(s), contractor(s) nor subcontractor(s) (collectively "Subrecipients"), nor any attorney engaged by Recipient's Subrecipient(s), shall defend any claim in the name of the State or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The State may, at any time at its election, assume its own defense and settlement in the event that it determines that Recipient's Subrecipient is prohibited from defending State or that Recipient's Subrecipient is not adequately defending State's interests, or that an important governmental principle is at issue or that it is in the best interests of State to do so. State reserves all rights to pursue claims it may have against Recipient's Subrecipient if State elects to assume its own defense.

3) Recipient shall require the other party, or parties, to each of its subagreements that are not units of local government as defined in ORS 190.003 to meet the minimum insurance requirements provided in Exhibit B. Recipient may specify insurance requirements of its contractor(s) above the minimum insurance requirements specified in Exhibit B. Recipient shall verify its contractor(s) meet the insurance requirements in Exhibit B.

4) Recipient shall determine insurance requirements, insurance types and amounts, as deemed appropriate based on the risk of the work outlined within the subagreement. Recipient shall specify insurance requirements and require its contractor(s) to meet the insurance requirements. Recipient shall obtain proof of the required insurance coverages, as applicable, from any contractor providing services related to the subagreement.

5) Recipient shall require its contractor(s) to require and verify that all subcontractors carry insurance coverage that the contractor(s) deems appropriate based on the risks of the subcontracted work.

12. Termination

a. Mutual Termination. This Agreement may be terminated by mutual written consent of the Parties.

b. Termination by ODOT. ODOT may terminate this Agreement effective upon delivery of written notice to Recipient, or at such later date as may be established by ODOT under any of the following conditions:

1) If Recipient fails to implement the Project within the time specified herein or any extension thereof.

2) If Recipient is out of compliance with any term of this Agreement, or fails to pursue the work as to endanger performance of this Agreement in accordance with its terms, and after receipt of written notice from ODOT fails to correct such failures within 10 days or such longer period as ODOT may authorize.

3) If ODOT fails to receive funding, appropriations, limitations or other expenditure authority sufficient to allow ODOT, in the exercise of its reasonable administrative discretion, to continue to make payments for performance of this Agreement;

4) If federal or state laws, regulations or guidelines are modified or interpreted in such a way that the Project work under this Agreement is prohibited or if ODOT is prohibited from paying for such Project work from the planned funding source; or

5) If, in the sole opinion of ODOT, the Project would not produce results that are commensurate with the further expenditure of funds.

c. Rights upon Termination. Any termination of this Agreement shall not prejudice any rights or obligations accrued to the Parties prior to termination. The remedies set forth in this Agreement are cumulative and are in addition to any other rights or remedies available at law or in equity.

13. Defaults. Any of the following constitutes an "Event of Default":

a. Any false or misleading representation is made by or on behalf of Recipient in this Agreement or in any document provided by Recipient related to the Project.

b. Recipient takes any of the following actions or an action for the purpose of affecting any of the below.

1) A petition, proceeding or case is filed by or against Recipient under any federal or state bankruptcy or insolvency law, and in the case of a petition filed against Recipient, Recipient acquiesces to such petition or such petition is not dismissed within 20 calendar days after such filing, or such dismissal is not final or is subject to appeal;

2) Recipient files a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, liquidation, dissolution, winding-up or composition or adjustment of debts;

3) Recipient becomes insolvent or bankrupt or admits its inability to pay its debts as they become due, or makes an assignment for the benefit of its creditors;

4) Recipient applies for or consents to the appointment of, or taking of possession by, a custodian (including, without limitation, a receiver, liquidator or trustee) of Recipient or any substantial portion of its property; or

5) Recipient takes any action for the purpose of affecting any of the above.

c. Recipient fails to comply with the terms of this Agreement, other than those referred to in subsections a. and b. of this Section 13, and that failure continues for period of 30 calendar days after written notice specifying such failure is given to Recipient by ODOT. ODOT may, in its sole discretion, agree in writing to an extension of time.

14. Remedies.

a. Upon any Event of Default, ODOT may pursue any or all remedies in this Agreement and any other remedies available at law or in equity to enforce the performance of any obligation of Recipient. Remedies may include, but are not limited to:

1) Terminating ODOT's commitment and obligations under the Agreement.

2) Requiring repayment of the Grant Funds and all interest earned by Recipient on those Grant Funds.

b. Any moneys collected by ODOT pursuant to Section 14.a will be applied first, to pay any attorneys' fees and other fees and expenses incurred by ODOT; then, as applicable, to repay any Grant proceeds owed; and last, to pay any other amounts due and payable under this Agreement.

c. No remedy available to ODOT is intended to be exclusive, and every remedy will be in addition to every other remedy. No delay or omission to exercise any right or remedy will impair or is to be construed as a waiver of such right or remedy. No single or partial exercise of any right power or privilege under this Agreement will preclude any other or further exercise thereof or the exercise of any other such right, power or privilege. ODOT is not required to provide any notice in order to exercise any right or remedy, other than notice required in section 9 of this Agreement.

d. In the event ODOT defaults on any obligation in this Agreement, Recipient's remedy will be limited to injunction, special action, action for specific performance, or other available equitable remedy for performance of ODOT's obligations.

15. General Provisions.

a. Contribution.

1) If any third party makes any claim or brings any action, suit or proceeding alleging a tort as now or hereafter defined in ORS 30.260 ("Third Party Claim") against State or Recipient with respect to which the other Party may have liability, the notified Party must promptly notify the other Party in writing of the Third Party Claim and deliver to the other Party a copy of the claim, process, and all legal pleadings with respect to the Third Party Claim. Each Party is entitled to participate in the defense of a Third Party Claim, and to defend a Third Party Claim with counsel of its own choosing. Receipt by a Party of the notice and copies required in this paragraph and meaningful opportunity for the Party to participate in the investigation, defense and settlement of the Third Party Claim with counsel of its own choosing are conditions precedent to that Party's liability with respect to the Third Party Claim.

