

Working Draft HCP

Bush Prairie Habitat Conservation Plan

PREPARED FOR:

City of Tumwater

555 Israel Rd SW,
Tumwater, WA 98501
Contact: Brad Medrud
360-754-4180

Port of Olympia

7643 Old Hwy 99 SE,
Tumwater, WA 98501
Contact: Rudy Rudolph
360-528-8074

PREPARED BY:

ICF

1200 6th Avenue, Seattle,
WA 98101
Contact: Ellen Berryman
530-798-1945



WORKING DRAFT HCP

BUSH PRAIRIE HABITAT CONSERVATION PLAN

PREPARED FOR:

City of Tumwater
555 Israel Rd SW,
Tumwater, WA 98501
Contact: Brad Medrud
360-754-4180

Port of Olympia
7643 Old Hwy 99 SE,
Tumwater, WA 98501
Contact: Rudy Rudolph
360-528-8074

PREPARED BY:

ICF
1200 6th Avenue, Seattle, WA 98101
Contact: Ellen Berryman
530-798-1945

February 2023



ICF. 2023. *Bush Prairie Habitat Conservation Plan*. Working Draft HCP.
February. ICF, Seattle, WA. Prepared for City of Tumwater and Port of
Olympia, Tumwater, WA.

Contents

List of Tables and Figures	vii
----------------------------------	-----

	Page
Chapter 1 Introduction	1-1
1.1 Overview	1-1
1.1.1 Purpose	1-1
1.1.2 Background	1-2
1.2 Scope of the Plan	1-3
1.2.1 Permittees.....	1-3
1.2.2 Covered Activities	1-3
1.2.3 Geographic Scope	1-4
1.2.4 Permit Term	1-10
1.2.5 Covered Species	1-10
1.3 Federal Regulatory Framework	1-12
1.3.1 Federal Endangered Species Act.....	1-12
1.3.2 Integration of Endangered Species Act Section 7 and Endangered Species Act Section 10	1-16
1.3.3 Regulatory Assurances under the Endangered Species Act	1-16
1.3.4 Federal Aviation Administration	1-17
1.3.5 National Environmental Policy Act	1-18
1.3.6 National Historic Preservation Act.....	1-18
1.4 State and Local Regulatory Framework	1-19
1.4.1 State Environmental Policy Act.....	1-19
1.4.2 State Growth Management Act.....	1-19
1.4.3 State of Washington Codes for Protected Species	1-21
1.4.4 City of Tumwater Comprehensive Plan	1-21
1.4.5 Tumwater Municipal Code.....	1-21
1.4.6 Port of Olympia Comprehensive Scheme	1-23
1.5 Other Habitat Conservation Plans in the Plan Area.....	1-23
1.5.1 Thurston County HCP.....	1-23
1.5.2 Project HCPs in the City of Tumwater.....	1-23
1.6 Overview of Planning Process.....	1-24
1.6.1 Structure of the Planning Process.....	1-25
1.6.2 Public Outreach and Involvement	1-25
1.7 Document Organization.....	1-25

Chapter 2 Physical Setting, Land Use, and Biological Resources	2-1
2.1 Introduction	2-1
2.2 Physical Setting	2-1
2.2.1 Location and Geography	2-1
2.2.2 South Puget Trough Prairies	2-2
2.2.3 Topography and Geology	2-2
2.2.4 Soils	2-2
2.2.5 Hydrology and Wetlands	2-4
2.2.6 Climate	2-4
2.3 Zoning	2-9
2.3.1 Zoning Categories	2-9
2.3.2 Conservation Lands.....	2-13
2.4 Growth Management Act	2-15
2.4.1 Population Projections.....	2-15
2.4.2 Urban Growth Area.....	2-15
2.5 Land Cover Types	2-15
2.5.1 Methods.....	2-16
2.5.2 Land Cover	2-17
2.6 Covered Species Accounts	2-21
2.6.1 Olympia Pocket Gopher	2-21
2.6.2 Oregon Spotted Frog	2-30
2.6.3 Streaked Horned Lark	2-36
2.6.4 Oregon Vesper Sparrow.....	2-41
Chapter 3 Covered Activities	3-1
3.1 Introduction	3-1
3.2 Method for Identifying Covered Activities	3-1
3.3 Covered Activity Categories.....	3-1
3.4 City Covered Activities	3-3
3.4.1 Data Sources	3-3
3.4.2 Urban Development Projects.....	3-5
3.4.3 Recurring Activities	3-7
3.4.4 Public Facility Operations and Maintenance	3-8
3.5 Port Covered Activities	3-16
3.5.1 Data Sources	3-16
3.5.2 Aeronautical-Related Activities	3-16
3.5.3 Non-Aeronautical Activities	3-21
3.6 Conservation Strategy Implementation.....	3-24

3.6.1	Activities Expected to Result in Soil Disturbance.....	3-25
3.6.2	Activities Not Expected to Result in Soil Disturbance.....	3-25
3.7	Projects or Activities Not Covered	3-25
Chapter 4 Effects Analysis		4-1
4.1	Introduction and Approach.....	4-1
4.2	Effects Mechanisms	4-1
4.2.1	Urban Development Projects.....	4-2
4.2.2	Recurring Activities	4-4
4.2.3	Facility Operations and Maintenance.....	4-5
4.2.4	Aeronautical-Related Activities	4-6
4.2.5	Non-Aeronautical Activities	4-8
4.2.6	Conservation Strategy Implementation.....	4-8
4.3	Effects Assessment Methodology.....	4-9
4.3.1	Olympia Pocket Gopher Proportional Habitat Assessment for Facility Operations and Maintenance Activities	4-10
4.3.2	Habitat Assessment for Port Operations and Maintenance Activities	4-11
4.3.3	Oregon Spotted Frog Effects Assessment.....	4-12
4.4	Effects on Covered Species	4-13
4.4.1	Olympia Pocket Gopher	4-13
4.4.2	Oregon Spotted Frog	4-22
4.4.3	Streaked Horned Lark	4-27
4.4.4	Oregon Vesper Sparrow.....	4-36
4.5	Cumulative Effects	4-41
4.6	Effects on Critical Habitat	4-42
4.6.1	Olympia Pocket Gopher	4-43
4.6.2	Oregon Spotted Frog	4-43
4.6.3	Streaked Horned Lark	4-44
Chapter 5 Conservation Strategy		5-1
5.1	Introduction	5-1
5.1.1	Conservation Strategy Overview	5-1
5.1.2	Key Terms.....	5-2
5.2	Data Sources	5-3
5.3	Conservation Strategy Framework	5-4
5.4	Biological Goals and Objectives	5-4
5.4.1	Olympia Pocket Gopher	5-5
5.4.2	Oregon Spotted Frog	5-5
5.4.3	Streaked Horned Lark	5-6

5.4.4	Oregon Vesper Sparrow	5-6
5.5	Conservation Actions	5-6
5.5.1	Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System.....	5-6
5.5.2	Conservation Action 2: Restore Prairie Habitat	5-22
5.5.3	Conservation Action 3: Minimize Effects in Wetlands and Restore Oregon Spotted Frog Habitat.....	5-24
5.5.4	Conservation Action 4: Fund Covered Species Translocation Research.....	5-25
5.5.5	Conservation Action 5: Best Practices to Avoid and Minimize Impacts	5-26
5.6	Benefits to Covered Species and Net Outcomes	5-31
5.6.1	Olympia Pocket Gopher	5-31
5.6.2	Oregon Spotted Frog	5-33
5.6.3	Streaked Horned Lark	5-34
5.6.4	Oregon Vesper Sparrow.....	5-36
Chapter 6 Monitoring and Adaptive Management		6-1
6.1	Introduction	6-1
6.1.1	Regulatory Context	6-1
6.2	Purpose of Monitoring Program	6-3
6.3	Compliance Monitoring	6-3
6.4	Effectiveness Monitoring	6-4
6.4.1	Success Criteria	6-4
6.4.2	Success Criteria for Prairie Species	6-5
6.4.3	Success Criteria for Oregon Spotted Frog.....	6-5
6.5	Baseline Monitoring.....	6-8
6.5.1	Covered Prairie Species	6-8
6.5.2	Oregon Spotted Frog	6-9
6.6	Long-Term Monitoring.....	6-10
6.6.1	Covered Prairie Species	6-11
6.6.2	Oregon Spotted Frog	6-11
6.7	Adaptive Management	6-12
6.7.1	Directed Studies.....	6-16
Chapter 7 Implementation		7-1
7.1	Overview	7-1
7.2	Implementation Roles and Responsibilities.....	7-1
7.2.1	Summary of HCP Permittee Responsibilities	7-1
7.2.2	U.S. Fish and Wildlife Service.....	7-3
7.2.3	Federal Aviation Administration	7-4

7.3	Covered Activity Application Process	7-4
7.3.1	HCP Application Package	7-5
7.3.2	Oregon Spotted Frog Permit Review	7-7
7.4	Participating Special Entity	7-8
7.5	Process for Acquiring Reserve System Lands.....	7-8
7.5.1	Step 1: Site Identification.....	7-9
7.5.2	Step 2: Pre-Acquisition Assessment.....	7-9
7.5.3	Step 3: Site Prioritization	7-9
7.5.4	Step 4: Acquire Land	7-10
7.5.5	Step 5: Reserve Management Plan.....	7-10
7.6	Stay-Ahead Provision	7-13
7.6.1	Special Stay-Ahead Provision for Streaked Horned Lark	7-15
7.7	Alternative Means of Mitigation.....	7-16
7.7.1	Purchasing Credits from Species Mitigation Banks	7-17
7.7.2	Land Dedication by Project Proponents	7-17
7.8	Durability of Reserve System Lands.....	7-19
7.9	Tracking Compliance.....	7-21
7.10	Annual Reporting	7-22
7.11	Assurances	7-23
7.11.1	Regulatory Assurances.....	7-23
7.12	Modifications to the Plan.....	7-27
7.12.1	Corrective Revisions and Plan Clarifications	7-27
7.12.2	Amendments.....	7-27
7.13	Incidental Take Permit Suspension or Revocation	7-28
7.14	HCP Discontinuance	7-28
Chapter 8	Costs and Funding	8-1
8.1	Overview	8-1
8.2	Costs for Plan Implementation	8-1
8.2.1	Plan Administration	8-4
8.2.2	Establishing a Reserve System	8-4
8.2.3	Land Management and Habitat Restoration	8-6
8.2.4	Covered Species Translocation Research	8-8
8.2.5	Monitoring and Adaptive Management	8-9
8.2.6	Contingency	8-9
8.2.7	Endowed Costs.....	8-10
8.3	Funding	8-11
8.3.1	Habitat Conversion Fee.....	8-11

8.3.2	Land Dedicated by Project Proponents in Lieu of Habitat Conversion Fee	8-14
8.3.3	Other Funding Sources	8-15
8.3.4	Funding Adequacy	8-15
Chapter 9 Alternatives to Take		9-1
9.1	Introduction	9-1
9.2	Take Alternatives	9-1
9.2.1	No Take Alternative	9-1
9.2.2	Reduced Permit Term	9-2
Chapter 10 List of Preparers and Literature Cited		10-1
10.1	List of Preparers	10-1
10.1.1	City of Tumwater	10-1
10.1.2	Port of Olympia	10-1
10.1.3	ICF 10-1	
10.1.4	Krippner Consulting	10-1
10.1.5	ECONorthwest	10-1
10.2	Literature Cited	10-1
10.2.1	Chapter 1	10-1
10.2.2	Chapter 2	10-2
10.2.3	Chapter 3	10-7
10.2.4	Chapter 4	10-9
10.2.5	Chapter 5	10-9
10.2.6	Chapter 6	10-10
10.2.7	Chapter 7	10-10
10.2.8	Chapter 9	10-10

Tables and Figures

Table	Page
1-1 Proposed Covered Species.....	1-11
1-2 Current and Proposed Project HCPs in the Plan Area.....	1-24
2-1 Soils in the Plan Area and Permit Area	2-3
2-2 Land Cover Acreages in Plan Area	2-17
3-1 City Urban Development Projects—Activity Summarya.....	3-6
3-2 Projected Development Per Zone District as of December 2020	3-7
3-3 City Recurring Activities—Activity Summary	3-8
3-4 City Parks and Open Space Operations and Maintenance—Activity Summarya	3-10
3-5 City Public Services, Infrastructure, and Utilities Operations and Maintenance— Activity Summarya	3-13
3-6 City Transportation Facilities Operations and Maintenance—Activity Summarya	3-15
3-7 Port Capital Infrastructure, Support Facilities, and Utilities—Activity Summary	3-17
3-8 Port Facility Operations and Maintenance—Activity Summary	3-19
3-9 Port Recurring Activities—Activity Summary	3-21
4-1 Summary of Impact Mechanisms	4-3
4-2 Proportion of Olympia Pocket Gopher Habitat in the Permit Areaa	4-11
4-3 Maximum Allowable Permanent Effects on Habitat for Olympia Pocket Gopher	4-15
4-4 Projected Habitat Impacts by Zone Districts in Olympia Pocket Gopher Habitat	4-15
4-5a Proportional Impact Analysis for Parks and Recreation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat	4-17
4-5b Proportional Impact Analysis for Public Services Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat	4-18
4-5c Proportional Impact Analysis for Transportation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat	4-18
4-5d Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat	4-19
4-6 Maximum Permanent Impacts on Habitat for Oregon Spotted Frog	4-24

4-7a	Impact Analysis for Parks and Recreation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat	4-24
4-7b	Impact Analysis for Public Services Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat	4-25
4-7c	Impact Analysis for Transportation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat	4-26
4-8	Maximum Permanent Effects on Habitat for Streaked Horned Lark.....	4-33
4-9	Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Streaked Horned Lark Habitat.....	4-33
4-10	Maximum Permanent Effects on Habitat for Oregon Vesper Sparrow	4-39
4-11	Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Vesper Sparrow Habitat	4-39
4-12	Recent Projects in the City That Required Take Authorization from USFWS	4-41
4-13	Maximum Permanent Effects on Critical Habitat for Covered Species	4-42
5-1	Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts.....	5-8
5-2	Scoring of Functional Acres Based on Occupancy and Location in Olympia Pocket Gopher Modeled Habitat.....	5-15
5-3	Functional Acre Calculations for Habitat Removed by Covered Activities and Range of Potential Reserve Lands Acquired to Mitigate That Loss	5-16
6-1	Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow.....	6-5
6-2	Success Criteria for Streaked Horned Lark.....	6-5
6-3	Success Criteria for Oregon Spotted Frog.....	6-7
6-4	Monitoring/Survey Protocols for Determining Site Occupancy of Covered Prairie Species	6-9
6-5	Adaptive Management Matrix.....	6-14
8-1	HCP Costs (2021 Dollars).....	8-3

Figure	Page
1-1 Regional Location	1-7
1-2 Plan and Permit Areas.....	1-8
1-3 Permit Area For Lark Conservation Only	1-9
2-1 Historical Prairie Habitat in Plan Area.....	2-6
2-2 Soils	2-7
2-3 Hydrology	2-8
2-4 Zone Districts	2-12
2-5 Existing Conservation Lands	2-14
2-6 Land Cover	2-19
2-7 Species Occurrence Data	2-23
2-8 Olympia Pocket Gopher Model Flow Chart	2-28
2-9 Olympia Pocket Gopher Modeled Habitat.....	2-29
2-10 Oregon Spotted Frog Modeled Habitat	2-34
2-11 Streaked Horned Lark Modeled Habitat	2-40
2-12 Oregon Vesper Sparrow Modeled Habitat	2-45
3-1 Projected Development at Olympia Regional Airport	3-23
4-1 Airport Area Projected Development in Olympia Pocket Gopher Habitat	4-21
4-2 Projected Development in Streaked Horned Lark Habitat	4-31
4-3 Interim Agreement Period – Potential Development Areas.....	4-32
4-4 Projected Development in Oregon Vesper Sparrow Habitat.....	4-38
4-5 Projected Development in Olympia Pocket Gopher Critical Habitat	4-45
5-1 Airfield Safety Zone Mow Areas	5-30
6-1 Monitoring and Adaptive Management	6-2
7-1 Land Acquisition Process	7-12

Acronyms and Abbreviations

ALP	Airport Layout Plan
ADA	Americans with Disabilities Act
BAS	Best available science
Applicants/HCP Permittees	City and the Port/City of Tumwater and Port of Olympia
City	City of Tumwater
CNLM	Center for Natural Lands Management
CFR	Code of Federal Regulations
ESA	Endangered Species Act
EIS	Environmental impact statement
FAA	Federal Aviation Administration
FR	Federal Register
GMA	Growth Management Act
GIS	Geographic Information System
HCP or Plan	Habitat Conservation Plan
ITP	Incidental take permit
ITS	Incidental Take Statements
MOU	Memorandum of understanding
NEPA	National Environmental Policy Act
NLCD	National Land Cover Dataset
NMFS	National Marine Fisheries Service
NWI	National Wetland Inventory
NRCS	Natural Resources Conservation Services
NDVI	Normalized Difference Vegetation Index
Airport	Olympia Regional Airport
PSE	Participating Special Entity
Port	Port of Olympia
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
state	State of Washington
TRPC	Thurston Regional Planning Council
TMC	Tumwater Municipal Code
UGA	Urban Growth Area
USDA	U.S. Department of Agriculture
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WRCC	
WSDOT	Washington State Department of Transportation

1.1 Overview

The Bush Prairie Habitat Conservation Plan (HCP or Plan) will serve as the basis for an application for an incidental take permit (ITP) from the U.S. Fish and Wildlife Service (USFWS). The ITP will cover effects on covered species from urban development, which includes residential, commercial, industrial (e.g., plants, manufacturing), and institutional development and associated infrastructure, and operations and maintenance activities within the City of Tumwater (City), as well as Port of Olympia (Port) owned properties in the City. The ITP will also cover effects on covered species from infrastructure construction activities at the Olympia Regional Airport (Airport) and ongoing management on Airport lands. The City and the Port will apply for an Endangered Species Act (ESA) Section 10(a)(1)(B) ITP from USFWS for all species addressed in the Plan.

ESA Section 9 prohibits the take of species listed as threatened or endangered. *Take* is defined as “...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (16 U.S. Code [USC] 1532). *Harm* is further defined as including “...significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 Code of Federal Regulations [CFR] 17.3).¹

1.1.1 Purpose

The purpose of the HCP is to facilitate development, allowing growth in accordance with local and State of Washington (state) laws in the City and at the Airport, and to protect biological resources, including listed species and their habitat. The HCP will help the City and the Port develop a shared long-term framework for management tools such as protocols, incentives, and acquisition strategies that provide for the long-term preservation of covered species and assurances for all participants. The Plan will also continue to build on local efforts by Thurston County, the Washington Department of Fish and Wildlife (WDFW), the Center for Natural Lands Management (CNLM), the Ecosystems Institute (EI), and others to maintain and restore the South Puget Sound prairie ecosystem.

To this end, the Plan describes how to avoid, minimize, and mitigate effects on endangered and threatened species, and species expected to become listed, from activities and projects conducted in the City and at the Airport. The activities addressed in the Plan include City-permitted urban development projects² and infrastructure maintenance activities (Section 3.4, *City Covered Activities*). Construction and infrastructure maintenance activities by the Port are also addressed in the Plan (Section 3.5, *Port Covered Activities*). For mitigation, the Plan details the responsibilities to manage lands to benefit covered species (Section 5.5, *Conservation Actions*).

¹ Appendix A, *Glossary*, provides definitions of all terms used in this HCP.

² Not all urban development within the Plan Area will need ESA coverage through the ITP process.

An important goal of the Plan is to provide an efficient framework for ESA compliance for covered species and covered activities in the Plan Area. There are activities at the Airport that may have federal (Federal Aviation Administration [FAA]) approval or funding authority. In those cases, if there were potential to affect a listed species, ESA Section 7 consultation would be triggered. This HCP (ESA Section 10) describes these two different processes and explains how the HCP could be used to streamline ESA Section 7 consultation.

Whether a covered activity occurs under ESA Section 7 or ESA Section 10, the Plan provides the framework for future ESA Section 7 consultations (Section 1.3.2, *Integration of Endangered Species Act Section 7 and Endangered Species Act Section 10*, and Section 1.3.3, *Regulatory Assurances under the Endangered Species Act*).

1.1.2 Background

The prairies of the South Puget Sound region and throughout the state have declined significantly. Glacier retreat created the South Puget Sound prairies and Native Americans retained and enhanced them through burning to keep timber encroachment at bay, create more browse for hunted species, and propagate plant species that were gathered, such as camas bulbs. As alternative land management practices emerged, including urban development, agriculture, and the decline in the use of fire to manage the lands, the resulting changes led to a dramatic decline of the prairie landscape. Today, less than 10% of historic prairies remain in the South Puget Sound region, with only a small portion remaining as high-quality prairies. There are currently no known high-quality prairies within the Plan Area (pending the expected success of recent prairie restoration projects) or those containing abundant prairie plant species. There remains degraded prairie within the Plan Area that is mostly covered in nonnative grasses with limited native prairie plant species remaining. Most sites containing prairie soils have not been formerly surveyed for prairie vegetation but there are currently no native plant-dominated prairies, even in a degraded condition, within the City.

The Mazama pocket gopher (*Thomomys mazama*) was listed as threatened by WDFW in March 2006. In 2014, USFWS listed four subspecies of the Mazama pocket gopher as federally threatened. The Mazama pocket gopher has been described as a *keystone species* of the South Puget Sound prairie landscape, because of its importance in helping to maintain the prairie ecosystem through soil disturbance and other functions (Vaughan 1961, 1974; Reichman and Seabloom 2002).

One of the listed subspecies of Mazama pocket gopher, Olympia pocket gopher (*Thomomys mazama pugetensis*), occurs almost entirely within the City.³ In addition, the streaked horned lark (*Eremophila alpestris strigata*) was listed as endangered in Washington in 2006 (Stinson 2005) and federally listed as threatened in 2013 (U.S. Fish and Wildlife Service 2013). These listings prompted several local developers to prepare their own HCPs in order to implement their construction projects. At the same time, the City and the Port began development of this more comprehensive approach to endangered species compliance, one that would eliminate the need for developers in the City to prepare their own HCPs while providing a coordinated conservation effort. With these federal listings, City leaders decided to proactively plan to protect endangered species while managing responsible urban growth to fulfill obligations under the state Growth Management Act (GMA).

³ See footnote 8 in Chapter 2, *Physical Setting, Land Use, and Biological Resources*.

The Airport supports the largest and most important source population of the Olympia pocket gopher within the range of the subspecies. The Airport also has the only known nesting population of streaked horned larks in Thurston County. To date, Airport activities have been implemented in tandem with take-avoidance protocols or have been exempted under individual ESA Section 7 consultations between USFWS and FAA, for projects with a federal nexus. For all development activities at the Airport, the Port will need either incidental take authorization under ESA Section 10 for those activities with no federal approval, or through the ESA Section 7 consultation process for those activities requiring FAA approval to implement fully their *Airport Master Plan* (Port of Olympia 2016). This HCP is intended to cover all Port construction and infrastructure maintenance activities, including Airport facility operations for incidental take authorization.

1.2 Scope of the Plan

This section describes the scope of the Plan, including the Permittees, covered activities, geographic scope, permit term, and covered species.

1.2.1 Permittees

The Plan was prepared jointly by the City and the Port, collectively referred to as the *Permittees*. The Permittees will use the Plan to facilitate planned development, growth, and construction and maintenance of needed infrastructure, consistent with approved land use and capital improvement plans, while implementing the Plan's conservation strategy. In order to accomplish development and growth within the City while successfully implementing the Plan's conservation strategy, the City will extend its permit coverage to public and private entities seeking to develop inside the City.

1.2.2 Covered Activities

Covered activities are those projects or ongoing activities that may receive incidental take authorization under ESA Section 10(a)(1)(B). Each potential covered activity was screened against a set of standardized criteria to determine which activities would be proposed for coverage in the HCP. Covered activities that met the screening criteria are summarized below and described in detail in Chapter 3, *Covered Activities*. Identification here is not project or site specific. Whether these activities come under the HCP will depend on factors such as whether the activity occurs in modeled habitat or if development occurs entirely on already built infrastructure.

- *Urban Development*—City-permitted construction projects undertaken to accommodate urban growth within the City and subject to construction permits issued by the City and include the public and private construction of City urban facilities.
- *Operations and Maintenance*—Activities that are undertaken to maintain the utility of new and existing land uses, facilities, and services within the City and require City building, grading, development, or other construction permits. Operations and maintenance activities implemented by the Port and/or the City are covered activities, exclusive of operations and maintenance activities implemented by or on behalf of any other party.
- *Aeronautical-Related Activities at the Airport*—Activities that occur at the Airport that are funded all or in part by grants from the FAA. This category includes development and operations and maintenance of new and existing air-related infrastructure (e.g., new hangars,

runways, terminals). Many of these activities are funded wholly or in part by grants from the FAA. This does not include flight-related activities, except for the annual air show (see Chapter 3, *Covered Activities*, for more detail).

- *Non-Aeronautical Activities on Port Properties*—Includes development of capital projects, permitted construction projects undertaken to accommodate urban growth within the City and subject to construction permits, support facilities, and utilities.
- *Conservation Strategy Implementation*—Includes implementation of the HCP’s conservation strategy. Activities that are part of the conservation strategy are described in Chapter 3, *Covered Activities*, and Chapter 5, *Conservation Strategy*.

1.2.3 Geographic Scope

1.2.3.1 Plan Area

The City and the Port began the planning process by defining a broad area in which all Plan implementation activities are expected to occur (Chapter 7, *Implementation*). Plan implementation activities include all covered activities within the City and at the Airport. Plan implementation activities also include conservation actions required to mitigate the effects of the activities and projects addressed by this HCP. The *Plan Area* (approximately 31,136 acres) is defined as areas where covered species may occur within the City’s Urban Growth Area (UGA) as the UGA exists at the time of writing and an additional area south of the UGA in the range of the Olympia pocket gopher where the UGA may expand and some mitigation may occur (Figure 1-1, *Regional Location*).

The UGA is a regional boundary mandated by the GMA that helps control sprawl by defining where urban development will occur in the City and those areas the City is expected to annex in the next 20 years. The UGA includes the current City boundary and the Port properties, including the Airport, which is within the City limits. The UGA extends from the eastern shore of Black Lake west to the Deschutes River. The UGA extends north to the City of Olympia and south to approximately 93rd Avenue SW.

The UGA boundary may change during the permit term. UGA boundaries may change following County action and City boundaries may change if the City then annexes that land. Any expansion of the UGA during the permit term to be covered by the HCP will be within the Plan Area described here. Southward UGA expansion has the greatest potential to incorporate lands where covered species and covered activities would occur. Northward and eastward expansion of the UGA is generally not anticipated during the proposed permit term due to adjacency with other City UGAs. Ultimately, the HCP will apply to any land inside the UGA boundary, including any areas of expansion and excluding any areas of contraction over time, but only after annexation to the City, and if HCP coverage is requested.

The Plan Area is subdivided into three separate areas. The Permit Area includes the areas where the City exercises permitting authority and within the Port’s jurisdictional boundaries in the City’s UGA. The Permit Area for Conservation Only is a designated area outside the City’s UGA where conservation actions are likely to occur. And third, the Permit Area for Streaked Horned Lark Conservation Only, where conservation actions for the streaked horned lark will occur. These areas are described in the following subsections.

1.2.3.2 Permit Area

The *Permit Area* (12,877 acres) is the geographic area where the ITP applies for most covered activities (Figure 1-2, *Plan and Permit Areas*). It includes the areas where the City exercises permitting authority and the Port's jurisdictional boundaries in the City's UGA, including the Airport. The UGA is a regional boundary mandated by the GMA that helps control sprawl by defining where urban development will occur within the City and those areas the City may annex in the next 20 years. The Permit Area extends from the eastern shore of Black Lake east to the Deschutes River. The UGA, within the Permit Area extends north to the City of Olympia and south to approximately 93rd Avenue SW.

Ultimately the HCP will apply to any land inside the UGA boundary within the Plan Area, including any areas of expansion and excluding any areas of contraction over time, but only after annexation to the City.

1.2.3.3 Permit Area for Conservation Only

The Plan Area also includes the *Permit Area for Conservation Only* (18,259 acres), which is defined as the remaining range of the Olympia pocket gopher outside of the UGA (Figure 1-2, *Plan and Permit Areas*). The Permit Area for Conservation Only is different from the Permit Area in that conservation actions would occur there, but no development or maintenance activities covered by the HCP. The Permit Area for Conservation Only was determined using the most current published service area for the Olympia pocket gopher (U.S. Fish and Wildlife Service 2018). The Permit Area for Conservation Only includes an area in which some lands will be acquired and managed by the Permittees for the purposes of covered species conservation. Some mitigation lands will be acquired from within the UGA (i.e., within the Permit Area), and some mitigation lands may be acquired outside the UGA, but within the range of the Olympia pocket gopher (i.e., within the Permit Area for Conservation Only). Outside the UGA but inside this larger Permit Area for Conservation Only, only conservation actions on mitigation lands are covered under this HCP. In other words, development activities covered in the Permit Area are not covered in the Permit Area for Conservation Only. Only lands acquired by the Permittees for mitigation under this HCP will be part of this HCP in the Permit Area for Conservation Only.

1.2.3.4 Permit Area for Streaked Horned Lark Conservation Only

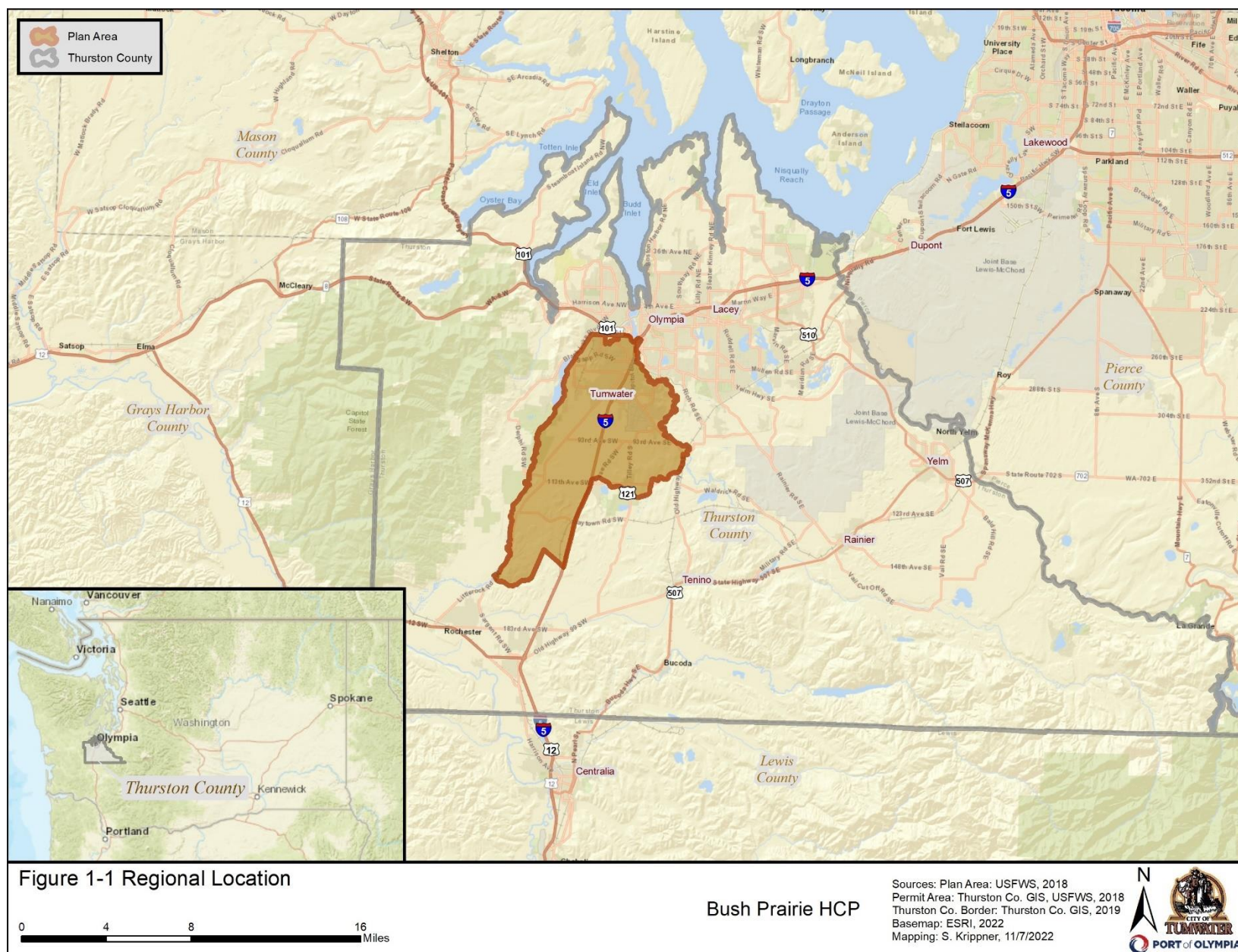
Because there are very few locations within the Permit Area for Conservation Only (Section 1.2.3.3, *Permit Area for Conservation Only*) that meet specific habitat criteria for the streaked horned lark, and there are no occupied areas outside of the Airport within the Plan Area, the Permittees have expanded the Plan Area for larks to include an area referred to in this HCP as the Permit Area for Streaked Horned Lark Conservation Only (Figure 1-3, *Permit Area for Lark Conservation Only*). This area (1,490,157 acres) includes the entire South Puget Lowlands Recovery Zone for the streaked horned lark as described in the *Draft Recovery Plan for the Streaked Horned Lark* (*Eremophila alpestris strigata*) (U.S. Fish and Wildlife Service 2019). The Permit Area for Streaked Horned Lark Conservation Only is where lands will be acquired and managed by the Permittees for the purposes of streaked horned lark conservation. Only lands acquired by the Permittees for mitigation under this HCP will be part of this HCP in the Permit Area for Streaked Horned Lark Conservation Only.

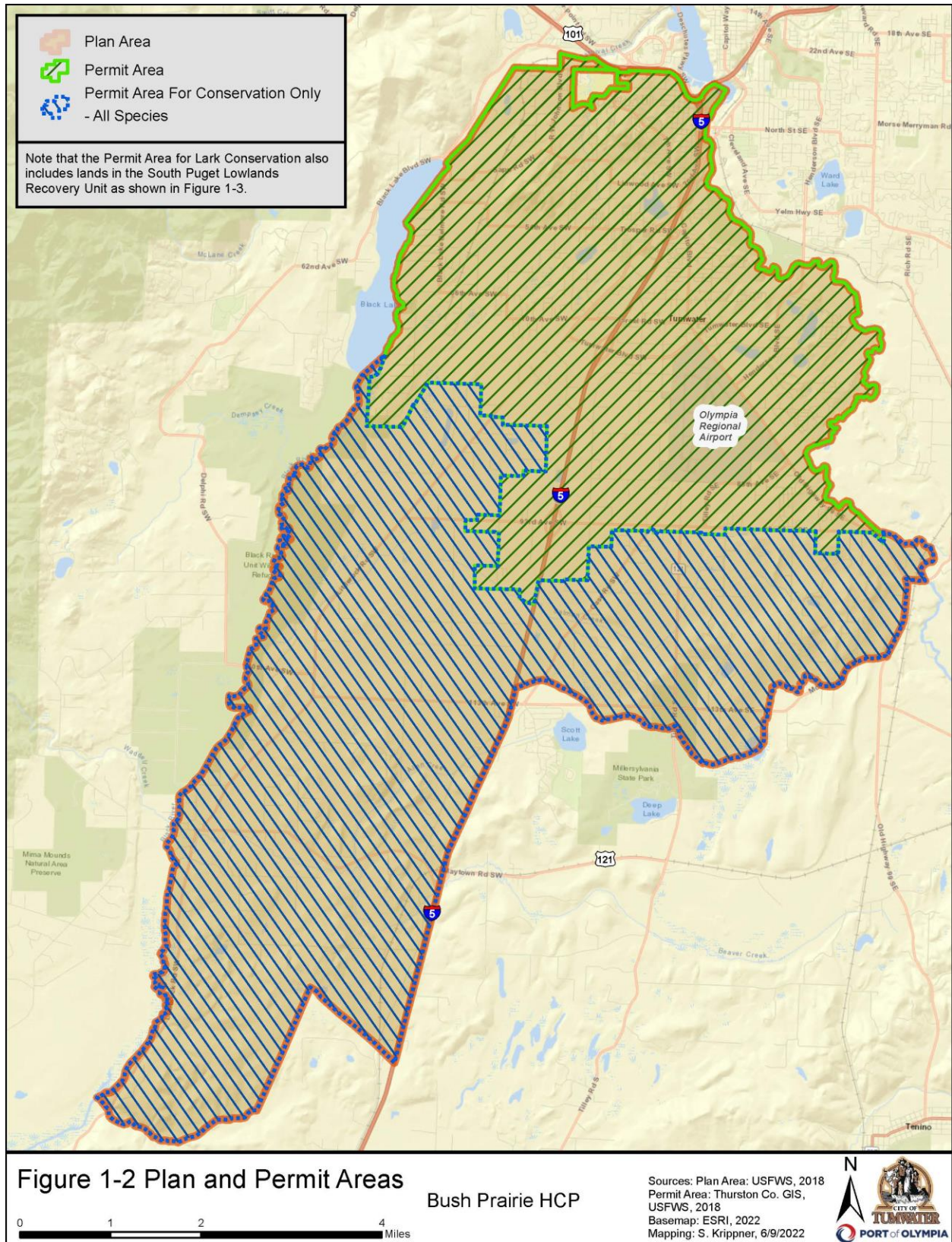
USFWS divided the streaked horned lark historical range into five regions (North Puget Lowlands, South Puget Lowlands, Coast and River, Willamette Valley, and Southwest Oregon) (U.S. Fish and