2) Except as otherwise provided in Paragraph 15.b below, with respect to a Third Party Claim for which State is jointly liable with Recipient (or would be if joined in the Third Party Claim), State shall contribute to the amount of expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred and paid or payable by Recipient in such proportion as is appropriate to reflect the relative fault of the State on the one hand and of Recipient on the other hand in connection with the events which resulted in such expenses, judgments, fines or settlement amounts, as well as any other relevant equitable considerations. The relative fault of State on the one hand and of Recipient on the other hand shall be determined by reference to, among other things, the Parties' relative intent, knowledge, access to information and opportunity to correct or prevent the

circumstances resulting in such expenses, judgments, fines or settlement amounts. State's contribution amount in any instance is capped to the same extent it would have been capped under Oregon law, including the Oregon Tort Claims Act, ORS 30.260 to 30.300, if State had sole liability in the proceeding.

3) Except as otherwise provided in Paragraph 15.b below, with respect to a Third Party Claim for which Recipient is jointly liable with State (or would be if joined in the Third Party Claim), Recipient shall contribute to the amount of expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred and paid or payable by State in such proportion as is appropriate to reflect the relative fault of Recipient on the one hand and of State on the other hand in connection with the events which resulted in such expenses, judgments, fines or settlement amounts, as well as any other relevant equitable considerations. The relative fault of Recipient on the one hand and of State on the other hand shall be determined by reference to, among other things, the Parties' relative intent, knowledge, access to information and opportunity to correct or prevent the circumstances resulting in such expenses, judgments, fines or settlement amounts. Recipient's contribution amount in any instance is capped to the same extent it would have been capped under Oregon law, including the Oregon Tort Claims Act, ORS 30.260 to 30.300, if it had sole liability in the proceeding.

b. Contract-Related Indemnification. Subject to any limitations imposed by State law and the Oregon Constitution, Recipient agrees to the following contract-related indemnification for all projects authorized under this Agreement:

Where Recipient contracts for services or performs project management for a project, Recipient shall accept all responsibility, defend lawsuits, indemnify, and hold State harmless, for all contract-related claims and suits. This includes, but is not limited to, all contract claims or suits brought by any contractor, whether arising out of the contractor's work, Recipient's supervision of any individual project or contract, or Recipient's failure to comply with the terms of this Agreement.

c. Survival. Sections 15.a and 15.b shall survive termination of this Agreement.

d. Dispute Resolution. The Parties shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Parties may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.

e. Amendments. This Agreement may be amended or extended only by a written instrument signed by both Parties and approved as required by applicable law.

f. Duplicate Payment. Recipient is not entitled to compensation or any other form of duplicate, overlapping or multiple payments for the same work performed under this Agreement from any agency of the State of Oregon or the United States of America or any other party, organization or individual.

g. No Third Party Beneficiaries. ODOT and Recipient are the only Parties to this Agreement and are the only Parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly or indirectly, to a third person unless such a third person is individually identified by name herein and expressly described as an intended beneficiary of the terms of this Agreement.

h. Notices. Except as otherwise expressly provided in this Agreement, any communications between the Parties hereto or notices to be given hereunder shall be given in writing by personal delivery, facsimile, email or mailing the same, postage prepaid, to Recipient Contact or ODOT Contact at the address or number set forth on the signature page of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this Section Any communication or notice personally delivered shall be deemed to be given when actually delivered. Any communication or notice delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine, and to be effective against ODOT, such facsimile transmission must be confirmed by telephone notice to ODOT Contact. Any communication by email shall be deemed to be given when the recipient of the email acknowledges receipt of the email. Any communication or notice mailed shall be deemed to be given when received.

i. Governing Law, Consent to Jurisdiction. This Agreement shall be governed by and construed in accordance with the laws of the State of Oregon without regard to principles of conflicts of law. Any claim, action, suit or proceeding (collectively, "Claim") between ODOT (or any other agency or department of the State of Oregon) and Recipient that arises from or relates to this Agreement shall be brought and conducted solely and exclusively within the Circuit Court of Marion County in the State of Oregon. In no event shall this section be construed as a waiver by the State of Oregon of any form of defense or immunity, whether sovereign immunity, governmental immunity, immunity based on the eleventh amendment to the Constitution of the United States or otherwise, from any Claim or from the jurisdiction of any court. Recipient hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.

j. Compliance with Law. Recipient shall comply with all federal, state and local laws, regulations, executive orders and ordinances applicable to the Agreement or to the implementation of the Project, including without limitation the generality of the foregoing, Recipient expressly agrees to comply with (i) Title VI of Civil Rights Act of 1964; (ii) Title V and Section 504 of the Rehabilitation Act of 1973; (iii) the Americans with

Disabilities Act of 1990, as amended, and ORS 659A.142; (iv) all regulations and administrative rules established pursuant to the foregoing laws; and (v) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.

k. Costs and Expenses Related to Employment of Individuals; Insurance; Workers' Compensation. Recipient is responsible for all costs and expenses related to its employment of individuals to perform the work under this Agreement, including but not limited to retirement contributions, Workers' Compensation, unemployment taxes, and State and Federal income tax withholding. In addition, all employers, including Recipient that employ subject workers who provide services in the state of Oregon shall comply with ORS 656.017 and shall provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Employer's Liability insurance with coverage limits of not less than $500,000 must be included. Recipient shall verify that each of its sub-recipient(s), contractor(s), and subcontractor(s) complies with these requirements.

l. Independent Contractor. Recipient shall perform the Project as an independent contractor and not as an agent or employee of ODOT. Recipient has no right or authority to incur or create any obligation for or legally bind ODOT in any way. ODOT cannot and will not control the means or manner by which Recipient performs the Project, except as specifically set forth in this Agreement. Recipient is responsible for determining the appropriate means and manner of performing the Project. Recipient acknowledges and agrees that Recipient is not an "officer", "employee", or "agent" of ODOT, as those terms are used in ORS 30.265, and shall not make representations to third parties to the contrary.

m. Severability. If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.

n. Counterparts. This Agreement may be executed in several counterparts (facsimile or otherwise) all of which when taken together shall constitute one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart. Each copy of this Agreement so executed shall constitute an original.

o. Integration and Waiver. This Agreement, and attached Exhibits constitute the entire Agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. No waiver, consent, modification or change of terms of this Agreement shall bind either Party unless in writing and signed by both Parties and all necessary approvals have been obtained. Such waiver, consent, modification or change,

if made, shall be effective only in the specific instance and for the specific purpose given. The failure of ODOT to enforce any provision of this Agreement shall not constitute a waiver by ODOT of that or any other provision.

p. Electronic Signatures. The Parties agree that signatures showing on PDF documents, including but not limited to PDF copies of the Agreement and amendments, submitted or exchanged via email are "Electronic Signatures" under ORS Chapter 84 and bind the signing Party and are intended to be and can be relied upon by the Parties. ODOT reserves the right at any time to require the submission of the hard copy originals of any documents.

q. Survival. The following provisions survive expiration or termination of this Agreement: Sections 9, 14(a), 14(b), 14(e), 14(i) and 14(j).