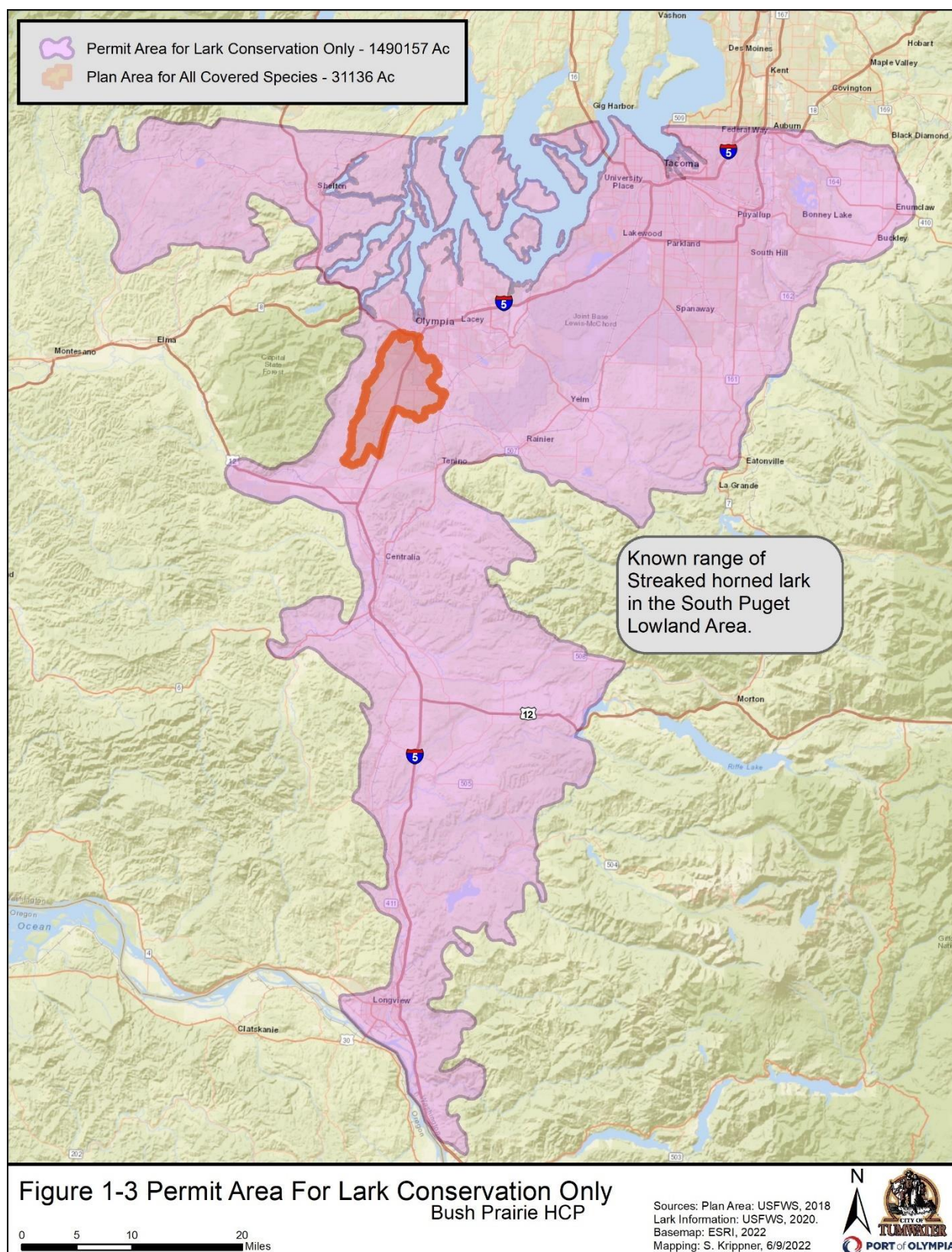
Wildlife Service 2019). According to the *Draft Recovery Plan for the Streaked Horned Lark* (*Eremophila alpestris strigata*) criterion 1a, is to increase the number of sites managed for streaked horned larks across the range (including the South Puget Lowlands) that will address the primary threat to the species of habitat loss. The goals for the South Puget Lowlands are as follows.

- Conserve larks in the South Puget Lowlands region.
 - Implement conservation actions on Core sites in the South Puget Lowlands region.
 - Identify and conserve current and potentially suitable sites.
 - Implement long-term conservation programs that enhance survival on Core sites.
- Implement conservation actions on Matrix lands in the South Puget Lowlands region.
 - Identify priority Matrix lands.
 - Develop and implement conservation programs that enhance survival on Matrix lands.

The expanded conservation area for the streaked horned lark provides the Permittees more opportunities to contribute to the recovery goals established in the *Draft Recovery Plan for the Streaked Horned Lark* (*Eremophila alpestris strigata*) (U.S. Fish and Wildlife Service 2019).







1.2.4 Permit Term

The *permit term* is the period when all covered activities can receive incidental take authorization under the Plan, consistent with the Plan's requirements. The permit term is also the time when all mitigation actions must be successfully implemented to offset the impacts of the covered activities. Ongoing mitigation site management will be perpetual following the permit term.

Long-term planning projections for the City UGA are available for a 20-year timeframe as detailed in the City's *Comprehensive Plan* (City of Tumwater 2016), so the magnitude and spatial patterns of development are foreseeable over that period. Moreover, the City anticipates reaching near full buildout under current zoning densities within approximately 30 years. This assumption of full buildout enables planning over the 30-year timeframe proposed for the HCP permit term. Planning projections for the Port are explicit within 5-year and longer timeframes as outlined in the *Airport Master Plan* (Port of Olympia 2016), which phases development through 2033, and with broader goals projected for the longer term as outlined in the *Comprehensive Scheme of Harbor Improvements* (Port of Olympia 2017a).

The next 30 years are also important for the Olympia pocket gopher and other covered species because it is the period during which foreseeable habitat impacts may result from full buildout of the City. Therefore, it is appropriate that the Plan covers this period in order to show appropriate mitigation for these species over this timeframe.

The Permittees have determined that a 30-year permit term is appropriate to address regulatory and biological considerations. A 30-year permit term provides sufficient time to accomplish the elements of the Plan listed below.

- Implement the Permittee's covered activities, including City maintenance and permitted construction projects and Port maintenance and permitted construction activities.
- Use the funding mechanisms established pre-permit (Chapter 8, *Costs and Funding*), secure funding for Plan implementation during the permit term and secure funds during the permit term to generate sufficient funding to permanently support the Plan.
- Implement a permanent monitoring and adaptive management program, to ensure Plan effectiveness in the face of uncertainties about the ecology of covered species and their responses to HCP management (Chapter 2, *Physical Setting, Land Use, and Biological Resources*, and Chapter 6, *Monitoring and Adaptive Management*).
- Cover enough projects and activities during the permit term to make any up-front investments needed for Plan development cost effective for the public over the long term.
- Secure and manage sufficient mitigation habitat land in perpetuity for the covered species.

Incidental take authorization for all covered activities will expire at the end of the permit term unless the ITP is renewed or replaced. Near the end of the permit term, the Permittees will determine whether to apply for permit renewal through the formal amendment process described in Chapter 7, *Implementation*.

1.2.5 Covered Species

Covered species are those species for which the Permittees are requesting incidental take authorization. The Plan Area provides habitat for a variety of species, including species listed under

state and federal endangered species protection laws. Covered species were selected for the HCP based on review of all species of conservation concern known or suspected to occur in the Plan Area during the permit term. These species were then screened for coverage based on the four selection criteria described in Section 1.2.5.1, *Covered Species Evaluation*. The criteria were applied to each species of conservation concern with potential to occur in the Plan Area.

1.2.5.1 Covered Species Evaluation

The species of conservation concern proposed for coverage were evaluated using the following criteria. To be covered, species must meet all four criteria.

- **Status.** The species falls into one of the following categories: (1) listed under the ESA as threatened or endangered, or proposed for listing; (2) listed by WDFW as threatened or endangered; or (3) has a high likelihood of becoming listed under the ESA within the proposed 30-year permit term. The potential for listing during the proposed 30-year permit term is based on current listing status, listing petitions, consultation with species experts and USFWS staff, evaluation of species population trends and threats, and best professional judgment.
- **Range.** The species is known to occur or is expected to occur within the Plan Area based on a review of species locality and range data, a review of literature, and input from species experts. Consideration was also given for species not currently known in the Plan Area that could occur there later in the permit term, through range expansion or introduction to suitable habitat created at mitigation sites. However, no species met this latter criterion and therefore, no additional species were added.
- **Impact.** There is a risk that, if listed currently or in the future, the species would experience incidental take due to covered activities, including management or restoration of mitigation sites.
- **Knowledge.** Sufficient scientific data exist on the species' life history, habitat requirements, and occurrence in the Plan Area to evaluate impacts on the species adequately and to develop conservation actions to mitigate these impacts to levels specified by regulatory standards.

In addition to the four criteria discussed above, the overall feasibility and potential cost of covering each species was considered.

1.2.5.2 Proposed Covered Species

The Bush Prairie HCP proposes to address four species (Table 1-1, *Proposed Covered Species*). The species proposed for coverage were selected from a larger list of species that are known to occur or may occur in the Plan Area, applying the criteria above. For more details on these species and the selection process, see Appendix B, *Species Considered for Coverage*.

Table 1-1. Proposed Covered Species

Common Name	Scientific Name	Status	
		Federal	State
Mammals			
Olympia pocket gopher	Thomomys mazama pugetensis	FT	ST
Amphibians			
Oregon spotted frog	Rana pretiosa	FT	SE

Common Name	Scientific Name	Status	
		Federal	State
Birds			
Streaked horned lark	<i>Eremophila alpestris strigata</i>	FT	SE
Oregon vesper sparrow	<i>Pooecetes gramineus affinis</i>	SCC--	SE

Status

Federal

FT = Federally Listed as Threatened

State

ST = State Listed as Threatened

SE = State Listed as Endangered

1.3 Federal Regulatory Framework

1.3.1 Federal Endangered Species Act

The purpose of the ESA is to provide a means whereby the ecosystems, upon which threatened and endangered species depend, may be conserved, and to provide a program for the conservation of such species. USFWS has the responsibility for conservation and protection of most threatened and endangered species under the ESA, including all listed species covered by this Plan.

USFWS can list species as either endangered or threatened. An *endangered species* is at risk of extinction throughout all or a significant portion of its range (ESA Section 3(6)). A *threatened species* is likely to become endangered in the near future (ESA Section 3(19)). ESA Section 9 prohibits the take of any fish or wildlife species listed under the ESA as endangered and in most cases threatened. The ESA includes mechanisms that provide exceptions to the ESA Section 9 take prohibitions and are addressed by ESA Section 10 for nonfederal actions and ESA Section 7 for federal actions. The following subsections summarize each of the requirements of these sections of the ESA.

1.3.1.1 Endangered Species Act Section 10

Under ESA Section 10(a)(2)(A), a nonfederal party may apply to USFWS for an ITP providing authorization to incidentally take listed species. The application must include an HCP. That HCP must describe the impacts that are likely to result from the incidental take and the measures the Permittee will carry out to minimize and mitigate such impacts. In addition, the HCP must include a discussion of alternative actions to incidental take authorization that the Permittee has considered, and the reasons these alternative actions are not being used. Finally, the HCP must include “...such other measures that the Secretary may require as being necessary or appropriate for the purpose of the plan.” The HCP must describe the following mandatory elements.

- The impact that will likely result in the taking of covered species.
- The steps the Permittees will take to monitor, avoid, minimize, and mitigate such impacts to the maximum extent practicable.
- The funding that will be available to implement such steps.

- The procedures to be used to deal with unforeseen circumstances.⁴
- The alternative actions to such taking the Permittees considered and the reasons why such alternatives are not proposed.
- Such other measures that the Director [of the Department of Interior or Commerce] may require as being necessary or appropriate for purposes of the Plan (50 CFR 17.22(b)).

This Plan is intended to satisfy these requirements of ESA Section 10.

The issuance of an ITP is also subject to evaluation by USFWS via the ESA Section 7 consultation process described in Section 1.3.1.4, *Endangered Species Act Section 7*. Thus, incidental take authorized pursuant to an HCP must be quantified, must not jeopardize the continued existence of the species, and must not destroy or adversely modify critical habitat.

1.3.1.2 Endangered Species Act 4(d) Rule for Olympia Pocket Gopher

In 2014, USFWS created a special 4(d) rule for the Olympia pocket gopher, under the ESA, that exempts some activities from the ESA's Section 9 take prohibitions, including some existing maintenance activities at airports and farms, livestock grazing, some agricultural activities, and certain activities on single-family residential properties (U.S. Fish and Wildlife Service 2014).

Because of the 4(d) rule, certain general activities conducted on nonfederal agricultural and ranching lands, regular maintenance activities at the Airport, certain ongoing non-commercial activities by small private landowners, control of noxious weeds and invasive plants on nonfederal lands, and maintenance of roadside rights-of-way on both federal and nonfederal lands are exempt from accidentally disturbing, harming, or killing the Olympia pocket gopher.

Routine removal or other management of noxious weeds and invasive plants includes mowing, disking, and burning.

Additionally, while this Plan includes agricultural development (Section 3.4.2, *Urban Development Projects*) as part of its covered activities, the following activities currently do not result in prohibited take of Olympia pocket gopher because of the Olympia pocket gopher 4(d) special rule, but are included as covered activities insofar as they may affect other covered species. In addition, the 4(d) special rule for Olympia pocket gopher may be revised in the future or may be revoked in the event that the species is listed as endangered. In the event that the 4(d) special rule is narrowed or revoked (i.e., if the species is uplisted), the applicable activities currently exempt are covered by this HCP

- Livestock grazing.
- Routine installation, management and maintenance of stock water facilities such as stock ponds, berms, troughs, and tanks, pipelines, and watering systems to maintain water supplies.
- Routine maintenance or construction of fencing.

⁴ *Unforeseen circumstances* are changes in circumstances affecting a covered species or geographic area covered by the HCP that could not reasonably have been anticipated by the Plan developers, and that result in a substantial and adverse change in the status of a covered species.

- Planting, harvest, fertilization, harrowing, tilling, or rotation of crops. Disturbance to the soils will not exceed a 12-inch depth. All activities that do not disturb the soil surface are also allowed, such as haying, baling, some orchard and berry plant management activities, etc.
- Maintenance of livestock management facilities such as corrals, sheds, and other ranch outbuildings.
- Repair and maintenance of unimproved agricultural roads. This exemption does not include improvement, upgrade, or construction of new roads.
- Placement of mineral supplements, plant nutrients, or soil amendments.
- Harvest, control, or other management of noxious weeds and invasive plants through mowing, disking, herbicide and fungicide application, fumigation, or burning. Use of herbicides, fungicides, fumigation, and burning must occur in such a way that non-target plants are avoided to the maximum extent practicable.
- Deep tillage (usually at depths of 18–36 inches, for compaction reduction purposes) occurring between September 1 and February 28, no more often than once in 10 years.
- Routine management, repair, and maintenance of runways, roads, and taxiways (does not include upgrades, or construction of new runways, roads, or taxiways, or new development at the Airport).
- Hazing of hazardous wildlife at the Airport.
- Management of forage, water, and shelter to reduce the attractiveness of the area around the Airport for hazardous wildlife.
- Control or other management of noxious weeds and invasive plants through mowing, disking, herbicide and fungicide application, fumigation, or burning at the Airport. Use of herbicides, fungicides, fumigation, and burning must occur in such a way that non-target plants are avoided to the maximum extent practicable.

1.3.1.3 Endangered Species Act 4(d) Rule for Streaked Horned Lark

In 2013, USFWS published a final rule (78 FR 61452) listing the streaked horned lark as a threatened species under the ESA; that rule includes a 4(d) rule to exempt certain activities from the take prohibitions of the ESA. On February 28, 2018, the Center for Biological Diversity filed suit against the Department of the Interior and USFWS on the listing and 4(d) rule for the streaked horned lark. In April 2021, USFWS proposed a new listing rule (and, as applicable, a new 4(d) rule). The proposed rule reflects an updated assessment of the status of the subspecies (including an updated analysis of any significant portions of the range) based on the 2021 *Species Status Assessment for the Streaked Horned Lark* (U.S. Fish and Wildlife Service 2021), and proposed revisions to the current 4(d) rule.

The proposed revised 4(d) rule would provide for the conservation of the streaked horned lark by prohibiting take, except as otherwise authorized, permitted, or incidental to the following activities:

- Wildlife hazard management at airports and accidental strikes by aircraft.
- Habitat modification and management of sources of forage, water, and shelter to reduce the attractiveness of the area around the Airport for hazardous wildlife. This exception for habitat modification and management includes control and management of vegetation (grass, weeds,

shrubs, and trees) through mowing, disking, herbicide application, or burning; also included the following exemptions:

- Routine management, repair, and maintenance of roads and runways (does not include upgrades or construction of new roads or runways);
- Agricultural (farming) practices implemented on farms consistent with State laws on non-Federal lands in Washington and Oregon.
- For the purposes of the 4(d)Rule, farm means any facility, including land, buildings, watercourses and appurtenances, used in the commercial production of crops, nursery stock, livestock, poultry, livestock products, poultry products, vermiculture products, or the propagation and raising of nursery stock
- Removal or other management of noxious weeds. Routine removal or other management of noxious weeds are limited to the following, and must be conducted in such a way that impacts to non-target plants are avoided to the maximum extent practicable.
- Includes mowing, burning, herbicide use, and fumigation.
- Habitat restoration activities beneficial to streaked horned lark.

Many of these allowed activities are included as covered activities in this HCP because they may affect other covered species. In addition, the 4(d) special rule for streaked horned lark may be revised in the future or may be revoked in the event that the species is listed as endangered. In the event that the 4(d) special rule is narrowed or is revoked (i.e., if the species is uplisted), the applicable activities currently exempt are covered by this HCP.

1.3.1.4 Endangered Species Act Section 7

ESA Section 7 requires all federal agencies, in consultation with USFWS, ensure that any action “authorized, funded, or carried out” by any agency “...is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification” of critical habitat (16 USC 1536(a)(2)). Before initiating an action, the federal agency must determine whether a proposed project may affect listed or proposed species or their critical habitat. If the agency determines that a project *may affect* a listed species or critical habitat, it is required to consult with either USFWS or the National Marine Fisheries Service (NMFS).⁵ If the agency determines, and USFWS concurs, that the project is neither likely to adversely affect any listed or proposed species or to adversely modify designated critical habitat, the consultation is concluded. If the agency determines that a project is likely to adversely affect a listed or proposed species or designated or proposed critical habitat, a formal consultation process is initiated.

During formal consultation, USFWS prepares a biological opinion in response to information provided by the action agency. The biological opinion analyzes the effects of the proposed action on listed species and determines if the action is likely to jeopardize the continued existence of the species or destroy or adversely modify designated critical habitat. If the biological opinion reaches a jeopardy or adverse modification conclusion, the opinion must develop a “reasonable and prudent alternative” that would avoid that result.

⁵ The NMFS has jurisdiction over anadromous fish and marine species. Because none of those species is covered by this HCP, this agency is not mentioned further in the document.

If the biological opinion concludes that the project, as proposed, would involve the take of a listed species, but not to an extent that would jeopardize the species' continued existence, the biological opinion includes an incidental take statement and specifies reasonable and prudent measures to minimize the impact of the take. Because the issuance of an ITP is a federal action, USFWS must consult with itself under ESA Section 7 by preparing an "intra-Service biological opinion". This HCP will provide USFWS with supporting information for its biological opinion.

Any project with a federal lead agency or federal involvement (e.g., a federal permit, federal funding, or a project on federal land) must obtain its incidental take authorization through ESA Section 7 and an incidental take statement. However, if the project subject to the Section 7 consultation is also covered by an HCP and complies with the conservation actions in the HCP, the ESA Section 7 consultation process can be greatly streamlined.⁶ Therefore, the covered activities described in Chapter 3, *Covered Activities*, include projects or activities that may need to obtain their incidental take authorization through ESA Section 7.

1.3.2 Integration of Endangered Species Act Section 7 and Endangered Species Act Section 10

The Permittees, FAA, and USFWS are working together to coordinate environmental review and approvals for certain activities that are covered under the Plan. The Plan includes covered activities carried out at the Airport that are subject to FAA jurisdiction, such as the issuance of waivers or conveyance and use of federal funding to carry out some activities. The Plan is designed to address biological resources subject to the ESA, including activities that also are subject to ESA Section 7 through a nexus with the FAA. The Permittees and the FAA propose to integrate the environmental review to the maximum extent possible under the ESA for covered activities. This integration involves establishing joint procedures that will fulfill both federal and local requirements. The Permittees, FAA, and USFWS will strive to make the joint processes efficient, transparent, and predictable, while meeting applicable federal requirements.

1.3.3 Regulatory Assurances under the Endangered Species Act

Federal projects, which are subject to ESA Section 7, are evaluated under standards that are different from those of nonfederal projects, which are subject to ESA Section 10. Nonfederal projects must obtain an ITP for take of listed species, while federal agencies must consult with USFWS whenever their actions have the potential to affect a listed species or designated critical habitat. For example, the definition of "affect" differs slightly from that of "take" and it may be applied differently, depending on the species and the project. In addition, compliance under ESA Section 7 does not provide No Surprises Assurances.

The Plan is not intended to alter the obligation of a federal agency to consult USFWS pursuant to ESA Section 7. USFWS will conduct ESA consultations for covered activities in accordance with the established regulatory process and deadlines (50 CFR 402.14). For covered activities where the FAA is the lead federal agency, the Permittees, FAA, and USFWS will follow the procedures outlined in Section 1.3.2, *Integration of Endangered Species Act Section 7 and Endangered Species Act Section 10*.

⁶ *Streamlining Endangered Species Act 7(a)(2) Consultations in Habitat Conservation Planning Efforts*, Memo from USFWS Assistant Director of Ecological Services, April 22, 2020.

Unless otherwise required by law or regulation, USFWS will ensure that the biological opinion for the proposed action subject to ESA Section 7 and covered by this HCP is consistent with the biological opinion issued for the HCP and the ITP.

ESA Section 7 consultations apply only to federally listed species; therefore, only those covered species that are federally listed at the time of the consultation need be included in the consultation. Unless otherwise required by law or regulation, USFWS will not impose measures on the Permittees for coverage under the Plan in excess of those that have been or will be required by the ITP. Before completing an ESA Section 7 consultation for a covered activity in which USFWS proposes to require a measure that exceeds the requirements of the Plan or ITP, USFWS will meet and confer with the Permittee with jurisdiction over the affected project to discuss alternatives to the imposition of the measure that would meet the applicable legal or regulatory requirements.

1.3.4 Federal Aviation Administration

Some activities that occur at the Airport are subject to review and approval by the FAA. These FAA approvals include approval of the changes to the Airport Layout Plan (ALP) where FAA has approval authority and/or grant funding for the project. These are federal actions subject to the National Environmental Policy Act (NEPA) as well as the federal consultation requirements of the ESA under ESA Section 7.

As an example, in 2015 USFWS issued a biological opinion to the FAA on the Port's proposed 2015 taxiway reconstruction and airshow at the Airport. The biological opinion addresses the actions' associated effects on the threatened streaked horned lark and the Olympia pocket gopher and designated critical habitat for the Olympia pocket gopher.

The activities covered in this HCP (described in Chapter 3, *Covered Activities*) on the Airport may require further approvals by the FAA to implement. If these activities require such authorization, FAA will consult with USFWS; if these activities result in a "may affect/likely to adversely affect" determination, the ESA Section 7 consultation process would conclude with a biological opinion. To the extent that the activities subject to such consultation are addressed in the HCP, the City and the Port will recommend the FAA use the HCP as their biological assessment.

All activities on the Airport are outlined in the *Airport Master Plan* (Port of Olympia 2016). The *Airport Master Plan* (2016) describes all activities contemplated at the Airport and is typically updated every 5 years.

1.3.4.1 FAA and USFWS 2019 Memorandum of Understanding Summary

In October 2019, the FAA and USFWS finalized a memorandum of understanding (MOU) regarding streaked horned lark recovery in Oregon and Washington. The MOU outlines the agencies' understanding and expectations of their roles in the recovery of the streaked horned lark, specifically for minimizing impacts on the species and habitat from airport development projects with a federal nexus.

The FAA does not own or operate airports and most airports are owned by municipal entities that have accepted responsibility to operate the airport in accordance with FAA standards, regulations, and orders. The FAA has limited control over the operation of these airports but does provide federal funding via grants-in-aid to public-use airports across the country. Each airport that applies for and accepts grant funding also accepts certain responsibilities and commitments as a condition

of receiving federal grant-in-aid funds. The MOU formalizes the partnership between USFWS and the FAA. It assists the agencies in fulfilling their common goals of filling gaps in the current knowledge base for the streaked horned lark's recovery and identifying, protecting, and managing non-airport recovery sites for the subspecies, thereby improving the status of the subspecies and reducing the importance of airports as habitat for the subspecies.

Under the MOU, the FAA will utilize its authority to fund off-airport recovery sites for the streaked horned lark as identified by USFWS and fund studies of recovery issues relevant to airport needs. USFWS will provide guidance and technical assistance to the FAA in determining appropriate studies to help meet the goals of the *Draft Streaked Horned Lark Recovery Plan* (U.S. Fish and Wildlife Service 2019) as well as assist the FAA in site selection and prioritization of potential off-airport conservation sites for the streaked horned lark.

1.3.5 National Environmental Policy Act

NEPA, established in 1969, serves as the nation's basic charter for determining how federal decisions affect the human environment (42 USC 4332). Federal agencies must complete environmental documents pursuant to NEPA before implementing discretionary federal actions. Such documents help ensure that the underlying objectives of NEPA are achieved: to disclose environmental information, assist in resolving environmental problems, foster intergovernmental cooperation, and enhance public participation. NEPA requires evaluation of the potential effects on the human environment related to the proposed action, reasonable alternatives to the proposed action (if any), and a No-Action Alternative.

Any federal agency undertaking a non-exempt federal action that is likely to affect the human environment must conduct an environmental review pursuant to NEPA. If any impacts on the human environment are found to be significant and cannot be mitigated to the point of insignificance, the federal agency must then prepare an environmental impact statement (EIS). The Council on Environmental Quality regulations define major federal actions as those actions with "...effects that may be major and which are potentially subject to federal control and responsibility," including "...projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies."

Issuance by USFWS of an ITP under ESA Section 10(a)(1)(B) is a federal action subject to NEPA. Although ESA and NEPA requirements overlap considerably, the scope of NEPA goes beyond that of the ESA by considering impacts of a federal action not only on wildlife resources but also on other aspects of the human environment such as water quality, air quality, and cultural resources.

1.3.6 National Historic Preservation Act

Compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, is required by law for all federal undertakings. In this case, the federal undertaking is issuance of ITPs for the covered activities. Section 106 requires federal agencies to consider the effects of the undertaking when there is a potential to affect a historic property—a district, site, building, structure, or object—that is listed in, or eligible for listing in, the National Register of Historic Places (NRHP). Section 106 contains specific consultation requirements with certain parties such as the State Historic Preservation Officer (SHPO), affected tribes, and individuals and organizations with a demonstrated interest in the undertaking. USFWS has determined that the area of potential effects for the present undertaking is that area where on-the-ground project activities will result in take of

species. The NHPA and the potential effects of the conservation strategy on resources subject to the NHPA are discussed in detail in the State Environmental Policy Act (SEPA)/NEPA document(s). See Appendix C, *Protecting Historical and Cultural Resources*, for the City's process for identifying, evaluating, and protecting of historic resources within Tumwater.

1.4 State and Local Regulatory Framework

1.4.1 State Environmental Policy Act

The State Environmental Policy Act (SEPA) applies to decisions by every state agency, county, city, port, and special districts (such as a school or water district) within the state. One agency is identified as the lead agency for a specific proposal. The *lead agency* is responsible for identifying and evaluating the potential adverse environmental impacts of a proposal and involving the public. The elements of the environment that are evaluated during the SEPA review process include earth, air, water, plants, animals, energy, environmental health, land use, transportation, cultural resources, public services, agriculture, and utilities. A lead agency may condition or deny a proposal when probable, significant, adverse environmental impacts are identified that cannot be appropriately mitigated.

The HCP will undergo the SEPA review process generally concurrent with the NEPA review process. Initial scoping by the SEPA lead agency (City) and the NEPA lead agency (USFWS) determined the HCP would require an EIS. Consistent with City and Port policy, every effort will be made during scoping to ensure all affected parties are notified and given opportunity to provide comment and feedback.

After the close of the draft EIS comment period, the lead agencies will determine and incorporate necessary modifications into the final EIS based on input received during the public review and comment period. The joint EIS is intended to comply with all provisions of NEPA and SEPA; however, each lead agency is ultimately responsible for ensuring compliance with its governing authorities and regulations.

1.4.2 State Growth Management Act

The GMA is a series of state statutes, first adopted in 1990, designed to address uncoordinated and unplanned growth, requiring fast-growing cities and counties to develop a comprehensive plan to manage their population growth (City of Tumwater 2016).

1.4.2.1 Overview of Requirements

The GMA puts specific requirements on local government land use planning. Each city and county subject to the GMA receives a targeted amount of job and housing growth from the state Office of Financial Management that it must plan to accommodate for over the next 20 years. In turn, each jurisdiction must show, in a comprehensive plan, that they have the land use capacity and development regulations to accommodate all the growth of their targeted amount. The GMA requires local governments to do the following.

- Develop county-wide planning policies that provide a framework for county and city comprehensive plans.

- Designate critical areas, agricultural lands, forest lands, and mineral resource lands and adopt regulations protecting these lands.
- Plan for urban growth by designating UGAs to be adopted by each county after consultation with individual municipalities.
- Adopt comprehensive plans that address land use, transportation, capital facilities, utilities, housing, economic development, parks and recreation, shorelines, and for counties rural land use and development.
- Adopt development regulations that carry out comprehensive plans.

1.4.2.2 Comprehensive Plans

The GMA establishes the City's *Comprehensive Plan* (City of Tumwater 2016) as the City centerpiece of local planning and articulates a series of goals, objectives, policies, actions, and standards that are intended to guide day-to-day decisions by elected officials and local government staff. At a minimum, comprehensive plans for cities subject to the GMA must include the following.

- Land use
- Transportation
- Capital facilities
- Utilities
- Housing
- Economic development
- Parks and recreation

While these elements are important, the land use element sets the direction of future growth in a community and usually includes a future land use map. The future land use map, which is policy-oriented, is then implemented consistent with the official zoning map, a regulatory tool.

Comprehensive plans must also address “essential public facilities” that are typically difficult to site, such as airport, educational, transportation, and correctional. Comprehensive plans also must be coordinated with adjacent and overlapping jurisdictions and must be updated every eight years, with optional annual or biannual updates.

1.4.2.3 State Critical Areas Regulations

Under the GMA, all cities and counties, even if they are not subject to comprehensive planning, are directed to designate natural resource lands, which are defined as agricultural, forest, and mineral resource lands of long-term commercial significance.

In addition, all cities and counties in Washington are also required to adopt critical areas regulations. As defined in Revised Code of Washington (RCW) 36.70A.030(5):

“Critical areas” include the following areas and ecosystems: (a) wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas.

Counties and cities are required to include the best available science in developing policies and development regulations to protect the functions and values of critical areas (RCW 36.70A.172).

1.4.3 State of Washington Codes for Protected Species

WDFW and its Commission oversees the listing and recovery of those species in danger of being lost in the State of Washington. Washington Administrative Code (WAC) 220-101-020 directs WDFW as the state agency with delegated legislative responsibility for preserving, protecting, perpetuating, and managing fish and wildlife in the lands and waters of the State of Washington, including offshore waters. The Revised Code of Washington (RCW) 77.04.012 identifies wildlife, fish, and shellfish within Washington as the property of the state and WDFW and the Commission as responsible for the conservation of said protected species. Within those codes is the directive to assess the status of species and list them accordingly as endangered, threatened, sensitive, candidates for listing or otherwise in the state. The covered species in this Plan are also state-listed species per WDFW (Table 1-1, *Proposed Covered Species*).

1.4.4 City of Tumwater Comprehensive Plan

The City's *Comprehensive Plan* (City of Tumwater 2016) provides an outline for managing the City's growth and investment decisions for the next 20 years. The City's *Comprehensive Plan* (2016) has been in existence for more than 40 years. The most recent update to the City's *Comprehensive Plan* (2016) addresses how the City's expected growth from 2016 to 2036 will affect land use, housing, lands for public purposes, parks and recreation, conservation, transportation, utilities, economic development, shorelines, and capital facilities. The City's *Comprehensive Plan* (2016) is described in more detail as it relates to this HCP in Chapter 2, *Physical Setting, Land Use, and Biological Resources*, and Chapter 3, *Covered Activities*.

1.4.4.1 Critical Area Regulations

The GMA requires all cities and counties in the state to identify and protect five types of environmentally sensitive areas, known as *critical areas* (Section 1.4.2.3, *State Critical Areas Regulations*). The Conservation Element of the City's *Comprehensive Plan* (City of Tumwater 2016) and the City's critical areas regulations were created to meet the GMA requirements to designate and protect critical areas. Critical area regulations updates are typically tied to the eight -year Comprehensive Plan update cycle, when updated guidance is issued by the state or in special cases, such as the HCP.

1.4.5 Tumwater Municipal Code

The Tumwater Municipal Code (TMC) is the collection of laws that are enacted and enforced by the City in matters of local concern. The TMC consists of 18 titles. These laws apply to the City of Tumwater only. Rules or laws are adopted by ordinance of the Tumwater City Council and codified (incorporated into the code) by Code Publishing, with oversight by the City Clerk. The TMC changes frequently through adoption of new ordinances or amendment ordinances. Current city code sections relevant to this HCP are provided in Appendix E, *Tumwater Municipal Code*.

1.4.5.1 Critical Area Ordinance (TMC 16.04.170)

The City of Tumwater conservation plan identifies and sets forth policy to protect critical areas. Critical areas include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas. Critical area regulations are updated on a regular basis and the city is engaged in regional climate change planning and actions, therefore these regulations are likely to be adjusted and improved, as needed to protect critical areas in step with a changing climate.

1.4.5.2 Wetland Protection Standards (TMC 16.28)

The City's wetland protection standards require site planning to avoid or minimize damage to wetlands wherever possible; to require that activities not dependent upon a wetland location be located at upland sites; and to achieve no net loss of wetlands by requiring restoration or enhancement of degraded wetlands or creation of new wetlands to offset losses that are unavoidable. Wetland buffer areas are also protected from development and degraded buffers are enhanced with native vegetation in accordance with wetland protection standards to ensure that wetland and buffer functions including water quality improvement, hydrologic support, and habitat are maintained in the city.

1.4.5.3 Fish and Wildlife Habitat Protection (TMC 16.32)

Fish and wildlife habitat that is protected in the city includes habitat areas where state or federally listed species including the covered species in this HCP have a primary association. Protected habitats also include Waters of the state as classified in Chapter 222-16 of the WAC and naturally occurring ponds under 20 acres and their submerged aquatic beds that provide habitat for Oregon spotted frogs and other aquatic species. Streams and stream buffers are protected from development and degraded buffers are enhanced with native vegetation in accordance with fish and wildlife habitat protection standards to ensure that stream habitat functions for salmonids, Oregon spotted frogs, and other aquatic species are maintained in the city.

1.4.5.4 Stormwater Systems (TMC 13.12)

The City of Tumwater Public Works director administers the city's stormwater management program in accordance with the City of Tumwater's 2018 Drainage Design and Erosion Control Manual, revised July 2022. Best management practices (BMPs) for stormwater management are reviewed periodically to make improvements in stormwater management, erosion control and treatment techniques. All developments and public works projects in the city must comply with requirements described in Tumwater's Drainage Design and Erosion Control Manual to protect aquatic resources in the city including wetlands and streams that provide habitat for Oregon spotted frogs. Since this manual is updated on a regular basis with support from the state and the city is engaged in regional climate change planning and actions, stormwater management requirements will continue to be adjusted and improved, as needed to protect aquatic resources even as temperature and rainfall patterns change.

1.4.6 Port of Olympia Comprehensive Scheme

The Port's *Comprehensive Scheme of Harbor Improvements* (Port of Olympia 2017a) is the Port's primary planning document and is required by state law. The current *Comprehensive Scheme* (2017) consists of the following planning documents.

- *Comprehensive Scheme of Harbor Improvements* (Port of Olympia 2017a) includes maps of the Port properties, depicting the Port's Use Districts as described in the Port's *Development Guidelines*, as well as a general description of anticipated future projects.
- *Development Guidelines* (Port of Olympia 2017b) provides detailed information on existing properties and long-range plans for development within the Port's Use Districts. The Port *Development Guidelines* (2017) contain the intended uses, design standards, and other information for all properties.
- The *Comprehensive Scheme* (2017) includes planning for the Airport- and Port-owned properties in the City, both of which occur within the Plan Area, and outlines future development plans for those properties.

1.5 Other Habitat Conservation Plans in the Plan Area

1.5.1 Thurston County HCP

The Thurston County HCP, approved by USFWS in July 2022 with plans for implementation starting in 2023, is intended to provide predictability for the next 30 years of development in unincorporated areas of Thurston County (Thurston County 2022). Conservation measures in the Thurston County HCP will contribute to the conservation of rare, threatened, and endangered species by establishing and managing a system of conservation lands that assist in the recovery of the species covered by the HCP.

The Plan Area for the Thurston County HCP (2022) encompasses the entire Plan Area of the Bush Prairie HCP outside all City limits. The Permit Area for the Thurston County HCP is proposed to include lands over which Thurston County has permitting authority and within which the covered activities will occur—approximately 412,228 acres. The Thurston County HCP covers five species or subspecies listed as threatened or endangered under the ESA and the state of Washington, and one species listed as endangered by the state. Three of the species proposed for coverage by the Bush Prairie HCP are also covered by the Thurston County HCP: Olympia pocket gopher, Oregon spotted frog, and Oregon vesper sparrow.