THE PARTIES, by execution of this Agreement, hereby acknowledge that its signing representatives have read this Agreement, understand it, and agree to be bound by its terms and conditions.

This Program is in the 2024-2027 Statewide Transportation Improvement Program, (Key #23805) that was adopted by the Oregon Transportation Commission on July 15, 2022 (or subsequently approved by amendment to the STIP).

Crook County Library, by and through its officials,

By_____

Name_____
(printed)

Date_____

By_____

Name_____
(printed)

Date_____

By_____

Name_____
(printed)

Date_____

STATE OF OREGON, by and through its Department of Transportation

By_____
Rail Operations & Statewide Multimodal Network Unit Manager

Name Jennifer Sellers_____

Date_____

APPROVAL RECOMMENDED

By_____
Innovative Mobility Program Manager

Date _____

Recipient Contact:
Sarah Beeler, Director
Crook County Library
175 NW Meadow Lakes Drive
Prineville, OR 97754
(541) 447-7978
SBeeler@crooklibraryor.gov

ODOT Contact:
Amanda Howell, Innovative Mobility Program Manager
ODOT Public Transportation Division
355 Capitol St. NE, MS43
Salem, OR 97301
971-718-1025
Amanda.howell@odot.oregon.gov

EXHIBIT A
Scope of Work

Program Goals and Objectives
The Innovative Mobility Program (IMP) aims to improve historically underserved communities' access to public and active transportation. Program goals also include reducing the number of trips Oregonians make by car and reducing greenhouse gas emissions.

Project Summary
Recipient is a library serving the greater Prineville area. Recipient provides traditional and innovative resources to support their diverse community ensuring everyone can experience the joy of learning and discovery. Recipient is expanding their expertise to electric (e-bike) bicycle lending.

Innovative Mobility Program funding will be used to establish an e-bike lending library to Recipient's service offerings. The purpose of the Project is to increase access to mobility and provide opportunities for community members to experience new modes of transportation. The e-bikes will be available to the entire community, although the program will be designed to support historically disadvantaged groups throughout Crook County. Community members who meet the minimum age and library patron requirements will be able to check out an e-bike for a certain length of time designated by the Recipient. E-bikes can be used by community members for free to run errands, access services, and more. Community members will also have the opportunity to check out bicycle accessories, including but not limited to, bicycle helmets, child seats, and baskets. Recipient will partner with a local bicycle supplier who can provide operational and maintenance services including e-bike maintenance, installation of e-bike accessories, and safety training for community members.

Project Activities
To conduct the Project, Recipient shall complete the following:

Procurement
- Purchase and assemble a fleet of e-bikes.
- Purchase bicycle accessories to include with e-bike reservations, including but not limited to helmets and child seat attachments.
- Purchase GPS theft tracking smart bicycle lock system.
- Install GPS theft tracking smart bicycle lock system on e-bike fleet.
- Add "Get There E-Bikes" decals to fleet of e-bikes.

Storage
- Provide a secure facility to store and charge bicycle fleet and accessories.

Reservations
- Manage reservation process including drafting and having participants follow guidelines for borrowing and use.
- Assist participants and provide an orientation to the smart bicycle lock system and application.

Liability
- Draft guidelines for borrowing and use including liability waiver.
- Maintain participant records, including signed liability waivers.
- Prepare plan for and manage steps in case e-bike is not returned at the end of the reservation period.

Participant Training

- Distribute bicycle safety educational resources and provide an orientation to e-bike usage to participants.

Program Promotion

- Distribute outreach materials, such as flyers and guidebooks, to provide transportation education and project awareness.
- Maintain Library of Things: E-Bike Lending Library webpage on the Crook County Library website.

Accessories and Maintenance

- Maintain inventory of bicycle accessories and track usage.
- Ensure that routine and intermittent bicycle maintenance is conducted.
- Maintain a maintenance log keeping track of necessary routine and intermittent maintenance and type of replacement parts and repairs.

Project Outcomes

Recipient shall track the following:

- Manage anonymized data collected through smart bicycle lock data dashboard to estimate the number of trips, hours of usage, mileage traveled, and pounds of CO2 reduced.
- Track the number of e-bike reservations, the length of reservations, and the number of repeat reservations.
- Track the number of people who received on-bike safety education and training.
- Survey participants before their first reservation and survey when they return. Survey will include optional sociodemographic questions.

Project Budget

IMP E-Bike Lending Library Pilot Program funds in the amount of $58,480.67 shall be used for the following:

- Purchase an e-bike fleet to be retained by Recipient and made available to community members through an e-bike lending library.
- Purchase bicycle accessories including but not limited to smart bicycle lock system, helmets, baskets, and child seats to be made available to community members utilizing e-bikes from the e-bike lending library.
- Purchase bicycle maintenance and safety equipment, such as flat tire repair kits and extra batteries, needed to maintain bicycle fleet.
- Purchase GPS tracking subscription to be able to locate, track, lock/unlock and maintain e-bike fleet.
- Support community partners time to assemble e-bike fleet, procure and purchase Project-related items including replacement bicycle parts, and perform routine and intermittent maintenance on e-bike fleet.
- Support Recipient's staff time whose work is directly related to the scope of the Project. Staff time may include, but is not limited, to project management, lending library logistics, data collection, marketing, and outreach.
- To conduct the Project, administrative overhead costs shall not exceed 10% of the total microgrant award amount.