1.5.2 Project HCPs in the City of Tumwater

Within the City's Permit Area, eight HCPs provide incidental take authorization for specific projects. These project HCPs range in size, species covered, and conservation strategies (Table 1-2, *Current and Proposed Project HCPs in the Plan Area*), and mitigation ratios for each HCP were not consistent between HCPs. The primary reason these project-level HCPs have been written is to obtain incidental take authorization for Olympia pocket gopher, although in some cases other species are also covered. Notably, these HCP projects were not conducted by the City of Tumwater, but by

private entities, including real estate developers, construction companies, and energy utility companies (Table 1-2, *Current and Proposed Project HCPs in the Plan Area*). Conservation area acres include areas in Thurston County that are outside of the Permit Area (all are within the Plan Area).

Table 1-2. Current and Proposed Project HCPs in the Plan Area

HCP	Project Site Size (acres) ^a	ITP Issued (year)	Permit Term (years)	Covered Species	Conservation Area (acres)
Tumwater Operations & Maintenance Facility	26.2	In review	10	Olympia pocket gopher	8.6 acres of credit from Kaufman
Tumwater East and West	83.7	2021	20	Olympia pocket gopher	67.5
Puget Sound Energy	Maintenance of Electric and Natural Gas Systems	2020	5	Olympia, Tenino, and Yelm pocket gophers, Taylor's checkerspot butterfly	71.4
Capitol Blvd	3	2019	5	Olympia pocket gopher	0.8 acres of credit from Kaufman
Preserve	127	2018	15	Olympia pocket gopher, Oregon spotted frog	64.6
Mclain	8.2	2017	2	Olympia pocket gopher	1.0
Kaufman	204	2016	20	Olympia and Yelm pocket gophers, streaked horned lark, Taylor's checkerspot butterfly	87.5
Meier HCP	6.4	2015	5	Olympia pocket gopher	2.5

^a Site size is not indicative of actual impacts authorized under each HCP and associated permits. In all cases actual species habitat acres affected were less than those shown in this column.

1.6 Overview of Planning Process

This section describes the process used to develop the HCP, which includes the structure of the planning process and how public input was incorporated.

1.6.1 Structure of the Planning Process

The development of this HCP was overseen and directed by a management team comprised of staff from the City and the Port, working with consultants to write the Plan. The management team generally met monthly to discuss Plan content and progress toward permitting.

The management team met regularly with USFWS to discuss the Plan. These meetings were an opportunity for USFWS to share the latest information about covered species with the management team. In turn, the management team shared working draft chapters of the HCP with USFWS staff for review and comment. These discussions and the outcomes of these meetings provided the basis for much of the analyses in the Plan.

1.6.2 Public Outreach and Involvement

A public stakeholder group was established in 2016 to share information with the public on the content of the Bush Prairie HCP and progress toward its completion. Stakeholders provided input on Plan development and in turn, kept their constituencies informed about the Plan. The stakeholder group met five times from 2016 to 2021. See Appendix D, *Stakeholders*, for a list of stakeholders involved in this process.

In addition to stakeholder meetings, two public meetings were held where the public at large was invited to learn about the process and provide feedback on the Plan during its development. In early 2019, a Public Participation Plan was developed that outlined the project team's approach to ensuring robust public involvement.

1.7 Document Organization

The Plan and supporting information are presented in the chapters and appendices listed below.

- Chapter 1, *Introduction*, discusses the background, purpose, and objectives of the Plan; reviews the regulatory setting; and summarizes the planning process.
- Chapter 2, *Physical Setting, Land Use, and Biological Resources*, describes the existing conditions of the Plan Area relevant to the Plan.
- Chapter 3, *Covered Activities*, describes the activities covered by the Plan.
- Chapter 4, *Effects Analysis*, presents the biological effects and take assessment associated with the covered activities.
- Chapter 5, *Conservation Strategy*, summarizes the conservation strategy and describes the specific conservation actions to mitigate the impacts of the covered activities. The chapter also describes the specific surveys and other actions required of all covered activities to avoid and minimize impacts on covered species, consistent with federal and state regulations.
- Chapter 6, *Monitoring and Adaptive Management*, describes the monitoring and adaptive management program.
- Chapter 7, *Implementation*, details the administrative requirements associated with Plan implementation and the roles and responsibilities of the ITP holders and USFWS.

- Chapter 8, *Costs and Funding*, outlines the costs associated with Plan implementation and the funding sources proposed to pay the costs.
- Chapter 9, *Alternatives to Take*, describes the alternatives the Permittees considered to the proposed HCP and the reasons those alternatives were not selected.
- Chapter 10, *List of Preparers and Literature Cited*, identifies the individuals involved in preparation of this document and includes a comprehensive bibliography of references cited in the text.
- Appendix A, *Glossary*, is a list of terms, as well as their definitions, used in this document.
- Appendix B, *Species Considered for Coverage*, contains a table showing species considered for coverage by the HCP and the selection criteria used to determine whether to include them.
- Appendix C, *Protecting Historical and Cultural Resources*, outlines the Permittees process for protecting historical and cultural resources.
- Appendix D, *Stakeholders*, contains a table of organizations and individuals who provided input on the Plan development.
- Appendix E, *Tumwater Municipal Code 16 Environment*, this appendix details TMC 16, Environmental, which outlines the process for complying with environmental regulations and protecting environmental resources.
- Appendix F, *Streaked Horned Lark Memorandum*, details the streaked horned lark interim strategy for development at the airport and compliance with the Stay Ahead Provision.
- Appendix G, *Oregon Spotted Frog Habitat Screen*, describes the criteria for determining whether a covered activity occurs within Oregon spotted frog habitat.

Chapter 2

Physical Setting, Land Use, and Biological Resources

2.1 Introduction

This chapter presents an overview of the physical and biological setting of the Plan Area. It describes the baseline physical and biological conditions upon which the effects analysis (Chapter 4, *Effects Analysis*) and conservation strategy (Chapter 5, *Conservation Strategy*) are based.

The chapter also describes how existing species occurrence data, habitat mapping, and recent aerial imagery were used to create the baseline inventory for each of the covered species and details how land cover types, natural disturbances, and current management of the land are interrelated, providing context for the proposed management of mitigation sites described in Chapter 5, *Conservation Strategy*. Section 2.5, *Land Cover Types*, identifies the methods used to classify, review, and map the land cover of the Plan Area. The biological setting of the Plan Area is described in terms of the covered species' ecology, distribution, and land cover type.

The analysis presented in this chapter uses the best available information. The analysis relies primarily on predictive habitat models that are informed by the results of available species occupancy surveys. The analysis is not determinative on whether listed species or suitable habitat are in fact present on any specific site.

Because of the size, the analysis presented in this chapter excludes the approximate 1.5-million-acre Permit Area for Streaked Horned Lark Conservation Only.

2.2 Physical Setting

2.2.1 Location and Geography

The northern edge of the City is located at the delta of the Deschutes River, where it connects to the southern tip of Puget Sound at the junction of Interstate 5 (I-5) and Highway 101. The City lies between the Deschutes River to the east and Black Lake to the west. The City is the southern entry point to Puget Sound's major metropolitan areas that span several counties from Thurston and Pierce to King and Snohomish, along the I-5 corridor, and include the cities of Olympia, Tacoma, and Seattle (Figure 1-1, *Regional Location*). The Port properties are in the southern portion of the City.

The City is contiguous with the City of Olympia to the north and northeast and with unincorporated Thurston County to the south, east, and west, and it stretches for approximately 6 miles from north to south. Some portions of the City are still developing from rural to urban land uses, particularly to the south and west where less developed areas are interspersed with typical urban land uses. The area of the City limits and associated UGA is approximately 17.70 square miles or 12,877 acres.

2.2.2 South Puget Trough Prairies

Historically, the South Puget Trough prairies covered approximately 150,000 acres, mostly in Pierce and Thurston Counties (U.S. Department of Agriculture 2018). A large prairie called “Bush Prairie” once covered a contiguous area in the Plan Area, overlapping what are now mostly urban areas and most of the Airport (Figure 2-1, *Historical Prairie Habitat in the Plan Area*). Throughout the region, South Puget Sound prairies, which were maintained by Native American land management practices, have mostly disappeared due to urbanization, agriculture, maintenance at the Airport, and encroachment of woody plants. This has resulted in the loss of 90% of native prairies in the region (U.S. Department of Agriculture 2018).

Along with the declining quantity, the quality of the remaining prairies has declined over the last 150 years. Of the remaining prairies in western Washington, only 3% of prairies are dominated by native prairie species (Dunwiddie and Bakker 2011). There are several reasons for the decline in prairie habitat quality, including reduced fire frequency on prairie ecosystems, encroachment from woody species, and conversion to nonnative plant species. Urban development and agriculture have also played significant roles in habitat degradation (Crawford and Hall 1997); however, agriculture has maintained open space on which prairie restoration is often practical. Prairie management, including restoring degraded prairies to high-quality native prairies, has been successfully implemented on some sites in the South Puget Trough prairie ecosystem. Loss of high quality native prairie does not have to be permanent.

2.2.3 Topography and Geology

The topography of the Plan Area is generally a flat, glacial plain at the southern extent of the Puget Sound Basin, surrounded by rolling hills. Elevation in the Plan Area ranges between 150 and 250 feet above sea level. The Plan Area is located in the geologic area known as the Puget Trough. The Puget Trough is bordered to the west by the Olympic Mountains and to the east by the Cascade Mountains. Most of the geology and soils in the Plan Area can be attributed to the deposition and erosion caused by several past glaciations and the advance and retreat of the Vashon glacier. These actions left behind coarse, well-drained, sandy glacial outwash soils. Glacial drift, till, and outwash are found in most of the low-elevation areas in Thurston County. Covered species predominantly occur in the low-elevation, flat to rolling terrain of the Plan Area.

2.2.4 Soils

The Natural Resources Conservation Service (NRCS) lists over 100 soil types and subtypes in Thurston County. NRCS also identifies soil types associated with prairie vegetation (Natural Resources Conservation Service 2018). USFWS has identified soil types where Olympia pocket gophers (*Thomomys mazama pugetensis*) are commonly found and divided all suitable Olympia pocket gopher soils into *more-preferred* and *less-preferred* (U.S. Fish and Wildlife Service 2018) (Table 2-1, *Soils in the Plan Area and Permit Area* and Figure 2-2, *Soils*). More-preferred Olympia pocket gopher soils are found on most sites where Olympia pocket gophers were detected during opportunistic surveys. An estimated 7,120 acres of more preferred gopher soils and 3,010 acres of less preferred gopher soils occur within the permit area.

Most of the land with more and less preferred soils that is also occupied by the Olympia pocket gopher is found within the permit area, with significantly fewer acres of more and less preferred soils occupied by gophers in the permit area for conservation only. Since the permit area is also

where the covered activities will occur, there will be significant challenges during HCP implementation in meeting the criteria of the reserve design since all lands dedicated to Olympia pocket gopher conservation must be occupied by gophers.

Table 2-1. Soils in the Plan Area and Permit Area

Soil Type	Permit Area (acres)	Permit Area for Conservation Only (acres)	Plan Area (acres)
More Preferred Soils			
Cagey Loamy Sand, 0 to 3% Slopes	2,111	1,152	3,263
Indianola Loamy Sand, 0 to 3% Slopes	1,361	776	2,137
Nisqually Loamy Fine sand, 0 to 3% slopes	3,627	353	3,980
Spanaway Gravelly Sandy Loam, 0 to 3% Slopes	21	303	325
Spanaway Gravelly Sandy Loam, 3 to 15% Slopes	0	5	5
Spanaway-Nisqually Complex, 2 to 10% Slopes	0	67	67
<i>Subtotal</i>	<i>7,120</i>	<i>2,656</i>	<i>9,776</i>
Less Preferred Soils			
Alderwood Gravelly Sandy Loam, 0 to 3% Slopes	173	224	397
Alderwood Gravelly Sandy Loam, 3 to 15% Slopes	318	1,314	1,631
Everett Very Gravelly Sandy Loam, 0 to 3% Slopes	852	2,029	2,881
Everett Very Gravelly Sandy Loam, 3 to 15% Slopes	171	1,519	1,689
Indianola Loamy Sand, 3 to 15% Slopes	378	65	443
Kapowsin Silt Loam, 3 to 15% Slopes	108	44	152
McKenna Gravelly Silt Loam, 0 to 5% Slopes	160	502	662
Norma Fine Sandy Loam	43	838	881
Norma Silt Loam	701	1,510	2,211
Spana Gravelly Loam	10	0	10
Yelm Fine Sandy Loam, 0 to 3% slopes	61	590	651
Yelm Fine Sandy Loam, 3 to 15% Slopes	36	95	131
<i>Subtotal</i>	<i>3,010</i>	<i>8,729</i>	<i>11,739</i>
Totals	10,130	11,385	21,515

2.2.5 Hydrology and Wetlands

The Plan Area falls within the Upper Chehalis Watershed and the Deschutes Watershed. The Deschutes Watershed drains directly into the Puget Sound, while the Upper Chehalis Watershed drains to Grays Harbor to the southwest. Major rivers include the Black and Deschutes Rivers (Figure 2-3, *Hydrology*). The hydrology of the Plan Area was shaped by historic glaciation. Approximately 10,000 years ago, glaciation events, including the Vashon glacier, gouged out drainages that make up many of today's wetlands, lakebeds, river channels, and flat lowlands. Glacial scour created kettle depressions and lakes, and meltwater from the receding glacier filled many of these features. Areas of glacial outwash are well drained and do not hold groundwater well. Because glacial outwash is so well drained, the prairie habitat found in those areas often experiences drought conditions during the summer months, supporting the historical fire regimes often implemented by Native Americans. Some prairies contain depressional areas with a seasonally high water table (i.e., wet prairies). These low-lying areas are wetter than most upland prairies, but may still burn during periods of droughts. This has helped to maintain native plant communities and limit the encroachment of woody plants.

There are several wetlands located throughout the Plan Area. The largest contiguous area of wetlands is in the western portion of the Plan Area along the Black River and around Black Lake. Wetlands can also be found along the Deschutes River as well as scattered throughout the Plan Area adjacent to various tributaries of these rivers and other aquatic features. Before the federal Clean Water Act and local regulations were in place to protect wetlands, wetlands in the City were drained and filled for agricultural uses and urban development. Now wetlands are protected by City, state, and federal regulations.

2.2.6 Climate

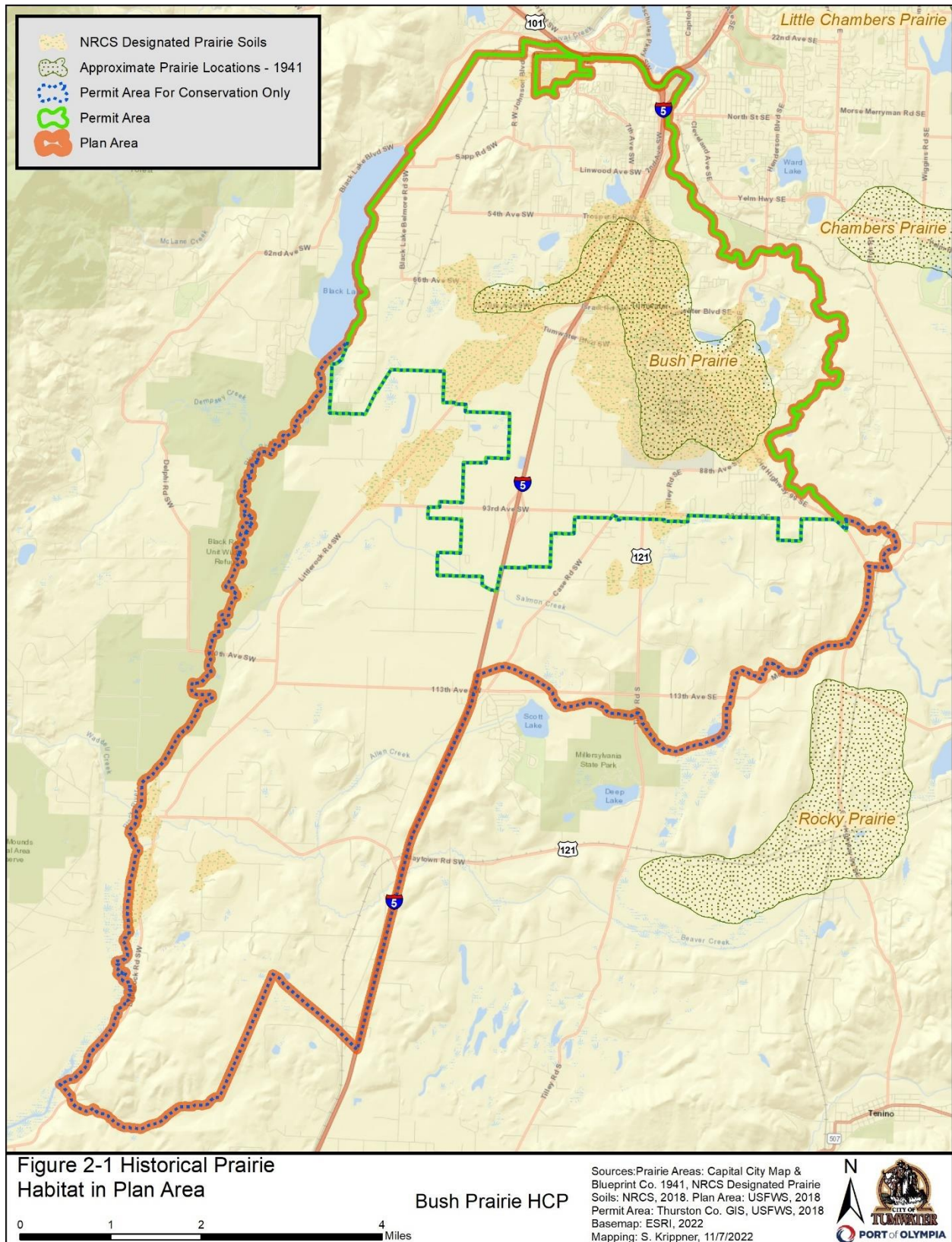
The average precipitation in the City is approximately 50 inches per year. The area experiences cool, wet, winters and mild to warm summers. The warmest and driest months generally occur in July and August, with December and January generally the coldest months and November through February generally receiving the greatest amount of precipitation. The average maximum temperature is 60.3 degrees Fahrenheit (°F) and the average minimum temperature is 39.6°F (Western Regional Climate Center 2015). These climatic factors contribute to a vegetation growing season that slows through the summer, as temperatures increase and moisture decreases, with growth resuming for a short time in late summer/early autumn.

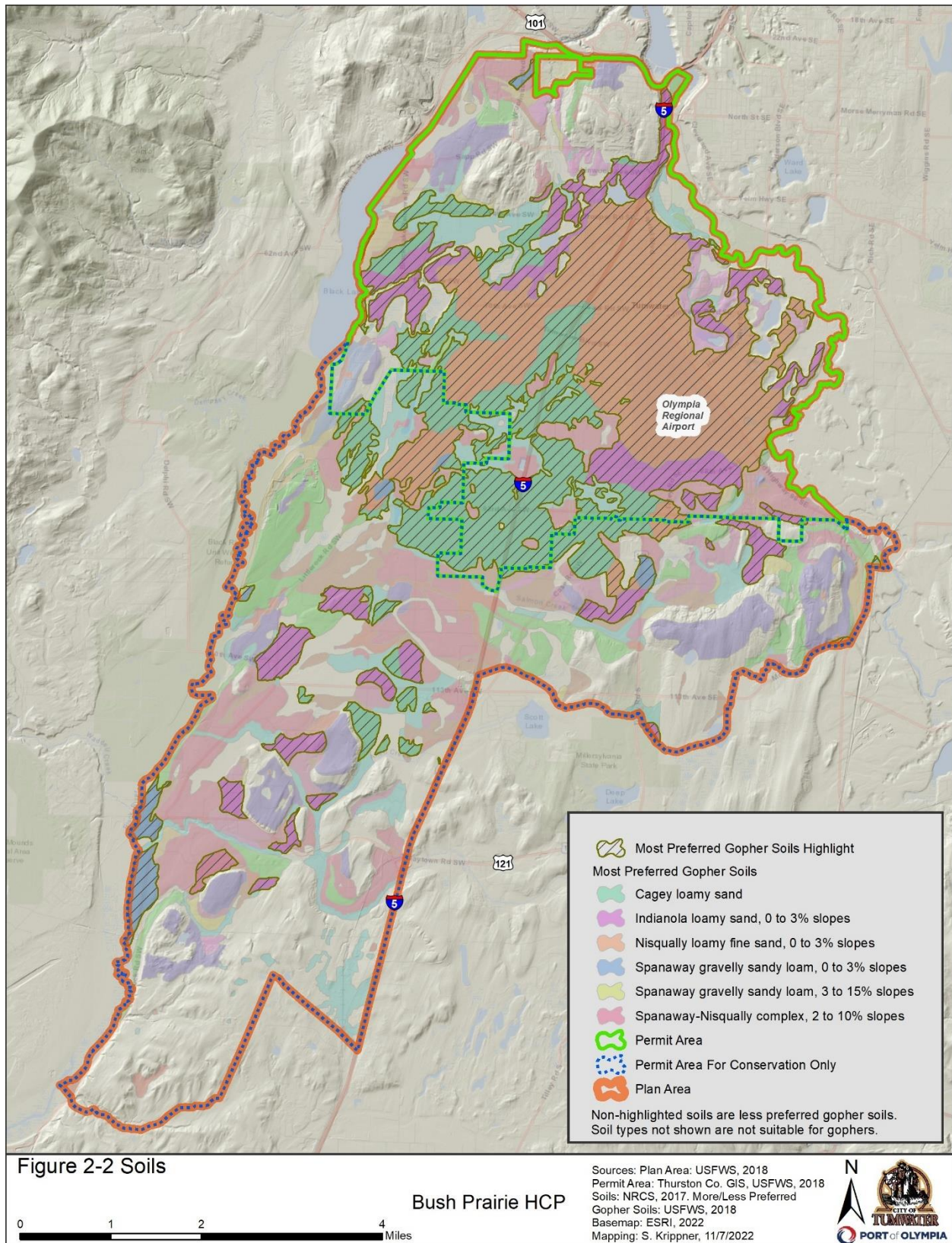
Climate change in the Puget Sound region during the permit term is projected to result in higher temperatures with lower precipitation in summer and more intense rainfall events with higher precipitation in winter. According to the University of Washington's Climate Impacts Group, in all years since 1900, above average annual air temperatures in the Puget Sound region were reached in all but 6 years from 1980 to 2014 (Mauer et al. 2015). By the 2050s (2040-2069), near the end of the ITP term, average annual air temperatures in the Puget Sound region are projected to increase by approximately 3°F to 7°F relative to 1970-1999, with extreme heat events becoming more common (Mauer et al. 2015). The predicted warming will be outside of the range of historical variation by 2050 will result in a longer growing season and earlier onset of spring growth.

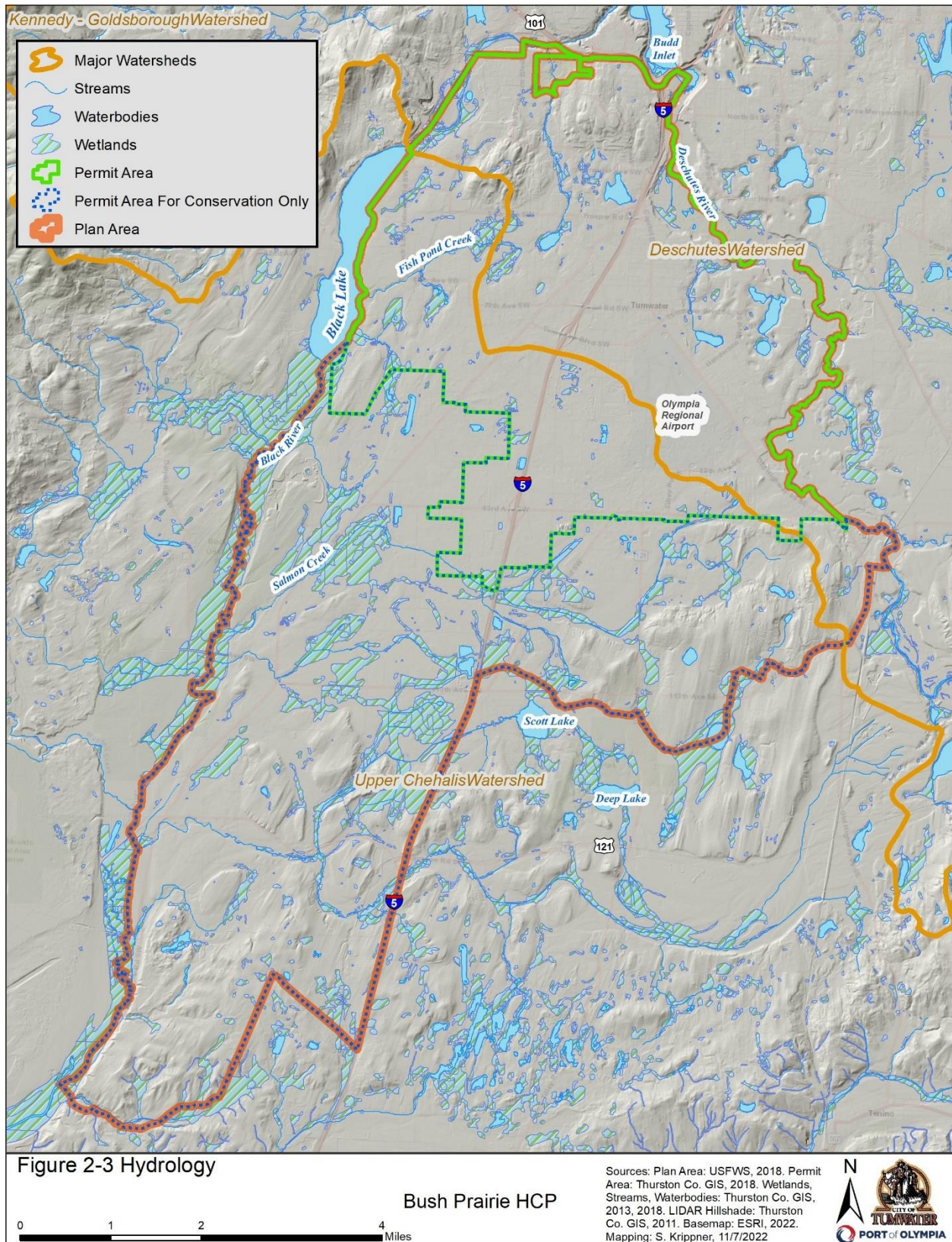
Oregon spotted frogs are likely to be more sensitive to climate changes than the other covered species because they depend upon persistent wetlands for breeding and shelter. Increasing summer drought may cause wetland habitats that support Oregon spotted frogs to dry out sooner, increasing

the risk of desiccation and/or reducing habitat areas available for breeding and metamorphosis. Summer drought could also result in increased predation risk if predators such as bullfrogs are concentrated in a smaller area, and warmer, longer summer seasons may also allow predators to reach larger body sizes, putting even adult frogs at greater risk of predation (Washington Department of Fish and Wildlife 2022). More intense winter storm events resulting in extreme flooding also pose a risk to frogs during the breeding season if their eggs are lost due to sudden high-water levels or exposed to air following a flood event. Actual climate effects will depend upon site specific conditions. At some sites wetlands may increase in size due to increases in winter precipitation (Mauer et al. 2015). This change could benefit Oregon spotted frogs.

Dryland prairie habitat that supports the other covered species, Olympia pocket gopher, streaked horned lark, and Oregon vesper sparrow, could be negatively affected by climate change if precipitation changes promote the spread of invasive plants or decline of native plants. Summer drought and heat stress can also affect animal behavior and be detrimental to individual animals. For instance, streaked horned larks have been documented foraging in shade and using wings to shade nests during warm periods, and heat events have interrupted the breeding season in other states (Washington Department of Fish and Wildlife 2022). The timing of insect prey and seed production may change (Mauer et al. 2015) and be less predictable and less productive for Oregon vesper sparrow and streaked horned lark. The quantity and quality of forage plants for Olympia pocket gophers may decline during summer droughts, and gophers may have trouble burrowing in very dry soils (Washington Department of Fish and Wildlife 2022). While increased fire risk and drought in summer could be beneficial to the covered species by maintaining prairie habitats (Mauer et al. 2015), conservation lands will already be managed as prairie habitat and fires beyond those that are done for site restoration and management are unlikely to provide additional benefits to these species. In addition, unplanned fires can disrupt nesting for birds.







2.3 Zoning

2.3.1 Zoning Categories

Future land use for the City⁷ is established by the *Comprehensive Plan* (City of Tumwater 2016) and applied in the Tumwater Municipal Code, Title 18 (2021).

Within the Permit Area, existing zoning is distributed in the following zone districts (Figure 2-4, *Zone Districts*).

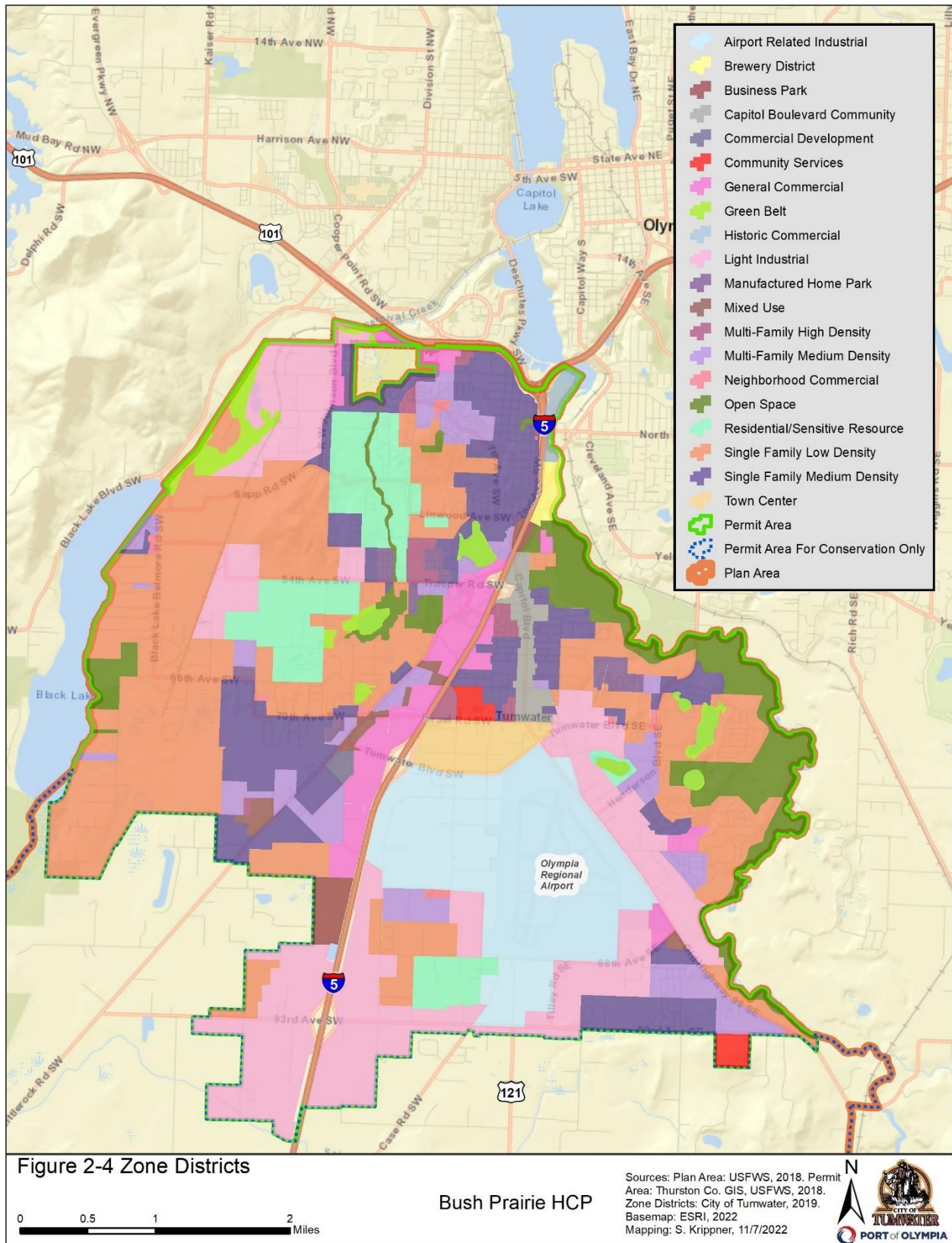
- *Airport Related Industry*: 1,459 acres (12%)—The purpose of the Airport Related Industry zone district is to regulate the use and development of land at or near the Airport to ensure that such uses are compatible with the operation of the Airport and with neighboring residential uses. The use restrictions are designed to make the land available for industrial uses, aviation, office, and commercial development.
- *Brewery District*: 40 acres (0.3%)—The purpose of the Brewery District zone district is to provide design and development standards to transform the brewery district from a largely auto-oriented commercial node into a lively, walkable, and economically vibrant neighborhood center. It would include a mixture of housing and neighborhood-serving businesses in accordance with the goals and objectives of the *Brewery District Plan* (City of Tumwater 2014a).
- *Capitol Boulevard Community*: 141 acres (1%) —The Capitol Boulevard Community zone district provides for a broad spectrum of compatible, mutually supporting uses in close proximity. The district is expected to incrementally change from strip commercial development and other low-intensity or non-pedestrian-oriented uses into a mixed-use, pedestrian-, auto-, and transit-oriented corridor in accordance with the goals and objectives of the *Capitol Boulevard Corridor Plan* (City of Tumwater 2014b).
- *Community Services*: 78 acres (1%) —The purpose of the Community Services zone district is to establish and preserve areas for community services, which are needed to serve the residents of the City, Thurston County, and the state. It is desirable for development to occur in a campus-like setting, using greenbelts, walkways, shared parking facilities, and mutual pedestrian and traffic access easements. Development should be oriented to create convenient pedestrian and transit access.
- *General Commercial*: 499 acres (4%)—The General Commercial zone district provides for those commercial uses and activities, which are dependent on convenient vehicular access and discourages extension of “strip” development by filling in available space in areas where substantial auto-oriented commercial development already exists.
- *Greenbelt*: 275 acres (2%)—The Greenbelt zone district is intended to ensure that certain areas of the City that are characterized by environmental sensitivity and value be preserved, for the most part, in their original undisturbed state.
- *Historic Commercial*: 43 acres (0.3%)—The Historic Commercial zone district is created to help preserve the character of the built environment of the Tumwater historic district, as it once

⁷ Zoning districts within the City UGA also include Business Center and Commercial Development as well as Heavy Industrial, which is located outside of the Permit Area.

existed. Development in this district should be consistent with the goals and general land use plan set forth in the *New Market Historic District Master Plan* (City of Tumwater 1993).

- *Light Industry*: 2,171 acres (17%)—The intent of the Light Industrial zone district is to establish and preserve areas for industrial uses and to make provisions for certain kinds of commercial uses that are most appropriately located as neighbors of industrial uses, or that are necessary to service immediate needs of people in these areas.
- *Manufactured Home Park*: 122 acres (1%)—The Manufactured Home Park zone district is established to promote residential development that is high-density, single-family in character and developed to offer a choice in land tenancy. The MHP zone district is intended to provide sufficient land for manufactured homes in manufactured home parks.
- *Mixed Use*: 95 acres (1%)—The Mixed Use zone district supports the goals of the *Comprehensive Plan* that call for a mixture of transit-oriented and pedestrian-friendly commercial and residential uses in close proximity.
- *Multifamily High Density Residential*: 117 acres (1%)—The intent of the Multifamily High Density Residential zone district is to provide a high standard of development for multifamily residential areas of high density and provide designated areas in which a minimum net density of 14 units per acre and a maximum net density of 29 units per acre apply to promote the efficient use of land and promote mass transit opportunities.
- *Multifamily Medium Density Residential*: 693 acres (5%)—The intent of the Multifamily Medium Density Residential zone district is to provide a high standard of development for residential areas of medium density including both single-family and multifamily housing and provide designated areas in which a minimum net density of nine units per acre and a maximum net density of 15 units per acre apply to promote the efficient use of land.
- *Neighborhood Commercial*: 38 acres (0.3%)—The intent of the Neighborhood Commercial zone district is to establish and preserve areas suitable for transitional uses between more intensive commercial activities and residential uses. The uses are intended to be those that provide professional and personal services, and general retail sales that generate small numbers of people and small volumes of traffic.
- *Open Space*: 824 acres (6%)—It is the intent of the Open Space zone district to be open space in the City that is of an institutional nature such as parks for active and passive recreation, cemeteries, and golf courses and to provide opportunities for joint usage of facilities such as stormwater retention/detention ponds and conveyance facilities and wellfields.
- *Residential/Sensitive Resource*: 774 acres (6%)—The intent of the Residential/Sensitive Resource zone district is to accommodate and establish low-density residential neighborhoods in a manner that is compatible with areas of unique open space character and environmental sensitivity.
- *Single-Family Low Density Residential*: 3,365 acres (27%)—The intent of the Single-Family Low Density Residential zone district is to preserve and establish peaceful low-density neighborhoods in which owner-occupied single-family structures are the dominant form of dwelling unit and provide designated areas in which a minimum net density of four units per acre and a maximum net density of seven units per acre apply to promote the efficient use of land.

- *Single-Family Medium Density Residential*: 1,523 acres (12%)—The intent of the Single-Family Medium Density Residential zone district is to provide for a high standard of development for residential areas of moderate density in which single-family housing is the primary form of development and provide designated areas in which a minimum net density of six units per acre and a maximum net density of nine units per acre apply to promote the efficient use of land.
- *Town Center*: 205 acres (2%)—The intent of the Town Center zone district is to create a mixed-use, urban density, transit-supported town center. The area should consist of multistory buildings oriented to create convenient pedestrian and transit access. Use of public gathering areas, shared parking facilities, and public walkways that connect uses within the town center are envisioned.