Reporting

- Recipient shall submit quarterly reports to ODOT IMP Staff using a format that ODOT provides. Recipient must submit the reports to InnovativeMobility@odot.oregon.gov by the first Wednesday of March, June, September, and December.
- Recipient shall submit a final report to ODOT IMP Staff within 60 days of Project completion with the above-mentioned metrics and social/demographic information on beneficiaries of the grant, in addition to receipts, invoices, or other proof of grant expenditures.

EXHIBIT B
Subagreement Insurance Requirements

1. GENERAL.

a. Recipient shall require in its first tier subagreements with entities that are not units of local government as defined in ORS 190.003, if any, (each a "Contractor") to: i) obtain insurance specified under TYPES AND AMOUNTS and meeting the requirements under ADDITIONAL INSURED, "TAIL" COVERAGE, NOTICE OF CANCELLATION OR CHANGE, and CERTIFICATES OF INSURANCE before performance under the subagreement commences, and ii) maintain the insurance in full force throughout the duration of the subagreement. The insurance must be provided by insurance companies or entities that are authorized to transact the business of insurance and issue coverage in the State of Oregon and that are acceptable to State. Recipient shall not authorize work to begin under subagreements until the insurance is in full force. Thereafter, Recipient shall monitor continued compliance with the insurance requirements on an annual or more frequent basis. Recipient shall incorporate appropriate provisions in the subagreement permitting it to enforce compliance with the insurance requirements and shall take all reasonable steps to enforce such compliance. In no event shall Recipient permit work under a subagreement when Recipient is aware that the Contractor is not in compliance with the insurance requirements. As used in this section, "first tier" means a subagreement in which Recipient is a Party.

b. The insurance specified below is a minimum requirement that the Contractor within the subagreement shall meet. Recipient may determine insurance types and amounts in excess to the minimum requirement as deemed appropriate based on the risks of the work outlined within the subagreement.

c. Recipient shall require the Contractor(s) to require that all of its subcontractors carry insurance coverage that the Contractor deems appropriate based on the risks of the subcontracted work. Contractor shall obtain proof of the required insurance coverages, as applicable, from any subcontractor providing Services related to the Contract.

2. TYPES AND AMOUNTS.

a. WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY.

All employers, including a Contractor, that employ subject workers, as defined in ORS 656.027, shall comply with ORS 656.017 and shall provide Workers' Compensation insurance coverage for those workers, unless they meet the requirement for an exemption under ORS 656.126(2). The coverage shall include Employer's Liability

Insurance with limits not less than $500,000 each accident. Each **Contractor shall require compliance with these requirements in each of its subcontractor contracts.**

b. COMMERCIAL GENERAL LIABILITY.

Commercial General Liability Insurance shall be issued on an occurrence basis covering bodily injury and property damage and shall include personal and advertising injury liability, products and completed operations, and contractual liability coverage. When work to be performed includes operations or activity within 50 feet of any railroad property, bridge, trestle, track, roadbed, tunnel, underpass or crossing, the Contractor shall provide the Contractual Liability – Railroads CG 24 17 endorsement, or equivalent, on the Commercial General Liability policy. Amounts below are a minimum requirement as determined by State:

Coverage shall be written on an occurrence basis in an amount of not less than **$1,000,000** per occurrence.

Annual aggregate limit shall not be less than **$2,000,000**.

c. AUTOMOBILE LIABILITY.
☒ **Required** ☐ **Not Required**

Automobile Liability Insurance covering Contractor's business-related automobile use covering all owned, non-owned, or hired vehicles for bodily injury and property damage. Amount below is a minimum requirement as determined by State:

Coverage shall be written with a combined single limit of not less than **$1,000,000**.

If not required, Recipient covenants and agrees that no motor vehicles will be used by Recipient's contractor, its officers, employees, or agents to accomplish or in support of the project scope to be conducted by contractor under this agreement.

d. EXCESS/UMBRELLA LIABILITY.

A combination of primary and Excess/Umbrella Liability Insurance may be used to meet the required minimum limits of insurance.

e. ADDITIONAL INSURED.

The liability insurance coverages, except Professional Liability or Workers' Compensation/Employer's Liability, if included, must endorse the **"State of Oregon, the Oregon Transportation Commission and the Department of Transportation, and their**

respective officers, members, agents and employees" as an **endorsed** Additional Insured but only with respect to the Contractor's activities to be performed under the Subagreement. Coverage shall be primary and noncontributory with any other insurance and self-insurance.

Additional Insured Endorsements on the Commercial General Liability shall be written on ISO Form CG 20 10 07 04, or equivalent, with respect to liability arising out of ongoing operations and ISO Form CG 20 37 07 04, or equivalent, with respect to liability arising out of completed operations.

Additional Insured Endorsements shall be submitted with the Certificate(s) of Insurance and must be acceptable to Recipient.

f. "TAIL" COVERAGE.

If any of the required insurance policies is on a "claims made" basis, such as professional liability insurance or pollution liability insurance, the Contractor shall maintain either "tail" coverage or continuous "claims made" liability coverage, provided the effective date of the continuous "claims made" coverage is on or before the effective date of the Subagreement, for a minimum of twenty-four (24) months following the later of : (i) the Contractor's completion and Recipient's acceptance of all Services required under the Subagreement or, (ii) the expiration of all warranty periods provided under the Subagreement. Notwithstanding the foregoing twenty-four (24) month requirement, if the Contractor elects to maintain "tail" coverage and if the maximum time period "tail" coverage reasonably available in the marketplace is less than the twenty-four (24) month period described above, then the Contractor may request and State may grant approval of the maximum "tail " coverage period reasonably available in the marketplace. If State approval is granted, the Contractor shall maintain "tail" coverage for the maximum time period that "tail" coverage is reasonably available in the marketplace.

3. NOTICE OF CANCELLATION OR CHANGE.

The Contractor or its insurer must provide thirty (30) days' written notice to Recipient before cancellation of, material change to, potential exhaustion of aggregate limits of, or non-renewal of the required insurance coverage(s). **Recipient shall immediately notify State of any change in insurance coverage.**

4. CERTIFICATE(S) OF INSURANCE.

Recipient shall obtain from the Contractor a certificate(s) of insurance for all required insurance before the Contractor performs under the Subagreement. The certificate(s) or an

attached endorsement must endorse: i) **"State of Oregon, the Oregon Transportation Commission and the Department of Transportation, and their respective officers, members, agents and employees"** as an endorsed Additional Insured in regards to the Commercial General Liability and if applicable, Automobile Liability policies and ii) that all liability insurance coverages shall be primary and non-contributory with any other insurance and self-insurance, with exception of Workers' Compensation/Employer's Liability.

EXHIBIT C
Reserved

AGENDA ITEM REQUEST

Date:

2/20/2025

Meeting date desired:

2/26/2025

Subject:

Legislative Bill Tracking

Background and policy implications:

BillTracker provides comprehensive legislative tracking services for individual lobbyists, advocacy organizations, and government partners. Streamline colleague and client communications, maximizing Crook County's impact.

Budget/fiscal impacts:

Not currently budgeted for the cost of this program, but it would be a great benefit to Commissioners and administration. The cost to set up the program for Crook County is $125.00. Crook County would have a monthly rate based on how many bills we would want to track.

Requested by:

Breyanna Cupp, Executive Administrative Assistant,
breyanna.cupp@crookcountyor.gov, 541-447-6555

Presenters:

Breyanna Cupp and Will VanVactor

Legal review (only if requested):

Elected official sponsor (if applicable):

Susan Hermreck and Brian Barney both requested this be added for me to talk about at work session

BillTracker

Home Contact Sign Up Login

2025-26 Pricing for Oregon

Set up fee:

- $125 for new users

Monthly rates (session only):

- $125 for first 50 bills tracked
- 51 - 150 bills tracked: $225
- 151 - 250 bills tracked: $325
- 251 - 350 bills tracked: $425
- 351 - 450 bills tracked: $500
- 451 - 550 bills tracked: $575
- Unlimited bills tracked: $600

Prepay and save:

- $1,625 for up to 350 bills/month for two years
- $2,850 for unlimited bills for two years
- Sign up for an unlimited plan by January 10, 2025 and receive an additional 10% off.

Over 100 users:

- $500 additional fee

Sign up now

BillTracker

Home Contact Sign Up Login

Legislative Bill Tracking

Simple.

Elegant.

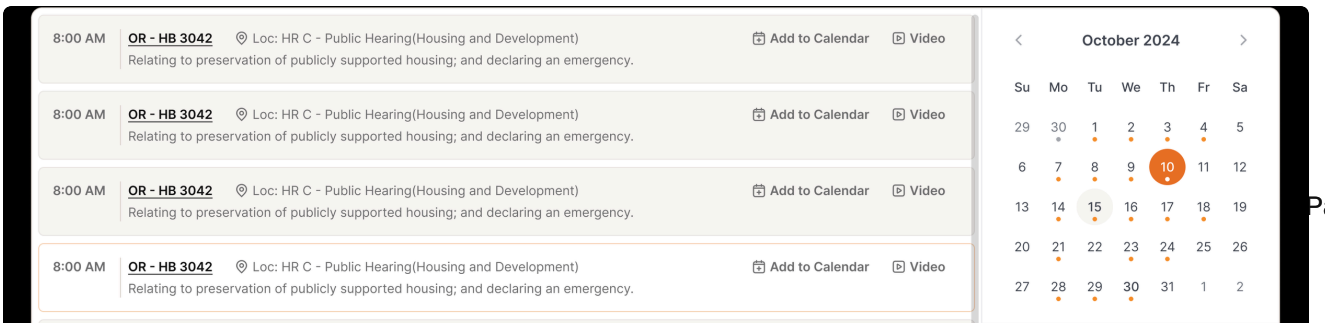
Intuitive.

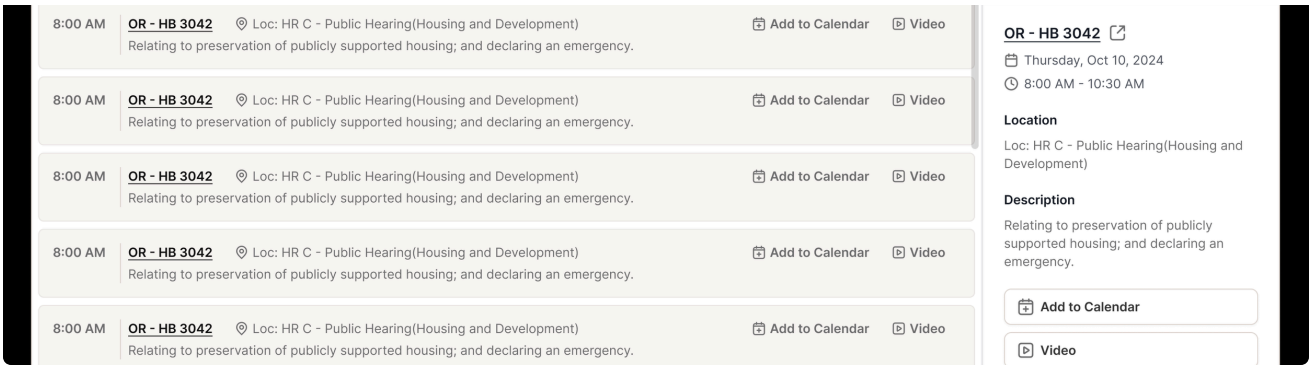
Affordable.

BillTracker provides comprehensive legislative tracking services for individual lobbyists, advocacy organizations, and government partners. We streamline colleague and client communications, maximizing your impact.