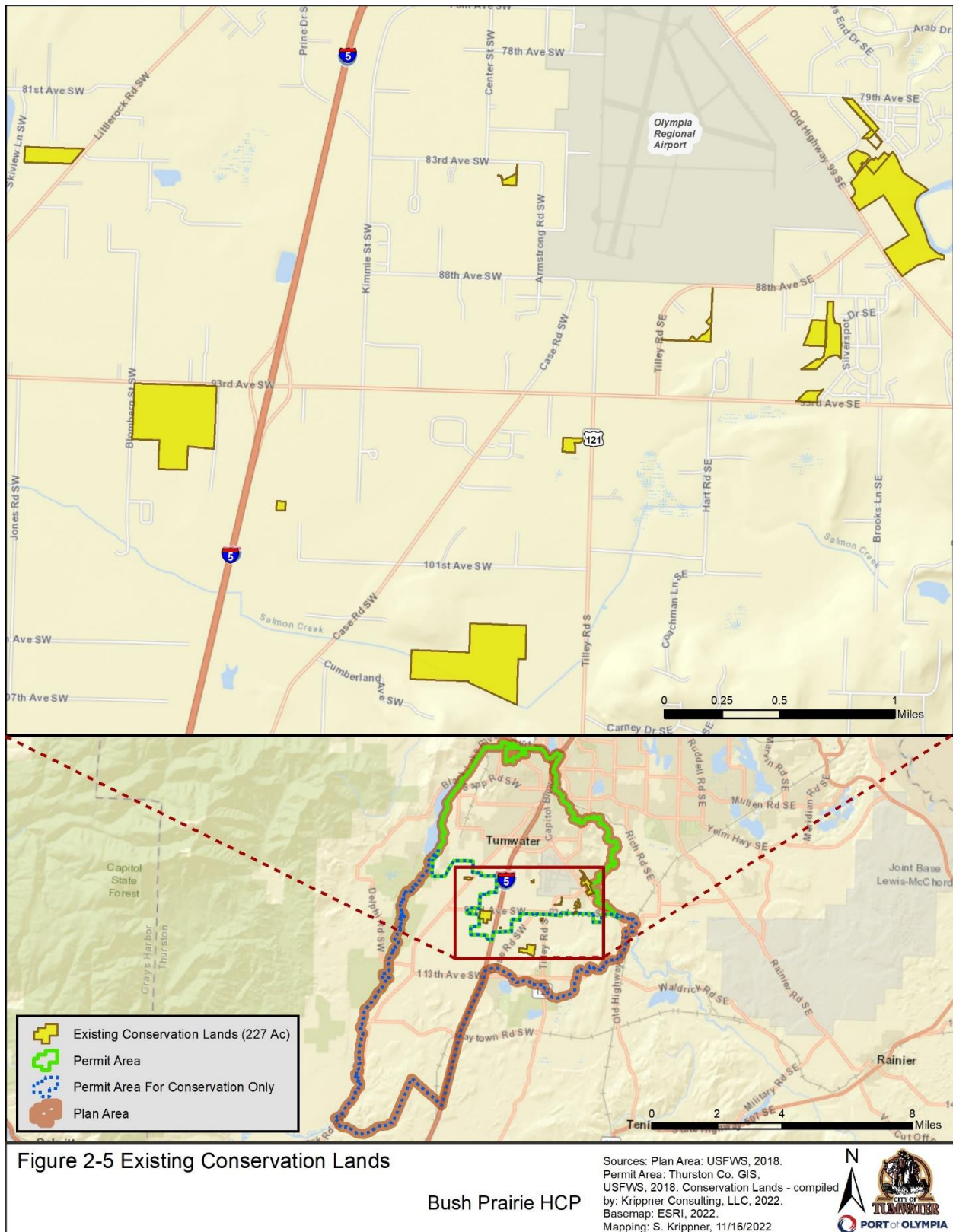
2.3.2 Conservation Lands

Conservation lands in the Plan Area currently provide mitigation for past and existing projects for impacts on, or advanced mitigation for future projects for, the following covered species: Olympia pocket gopher, streaked horned lark (*Eremophila alpestris strigata*), and Oregon spotted frog (*Rana pretiosa*). Within the Plan Area, there are approximately 202.5 acres of conservation lands under protection to provide mitigation for the Olympia pocket gopher. These lands are protected through various means, including the following.

- Conservation easements on private lands (3.5 acres).
- Habitat set-asides (31 acres), which are lands under legal protection set aside by the landowner for conservation and protection and approved by WDFW and/or the local jurisdiction (City or Thurston County).
- Areas approved by USFWS through HCPs as permanent conservation areas (168 acres) for the Olympia pocket gopher (Figure 2-5, *Existing Conservation Lands*).

Collectively, these conservation areas provide important habitat for the Olympia pocket gopher. While these lands are dedicated to conservation of Olympia pocket gopher, some are too degraded or isolated to maintain biological function for the subspecies.

One of the permanent conservation areas dedicated to providing habitat for Olympia pocket gophers is also being managed to provide up to 51 acres of habitat for the streaked horned lark. Another conservation area has an additional 25 acres of habitat that is occupied by and is being managed for the Oregon spotted frog, raising the total number of conservation acres that provide mitigation for covered species in the Plan Area to 227.5 acres. While there is no intention to include these existing conservation lands in the reserve system for this HCP, their presence should help to support long term conservation of the covered species in the Plan Area on the reserve lands that are secured and managed for this HCP.



2.4 Growth Management Act

As described in Section 1.4.2, *State Growth Management Act*, the GMA is a series of state statutes first adopted in 1990, designed to prevent uncoordinated and unplanned growth, requiring fast-growing cities and counties to develop a comprehensive plan to manage their population growth (City of Tumwater 2016).

2.4.1 Population Projections

Since the 1960s, Thurston County has been one of the fastest-growing areas in Washington, consistently exceeding the state's overall rate of growth. The state Office of Financial Management and the Thurston Regional Planning Council (TRPC) have estimated that 370,600 people will live in Thurston County by the year 2035. This is a 39% increase over the 2015 population of 267,400 (City of Tumwater 2016). The City's population in 2002 was 12,730, while today it is approximately 26,050 residents (2021), an increase of 105%. This increase was due to both new development and annexations of areas of the county set aside for urban growth. The City's population is expected to increase 33% to 34,680 by 2035.

The GMA requires the City to identify and plan for 20 years of population growth. An important part of this equation is providing sufficient land area to accommodate adequate housing for people expected to live in the City over that time. From 1991 to January 1, 2016, housing units in the City increased from 4,691 to 8,680 (City of Tumwater 2016). This amounts to a doubling of housing units and annexations of areas of the county set aside for urban growth over the 25-year period. For the purposes of this HCP, these trends are assumed to continue through the requested 30-year permit term.

2.4.2 Urban Growth Area

UGAs are mandated through the GMA (Section 1.4.2, *State Growth Management Act*). The City's UGA is a regional border in Thurston County that helps control urban sprawl by keeping higher-density development within its boundaries. The City's UGA spans from the east side of Black Lake to the Deschutes River, is bounded by the City of Olympia on the north side, and continues south to roughly 93rd Avenue SW.

City jurisdictional boundaries and the City's UGA are not coextensive. In 2015, population within the unincorporated portion of the City's UGA was approximately 3,250 people and the population is expected to increase to 8,200 by the year 2035, an increase of 152%. Urban development tends to concentrate first within the City proper, with development gradually intensifying in the unincorporated UGA. For the purposes of this HCP, these trends are assumed to continue through the requested 30-year permit term. Any growth or expansion in the UGA would likely be to the Southeast.

2.5 Land Cover Types

One of the primary data sources for this HCP is a detailed geographic information system (GIS)-based map of land cover types within the Plan Area. A *land cover type* is defined as the dominant character of the land surface discernible from aerial photographs, as determined by vegetation,

water, or human uses. Land cover types are widely used units in analyzing natural communities and covered species habitat. Though not a substitute for a survey, land cover types are an indicator of habitat suitability.

It is important for the effects analysis and the conservation strategy to not only know where species are known to occur in the Plan Area, but also where they are likely to occur based on the suitability of habitat. One primary factor influencing whether covered species are present in an area is whether the land cover is suitable and whether it can provide habitat. Significant to this determination are factors such as competitor species, food sources, shelter, habitat connectivity, mating opportunities, and predator presence.

2.5.1 Methods

Land cover classes were derived from 3-inch pixel⁸ 2018 aerial photos for the City UGA. A combination of the open source Semi-Automatic Image Classification plugin for QGIS, the Normalized Difference Vegetation Index (NDVI), and manual mapping was used to derive the following four cover types, each of which is described in more detail in the next section.

1. *Tree cover over 30%* is defined as vegetated areas with at least 30% aerial cover of tree canopy.
2. *Grass/shrub areas* are defined as vegetated areas with no trees or tree cover up to 30%. Grass/shrub may be dominated by grasses, shrubs, or a mix of grass, forbs⁹, and shrubs.
3. *Developed areas* include roads, buildings, parking lots, and any other areas of impervious or paved surfaces, devoid of vegetation.
4. *Water* is defined as permanent waterbodies that do not dry out at any time. Permanent waterbodies include lakes, ponds, rivers, and wetlands.

First, delineated training samples for the four land cover types were used to inform the classification algorithm. The automated process assigned each pixel to the nearest class based on its aerial photo signature. After the initial classification, the following issues were identified and resolved.

- Due to the high resolution of the images, features such as trees or buildings were often made up of hundreds of pixels, providing a wide range of signatures for a single feature. To reduce the level of noise, image resolution was downgraded to 25% of the original size (12-inch or 1-foot square pixels). This allowed a better match of a single cover type for a given feature. A 12-inch square (3.5 by 3.5) pixel equals 0.0000056 acre.
- Isolated pixels were sometimes inappropriately placed within other classes. To better group like pixels together (e.g., an area with more than 30% canopy cover), a *nearest neighbor* analysis was performed giving isolated pixels the value of the majority of their neighbors.
- The image classification method identifies where trees are present, and where they are not, with the nearest neighbor approach allows for an averaging of pixels and their nearest neighbors to derive the 30% cut-off for land cover types. The 30% threshold was used as a guide to assess the accuracy of areas classified as having trees. The larger areas of land with continuous tree or grass/shrub mix were manually mapped over as areas of trees 30% or greater, if they met the

⁸ A 3-inch pixel represents 9 square inches (3 by 3). This means that a color signature (or data point) for every 9 square inches was used for the analysis, which equals approximately 0.0000014 acre.

⁹ *Forbs* (sometimes referred to as herbs) are herbaceous (not woody), broadleaf plants that are not grass-like.

30% rule, rather than a mixed scattering of cover types. The same was done for the deciduous/conifer mix areas.

- Dark shadows in both tree cover and developed areas resulted in a similar classification type. To fill in these areas, the original images were split into three classes—tree cover, grass/shrub, and developed—using the NDVI, a standard method used by the U.S. Geological Survey. The resulting layer had a reasonable level of accuracy and provided a good mechanism for replacing the shadowed areas in the original classification.
- Both the initial image classification and the NDVI could not reliably separate water pixels from other classes. Wetland features from the National Wetland Inventory (NWI) were initially used to identify wetted areas, and were then modified using manual, on-screen, digitizing methods using the aerial imagery, for a higher level of accuracy. Other water features not in the NWI were mapped by hand based on manual inspection of the Plan Area.
- Features such as golf courses and schoolyards were manually mapped as developed.

The resulting land cover layer covers the Plan Area at a higher resolution and accuracy than the standard National Land Cover Dataset.

2.5.2 Land Cover

Based on the data sources described above, land cover was divided into four main categories. A breakdown of the acreage of each land cover type is found in Table 2-2, *Land Cover Acreages in Plan Area*, and the description of each land cover type is provided in the following subsections.

Table 2-2. Land Cover Acreages in Plan Area

Cover Type	Permit Area		Permit Area for Conservation Only		Total Plan Area	
	Acres	Percent	Acres	Percent	Acres	Percent
Tree Cover Over 30%	4,760	37	12,319	67	17,078	55
Grass/Shrub	4,159	32	4,494	25	8,652	28
Developed	3,535	28	1,284	7	4,818	15
Water	423	3	162	1	584	2
<i>Total</i>	12,877	100	18,259	100	31,136	100

2.5.2.1 Tree Cover Over 30 Percent

Areas with tree cover over 30% occur on 4,760 acres (37%) of the Permit Area and 12,318 acres (67%) of the Permit Area for Conservation Only. These areas are defined as vegetated areas with at least 30% aerial cover of tree canopy (Figure 2-6, *Land Cover*). This includes conifer, mixed conifer-deciduous, and deciduous forest; conifer and deciduous tree plantations; wood lots; and other areas dominated by a tree canopy. Many of the areas of dense tree cover include past and present agricultural areas, past prairie areas, tree farms in otherwise suitable habitat for covered species,

and treed patches in a matrix of other cover types. The minimum patch size used in this analysis was 36 square feet.¹⁰

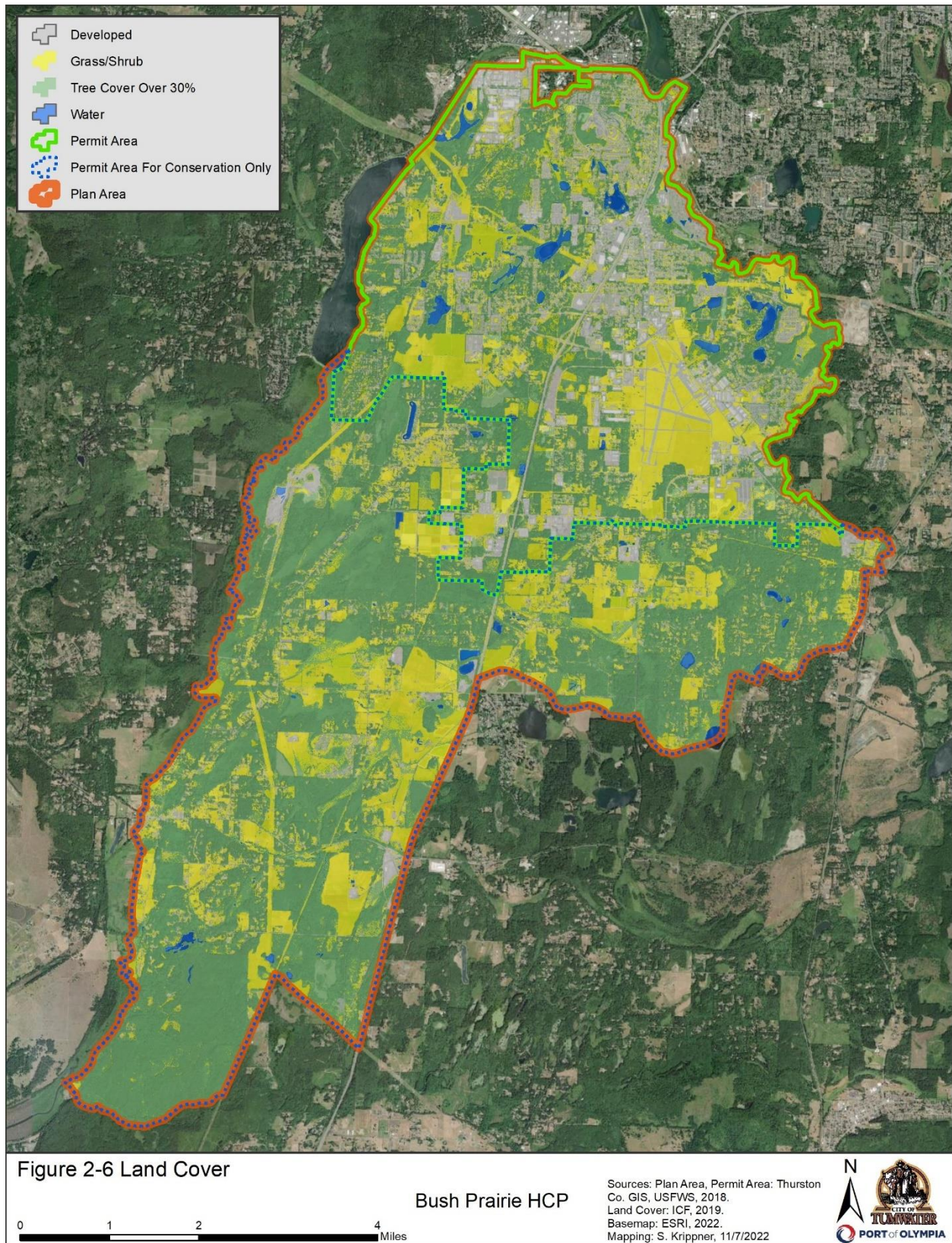
Dominant trees in forest areas typically include Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), lodgepole pine (*Pinus contorta*), big leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), beaked hazelnut (*Corylus cornuta*), vine maple (*Acer circinatum*), and osoberry (*Oemleria cerasiformis*). Tree clusters having typical forest understory shrubs, mosses, or bare soil beneath them are also defined here as treed. A few areas with individual or small clusters of Oregon white oak trees also exist in the Permit Area in and near areas mapped as having prairie soils.

2.5.2.2 Grass/Shrub

Grass/shrub¹¹ areas occur on 4,159 acres (32%) of the Permit Area and 4,494 acres (25%) of the Permit Area for Conservation Only (Table 2-2, *Land Cover Acreages in Plan Area*). These areas are defined as vegetated areas with less than 30% of trees (Figure 2-6, *Land Cover*). Grass/shrub areas typically include past and present agricultural areas, past prairie areas, mowed fields, and tree harvest areas that have not been replanted with trees. This includes turf areas, such as those found in parks, developed areas, and roadway medians. It also includes developed and partially paved areas, areas with degraded biological resources, and areas that may provide movement habitat or connectivity between more intact habitat patches. These are not areas that necessarily serve as locations that could persist as high-quality habitat over time due to fragmentation.

¹⁰ Fragments of refined habitat (suitable occupied habitat) less than 36 square feet in size were removed from the analysis to make processing/buffering feasible. This did not change the overall numbers very much or the modeling results.

¹¹ Shrub cover in Tumwater is typically a successional land cover type that results from tree removal or invasion of grassland by Scot's broom. In either case, these areas could be restored to grassland conditions so they are conservatively treated as grassland habitat for the impact analysis and for future use in the conservation site selection process.



Grass areas are typically dominated by nonnative rhizomatous grasses including, but not limited to, bentgrass (*Agrostis*), quackgrass (*Elymus repens*), perennial ryegrass (*Lolium perenne*), red fescue (*Festuca rubra*), velvetgrass (*Holcus lanatus*), and sweet vernal grass (*Anthoxanthum odoratum*). These plants commonly occur in Olympia pocket gopher habitat.

Native prairie forbs are also found scattered in low densities on some sites, including but not limited to prairie lupine (*Lupinus lepidus* var. *lepidus*), bicolor lupine (*Lupinus bicolor* ssp. *bicolor*), and yarrow (*Achillea millefolium*). These species are found more often on disturbed sites than other prairie plants. Gophers forage on succulent forbs such as lupines (Stinson 2020).

Weedy forbs such as hairy cat's ear (*Hypochaeris radicata*), dandelion (*Taraxacum*), sheep sorrel (*Rumex acetosella*), oxeye daisy (*Leucanthemum vulgare*), and St. John's wort (*Hypericum perforatum*) are more commonly found in much greater abundance in most grassland areas in the City. Most of these plants can serve as suitable forage for Olympia pocket gopher.