Sign up

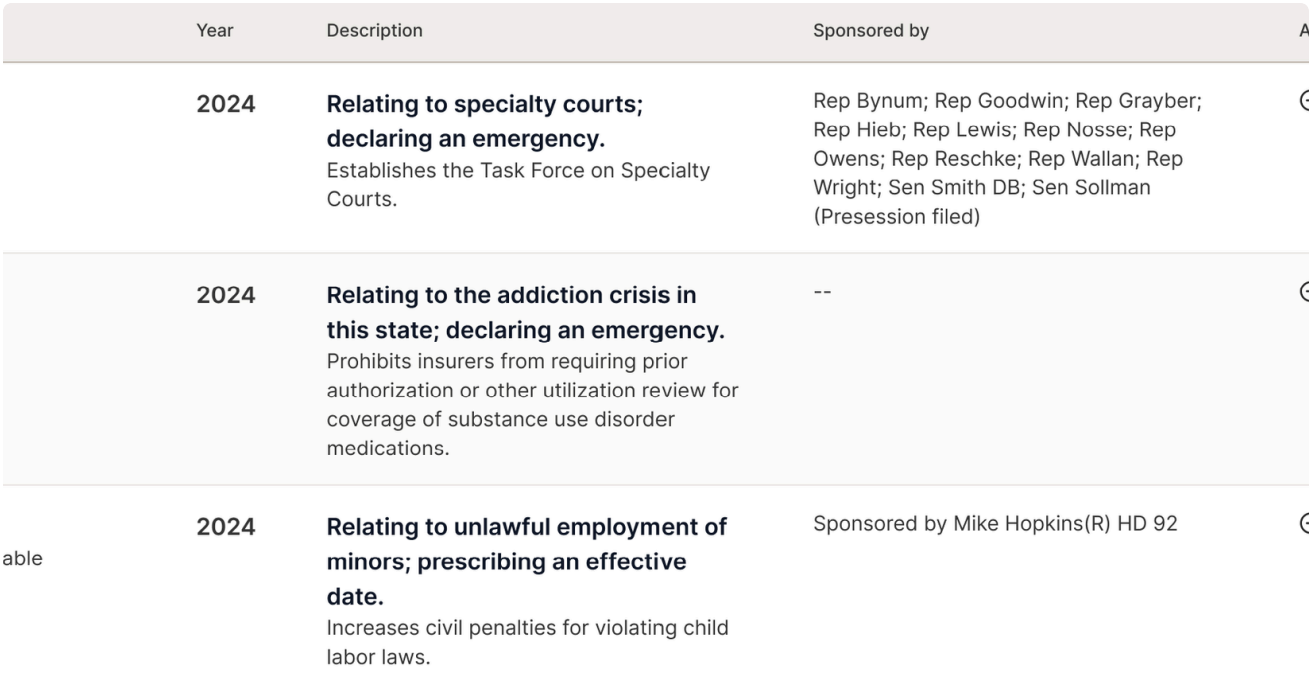
Lobby smarter.





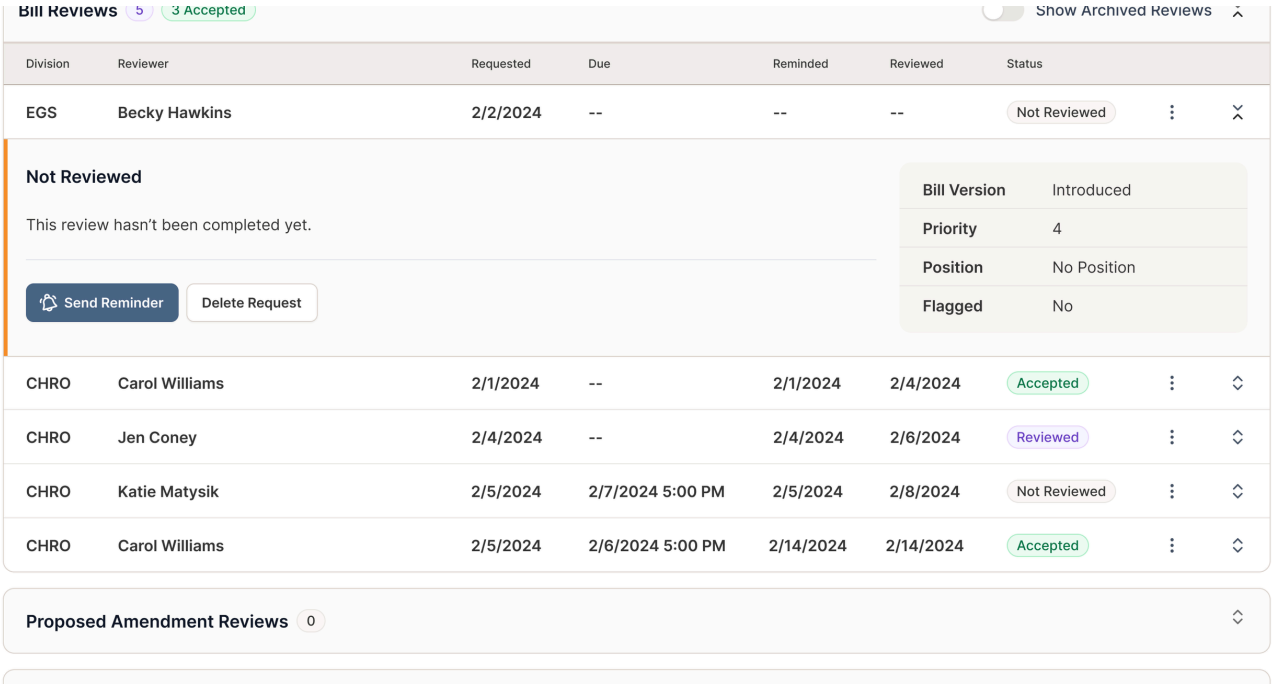
Automated Calendaring

Never miss another hearing or floor vote. Committee meetings, floor sessions, and other critical events are directly posted to your calendar.



Comprehensive search and sort

Legislation is imported to BillTracker in real time. View all your bills across states, across sessions in one place. Fully searchable, sortable and filterable.



Collaborate with ease

BillTracker offers user industry unique tools to collaborate across organizations, clients or colleagues. Our innovative and intuitive routing and review tools deliver seamless integration across teams to ensure timely feedback on legislation

Experience Matters.

We serve hundreds of clients across the United States

- We track over 10,000 bills annually

- We have over 5,000 users
- We send out over 1,000,000 calendar invites every year

In 2007, after a decade of lobbying using paper, spreadsheets, and inferior solutions, we decided to build something better. BillTracker was the solution. It offers new, innovative ways to connect with clients, work across organizations, and ensure users never miss a meeting, amendment, or action.

We are a small software company, which allows us to provide solutions that are specifically tailored to every state's unique legislative processes. We do not believe in one-size-fits-all.

Schedule a demo today if you are ready for a personalized experience, individualized solution, and customer support with real people committed to your success.

Contact Us

Interested in working together? Fill out some info and we will be in touch shortly. We can't wait to hear from you!

Name (required)

First Name

Last Name

Email (required)

Message (required)

Send

BillTracker

BillTracker is a product of Election Solutions, Inc.

Portland, Oregon

AGENDA ITEM REQUEST

Date:
February 14, 2025

Meeting date desired:
February 26, 2025

Subject:
CDD Monthly Update

Background and policy implications:
Update on Department services, including permit and application activity.

Budget/fiscal impacts:
N/A

Requested by:
John Eisler
John.eisler@crookcountyor.gov I 541.447.3211

Presenters:
John Eisler
Randy Davis

Legal review (only if requested):
n/A

Elected official sponsor (if applicable):

Community Development Department

Mailing: 300 NE Third St. RM 12, Prineville, OR 97754 □ Phone: 541-447-3211

MEMO

TO: Crook County Board of Commissioners

FROM: John Eisler, Community Development Director
Randy Davis, Building Official

DATE: February 14, 2025

SUBJECT: Community Development Activity Update – January 2025

Below is a summary of building, planning, onsite, and code enforcement activity for the last month.

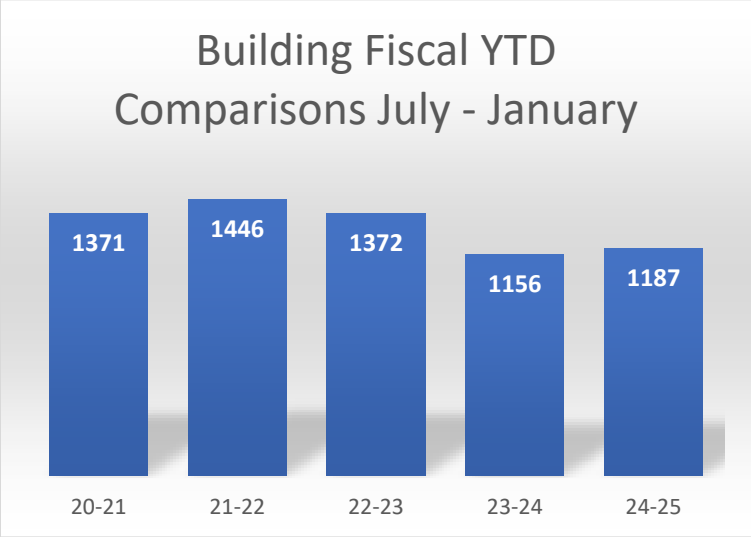
Building:

Permits issued summary (January):

Permit Type	Number of Permits
New Residential Dwellings (Site Built or Manufactured)	11
Commercial (plumbing, electrical, structural, etc.)	20
Residential Permits (plumbing, electrical, mechanical etc.)	78
Residential Structural (shops, etc.)	10
Other (e.g. demo)	4
TOTAL	**123**

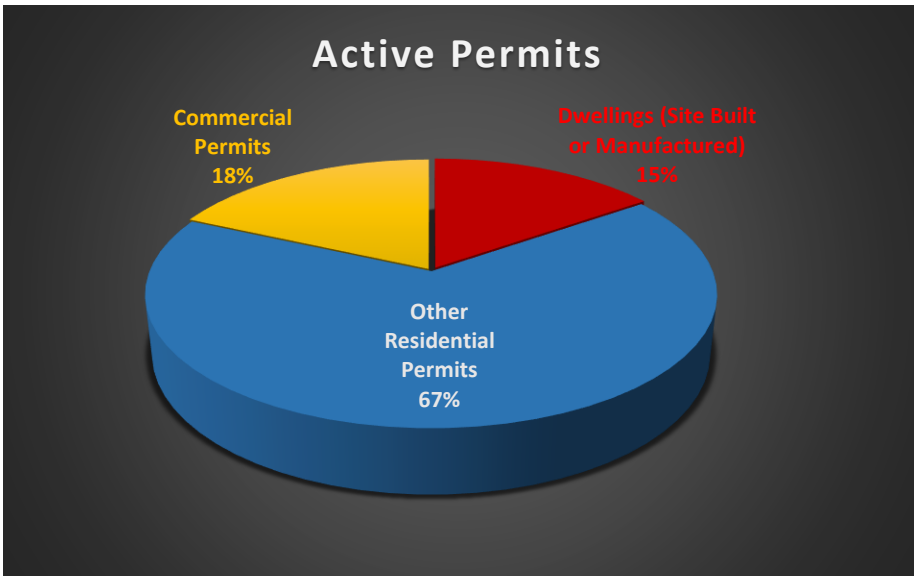
Comparisons:

Time Frame	Permits
January 2025	123
January 2024	129
Fiscal YTD 2024-25	1187
Fiscal YTD Comparison 2023-24	1156



Active Permits:

Permit Type	Amount Still Active as of end of January
Dwellings (Site Built or Manufactured)	179
Other Residential Permits	775
Commercial Permits	213



Daily Inspections:

Inspection Type	Amount this month
Residential	719
Commercial	123
All	842

Larger Projects Under Construction:

Apple Data Center
Area H & I of Prineville Campus
PRN1 Retrofit
F-5 Smokehouse
Humane Society – Dog Wing Addition
Thoroughbred Carwash
Chamber of Commerce
Rooster Restaurant/Bar
Convenience Store
Church/Community Center – Madras Hwy
Brasada Ranch Facility Service Building
Reserve at Ochoco Creek - Apartments
Cabins at Brasada Ranch
(3) Meteorological Towers – Bear Creek

Larger Projects Under Review or Incoming:

Cessna Dr – Data Mining Facility, Bit Coin
Cabins at Brasada Ranch
Parking Garages – Ochoco Reserve Apts
Oppidan Data Center

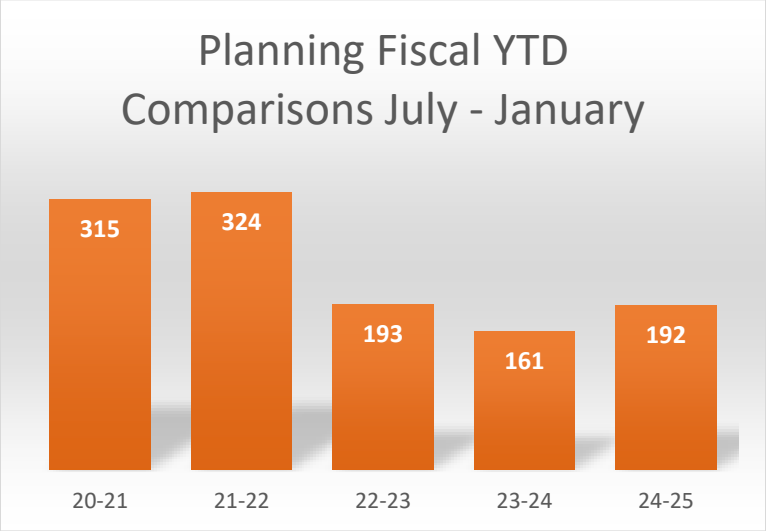
Planning:

Applications received:

Application Type	# of Applications (January)	YTD
Appeals	0	0
Variance	0	0
Site Plan Review	21	21
Land Partition	0	0
Combine/Un-Combine Lots	0	0
Road Approach	3	3
Boundary Line Adjustment	3	3
Destination Resort	0	0
Conditional Use	0	0
Miscellaneous (Temporary Hardship Two-year renewals)	3	3
Sign	0	0
Extension	0	0
Subdivision	0	0
Amendment	1	1
Road Name/Rename	0	0
Vested Right	0	0
TOTAL	**31**	**31**

Comparisons:

Time Frame	Permits
January 2025	31
January 2024	19
Fiscal YTD 2024-25	192
Fiscal YTD Comparison 2023-24	161



Notable Land Use Applications:

Request	Status
Raasch (Moffatt Rd Solar Farm LLC) – Commercial Solar Facility	In Review – PC Hearing Tentatively 3/26
Hegele – Comp Plan Amend & Cond Use	BOCC Review – March 11 & 25 Planning Commission CU - May
Lester – Zone Map Amendment to rezone property already designated through Powell Butte Study	In Review – PC Hearing in May

Notable City Land Use Applications:

Request	Status
Taphouse & Food Trucks – 2nd St.	In Review
4-Plex 2600 sq ft – 10th St	In Review

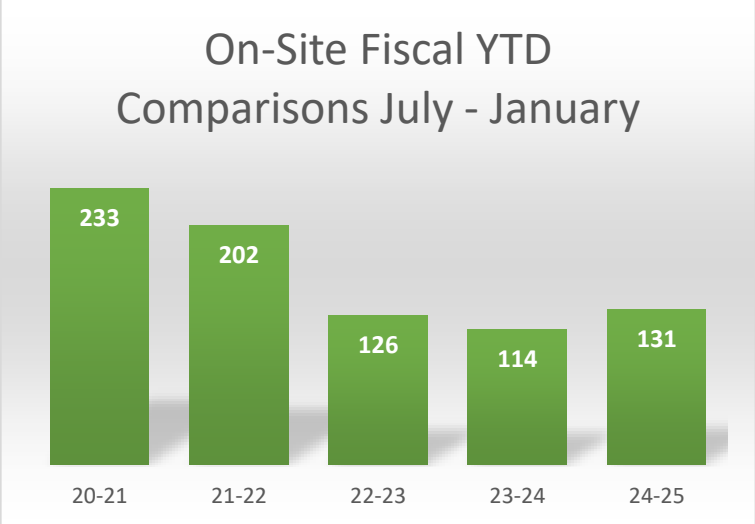
On-Site:

Applications (December):

Application Type	Number of Applications
Residential Authorization	2
Commercial Authorization	0
Construction Permit (Residential)	7
Construction Permit (Commercial)	0
Repair (Major) - Residential	4
Repair (Minor) - Residential	2
Repair (Major) – Commercial	0
Repair (Minor) - Commercial	0
Residential Site Evaluation	1
Commercial Site Evaluation	0
Alteration (Minor) – Residential	0
Alteration (Major) – Residential	0
Alteration (Minor) - Commercial	0
TOTAL	**16**

Comparisons:

Time Frame	Permits
January 2025	16
January 2024	12
Fiscal YTD 2024-25	131
Fiscal YTD Comparison 2023-24	114



Code Compliance:

Case Load (Total violations from open cases):

Year	Building	Land Use	Waste	Septic
YTD 2025	2	0	2	1

Activity:

Opened in January: 4
Closed in January: 2

Crook County

Mailing: 300 NE 3rd Street • Prineville, Oregon 97754
Physical: 203 NE Court Street • Prineville, Oregon 97754
Phone (541) 447-6555

February 25, 2025

Subject: Testimony in Opposition to HB 2640

Dear Chair Kropf and Members of the Committee,

On behalf of Crook County's residents, we must express our serious opposition to House Bill 2640, specifically the modifications suggested in Section 2 concerning the crime of Aggravated Harassment as defined in ORS 166.070.

This bill introduces a challenging new requirement for prosecutions: the state must not only prove that an individual intentionally spat at a law enforcement officer, but also that this act posed a risk of transmitting a communicable disease. This change severely undermines the protections currently afforded to our law enforcement community, complicating the legal process and potentially allowing offenders to escape proper penalties.

A recent troubling event in our community underscores the risks of this proposed legislative change. A sergeant in our law enforcement, who serves both as an active duty military member and a veteran, was spat upon by an individual known to carry HIV. The impact on his and his family's well-being has been profound, involving extensive medical tests and treatments that jeopardize both his health and his military career.

The requirement to demonstrate the risk of communicable disease transmission adds an impractical burden. It necessitates advanced medical testing, expert testimony, and significant expenses, straining our resources and diverting attention from other vital public safety initiatives.

We are concerned that passing this amendment will establish a dangerous precedent that may erode the legal protections vital for the safety of our law enforcement officers. Maintaining a legal framework that facilitates the swift and fair prosecution of those who threaten the safety of these community protectors is crucial.

We strongly urge you to reject this amendment and preserve the existing laws that ensure the safety and security of our law enforcement personnel. Please consider the adverse effects this bill could have and join us in safeguarding those who commit their lives to our protection.

Thank you for considering this critical issue. We count on your support to keep our community safe for all, especially those tasked with its protection.

Sincerely,

X	X	X
Brian Barney County Commissioner	Seth Crawford County Commissioner	Susan Hermreck County Commissioner