Shrub areas may be dominated by invasive species (i.e., nonnative shrubs such as Scotch broom [*Cytisus scoparius*]) or by native shrubs. Scotch broom and Himalayan blackberry (*Rubus armeniacus*) have invaded many sites that once were treed, used for agriculture, and/or were prairie sites. Dense native shrubs like snowberry (*Symphoricarpos*) and tall Oregon grape (*Mahonia aquifolium*) may also persist following tree harvest or they may invade past agricultural sites. Bracken fern (*Pteridium*) and trailing blackberry (*Rubus ursinus*) are also dominant native plants in some areas that have no substantial tree cover. Scotch broom and bracken fern roots have been found in gopher food caches, but woody vegetation is not a large part of their diet and is not likely a preferred food source (Stinson 2020).

2.5.2.3 Developed

The developed land cover type occurs on 3,535 acres (28%) of the Permit Area and 1,284 acres (7%) of the Permit Area for Conservation Only (Table 2-2, *Land Cover Acreages in Plan Area*, and Figure 2-6, *Land Cover*). It includes roads, buildings, parking lots, and any other areas with impervious or paved surfaces, devoid of vegetation.

Within the developed landscape, patches of woody plants, grass cover, and water occur. The minimum patch size evaluated in this analysis was 36 square feet.¹²

2.5.2.4 Water

Water includes, but is not limited to, permanent waterbodies: lakes, ponds, rivers, and perennial wetlands that have been mapped within the Plan Area. Water occurs on 423 acres (3%) of the Permit Area and 162 acres (1%) of the Permit Area for Conservation Only (Table 2-2, *Land Cover Acreages in Plan Area*, and Figure 2-6, *Land Cover*).

¹² Fragments of refined habitat (suitable occupied habitat) less than 36 square feet in size were removed from the analysis to make processing/buffering feasible. This did not change the overall numbers very much or the modeling results.

2.6 Covered Species Accounts

2.6.1 Olympia Pocket Gopher

2.6.1.1 Listing Status

Scientific name: *Thomomys mazama pugetensis*

Federal Status: Threatened (79 *Federal Register* [FR] 19760–19796)

State Status: Threatened

Critical Habitat: Designated, 2014 (79 FR 19711–19757)

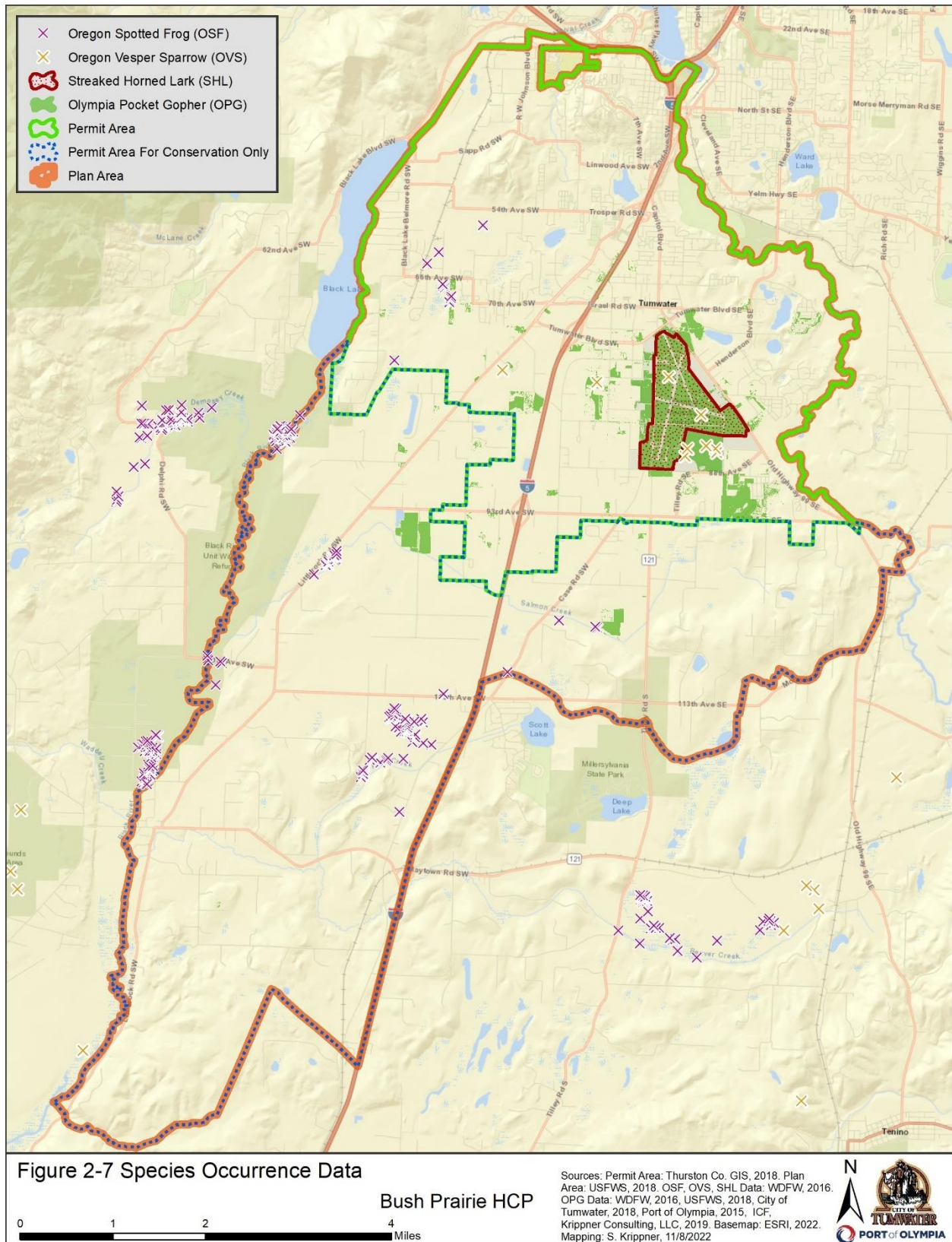
2.6.1.2 Population and Habitat Status

The Olympia pocket gopher is a regionally endemic subspecies of the Mazama pocket gopher found only in Thurston County, Washington, mainly in the City and areas of the county south of the City (Figure 2-7, *Species Occurrence Data*). Mazama pocket gophers live on open meadows, prairies, and grassland habitats of the glacial outwash plain where there are porous, well-drained soils (Dalquest 1948). Preferred forage includes short flowering plants and grasses, succulent roots, shoots, bulbs, and tubers (Case and Jasch 1994). Mazama pocket gophers do not require high-quality prairie, but can live in a wide range of grasslands, particularly if soils are loose and loamy and there is a significant component of forbs, such as clover, lupines, dandelions, false dandelions, and camas. However, sites with greater richness of native prairie plants likely contain greater potential for population stability among Olympia pocket gopher than in degraded grasslands due to these areas being more resistant to catastrophic disturbance (Collins and Rasmussen 1991) and the ability to better meet nutritional needs of gophers, thereby improving the fecundity and survival of the gopher populations. In addition to remnant prairies, occupied sites in the state include grassy fields at airports, agricultural fields, pastures, recreation fields, residential lots, road shoulders, rights-of-way, Christmas tree farms, and occasionally clearcuts (Stinson 2020). Individuals are rarely detected in forest or shrub-dominated areas (Washington Department of Fish and Wildlife 2013), even on sites with suitable soils near other known occupied areas. Distribution of the Olympia pocket gopher in the Plan Area is not completely known and is likely to be somewhat patchy due to the dependence of the species on soil types and a landscape fragmented by disturbance and other threats.

The Olympia pocket gopher most likely declined with the cessation of prairie fires and conversion of land for agricultural and urban uses in the Plan Area. The subspecies is known to persist in parts of the City and areas south of the City, and individuals have been found in vacant lots, residential lots, yards, and pastures in nearby locations on both sides of I-5 (Stinson 2020). The largest area known to be occupied by the Olympia pocket gopher is at the Airport. In 2005, McAllister and Schmidt (2005) derived a crude population estimate of 6,000 individuals for the Airport, but this is probably a better index value than a true population estimate. No trapping was done to determine how closely this approximated the actual number of Olympia pocket gophers.

2.6.1.3 Life History

The Olympia pocket gopher is a small mammal ranging in length from 6 to 9 inches when measured from nose to tail. They are called pocket gophers because they have fur-lined external pockets on either side of their mouth that are used for transporting food back to their burrows. They have small ears and eyes, and are considered fossorial animals, which means they live their lives almost entirely under the surface of the soil. Juveniles are known to disperse aboveground when it is time for them to make their own tunnel system. Olympia pocket gophers also occasionally come out of their burrows to fill their fur-lined cheek pockets with vegetation before running back below ground (Stinson 2020).



Mazama pocket gophers are well-adapted for life underground. They have short tubular bodies and strong arms equipped with long pointed claws that allow them to move a tremendous amount of soil, which brings seeds in the soil to the surface and provides a place for plants to germinate. Their teeth grow continuously throughout their lives (U.S. Fish and Wildlife Service 2014a) and are used alongside their long, curved claws to sift roots of plants out of the soil as they dig their tunnels. Although their vision is poor, their highly sensitive tails assist in navigation through tunnels. They use their cheek pouches to transport food and nesting material to special caches in their tunnel systems, which are vital to their survival. While they do not hibernate during winter months, activity slows during this time of year (Stinson 2020). There is typically less mounding activity on the surface at this time.

Mazama pocket gophers are territorial, preferring to live alone in burrow systems maintained by a single individual. Multiple Mazama pocket gophers are usually only found in the same burrow system during mating season or when the young, known as pups, are still with their mother in the spring and summer months (U.S. Fish and Wildlife Service 2014a). In late summer and autumn, juveniles disperse aboveground from their mother's den to make their own burrow systems, typically within a few hundred feet of their natal site. Males are likely to mate with more than one female, but it is also likely that mating is based on female choice. Females are typically pregnant between 18 or 19 days before delivering a litter of five pups, on average (Stinson 2020). Unlike most other small rodents, or even other kinds of Mazama pocket gophers, Olympia pocket gophers are only known to produce one litter of pups a year.

2.6.1.4 Threats

The greatest threat to Mazama pocket gophers in the state is the loss, fragmentation, and degradation of suitable habitat. To date, an estimated 90% of the prairies and prairie-like habitat have been converted to other uses or developed for urban use. In some areas, historical prairies have become overgrown with woody vegetation such as trees and shrubs. The heterogeneous nature of native prairies likely provides greater stability and productivity for the Mazama pocket gopher than do more homogenous grasslands; however, pocket gophers are found in grasslands with less vegetative diversity.

Fragmentation of the habitat, due to residential, commercial, and infrastructure development as well as conversion to agricultural lands, has led to smaller areas of suitable habitat and occupied areas that are separated from each other, sometimes by distances too far for dispersal or too difficult to cross. In fragmented habitats, Mazama pocket gophers may spend more time aboveground foraging or dispersing where they are vulnerable to predators like raptors, coyotes, cats, or dogs, or they may disperse across roads where they are vulnerable to vehicular strikes.

Populations that are small, fragmented, or isolated are more vulnerable to a variety of forces that can lead to local extinction. These forces include, but are not limited to, food shortages, predation, disease, randomly occurring natural events, genetic effects that plague small populations (known as small population effects), and cumulative effects (multiple effects acting together). Small population effects (including genetic drift and genetic bottlenecks) negatively affect the ability of a population to survive and grow and may amplify the effects of habitat loss and fragmentation. If too many individuals are lost from an already small population, that population may become extinct and there may be no nearby population to recolonize the suitable habitat available.

2.6.1.5 Occurrence Data

Olympia pocket gophers have mainly been surveyed in the Plan Area on specific soil types described earlier in this chapter as more preferred soils. These soils, listed in Table 2-1, *Soils in the Plan Area and Permit Area*, and shown on Figure 2-2, *Soils*, encompass a total of 7,120 acres and include Nisqually loamy fine sand, Cagey loamy sand, and Indianola loamy sand. However, much of this acreage does not currently provide suitable gopher habitat because it is developed or covered by forest.

Gopher occurrence data collected and confirmed by qualified biologists from 1990 through 2018 were used in combination with land cover and NRCS soil map data to identify occupied habitat and habitat with high or low likelihood of being occupied, depending upon dispersal distance from occupied habitat. Because of the uncertainties inherent in occupancy data based only on known survey data, there is uncertainty in this model. Areas that are identified as having a high likelihood of occurrence may very likely contain gophers if there are few to no movement barriers between them such as busy roads or water, and if they have most-preferred soils. However, it may be more appropriate to identify these areas as having a low likelihood of gopher occurrence if there are barriers between them and occupied areas or if soils are less preferred. This model did not encompass information on barriers because they can be difficult to determine at this scale, and it did not include recognized soil preference as a measure because any suitable soil can be occupied. Occurrences of Olympia pocket gopher on a site-specific basis are likely to change over time as individuals move to new locations. With extensive areas of suitable habitat connected in an accessible network, pocket gopher populations can expand, as needed, to ensure genetic diversity. The distribution of individuals is expected to be a shifting mosaic due to the territoriality of the species, the limited dispersal distance of juveniles, and exposure to predation and other threats. In fragmented habitat, the opportunity for recolonization is often reduced but not eliminated, resulting in longer time periods when occupancy may not be detected in a specific patch of suitable habitat. This section summarizes occupancy information that has been collected and confirmed by qualified biologists in the Plan Area since 1990.

Occurrences are locations where Olympia pocket gopher mounds or animals have been recorded by a qualified biologist and/or are recorded in a database of occurrence records maintained by WDFW (Figure 2-7, *Species Occurrence Data*). Data on Olympia pocket gopher occurrences include the following four datasets.

- **USFWS:** Point occurrence data on Olympia pocket gopher were extracted from the USFWS Mazama pocket gopher dataset. The USFWS Mazama pocket gopher occurrence dataset includes locations that have been identified by various sources including USFWS staff, WDFW, and Thurston County staff, scientific collections, and other local government staff, and have passed data quality review by USFWS staff. These Mazama pocket gopher data were intersected with the USFWS-accepted range of the subspecies.¹³

¹³ Genetic research to confirm the range of each subspecies of Mazama pocket gopher has been completed by both WDFW (Warheit and Whitcomb 2016) and USFWS. Although WDFW concluded 9 genetic groupings and USFWS concluded 4, the range of the Olympia pocket gopher was generally in agreement. Each occurrence of Mazama pocket gopher is generally not verified to subspecies; that is, occurrences within the Olympia pocket gopher range are assumed to represent that subspecies, and no other. It is assumed there is overlap between the ranges of the Olympia pocket gopher and neighboring pocket gopher subspecies such as the Yelm pocket gopher, despite them being genetically different (Warheit and Whitcomb 2016)

- *WDFW*: These point and polygon data were extracted from the WDFW Priority Habitats and Species dataset. This is a public-access dataset widely used in the state for environmental assessment and ecological study.
- *Port*: These point data were collected in 2015 during surveys performed by Krippner Consulting for the Port to study Olympia pocket gopher occurrence and habitat in support of the Port's New Market Industrial Campus and Town Center Master Plan. These data were provided courtesy of the Port.
- *City*: These point and polygon data were collected from 2002 to 2018 by various parties and reported in site survey reports or related permitting documents submitted to the City. City staff reviewed those reports and assembled this dataset for the purposes of the present analysis.¹⁴ Survey methods followed recommendations of WDFW and/or USFWS. As with the above datasets, pocket gophers were not identified to subspecies; however, the Olympia pocket gopher is the only subspecies believed to occur in the City.

Occurrence data provides critical information on species populations including where the species is known to occur within the Plan Area, both currently and historically. Occurrence data is based on positive survey results, and there are likely currently unknown occurrences in the area that have not been surveyed. WDFW have also collected data on where gophers have been searched but not found (Tirhi pers. comm.: WDFW 2013). Based on this occurrence data it is possible to differentiate general habitat specifics and preference, species movement, as well as overall known distribution within the Plan Area.

2.6.1.6 Species Habitat Distribution Model

The model of habitat distribution for the Olympia pocket gopher was developed from four component data sets: species occurrences, suitable land cover types, suitable soils, and estimated dispersal distance. Once the data were combined in the method described below, the model predicts where Olympia pocket gophers are most likely to occur in the Plan Area. Occurrences describe places where the Olympia pocket gopher's presence has been confirmed. Occurrences may be either point locations consisting of individual mounds or mound clusters or polygons, which encompass areas within which gophers were documented.

Occurrence information includes data collected by USFWS, WDFW, Thurston County, and other researchers and consultants (Figure 2-7, *Species Occurrence Data*). The habitat model is a composite of GIS databases combined in a manner representing species habitat affinities. The Olympia pocket gopher model was developed using eight steps, each of which is described below and illustrated in Figure 2-8, *Olympia Pocket Gopher Model Flow Chart*. A site-specific survey may find habitat is not present, even if the model suggests otherwise. The final model is shown in Figure 2-9, *Olympia Pocket Gopher Modeled Habitat*.

The steps used to assemble the model were the following.

1. Assembled and confirmed all known point and polygon gopher occurrences in the Plan Area (see Section 2.6.1.5, *Occurrence Data*, for sources).

¹⁴ WDFW maintains the comprehensive pocket gopher database for the State of Washington. Thurston County and WDFW have completed a data sharing agreement for the County to provide all gopher data to WDFW, and it is recommended that the City does the same to aid in maintaining the comprehensive pocket gopher dataset and to alleviate confusion when sharing data with its users.

2. Buffered all point occurrences by 15 feet, the standard error for handheld global positioning system (GPS) data collected, so that all point occurrences are converted to polygon data and can be combined with polygon data sources for further analysis. Any overlaps of polygons were removed to prevent double-counting or overcounting.
3. Added areas of grass-shrub cover since this land cover type may be used by Olympia pocket gophers but only with soils suitable for Olympia pocket gopher burrowing, defined as those with more-preferred and less-preferred soils as defined by the *Mazama Pocket Gopher Screening Protocol* (U.S. Fish and Wildlife Service 2018).
4. Combined gopher occurrence data (1 and 2) and refined this data layer by selecting only areas that have both grass-shrub cover and suitable soils from the previous step (3). This process generally removes areas containing significant development or water, although small amounts of these features likely exist within the modeled layer.
5. Buffered all the refined occupied habitat layer (step 4) by 200 meters (650 feet), USFWS's most recent known dispersal distance by Olympia pocket gophers from natal areas (U.S. Fish and Wildlife Service 2015) to create the final occupied habitat layer.
6. Identified all suitable habitat (grass-shrub cover areas with suitable soils) within 200 meters (650 feet) of the final occupied habitat layer and suitable habitat contiguous with these areas extending farther than 200 meters (650 feet) away from occupied habitat and defined these as areas that have a "higher likelihood of occupancy."
7. Identified all remaining suitable habitat as areas that have a "lower likelihood of occupancy."¹⁵

¹⁵ The model will be updated by the City and Port when or if gophers are found in new areas, which could change lower likelihood habitat to higher likelihood habitat, or higher likelihood habitat to occupied habitat.

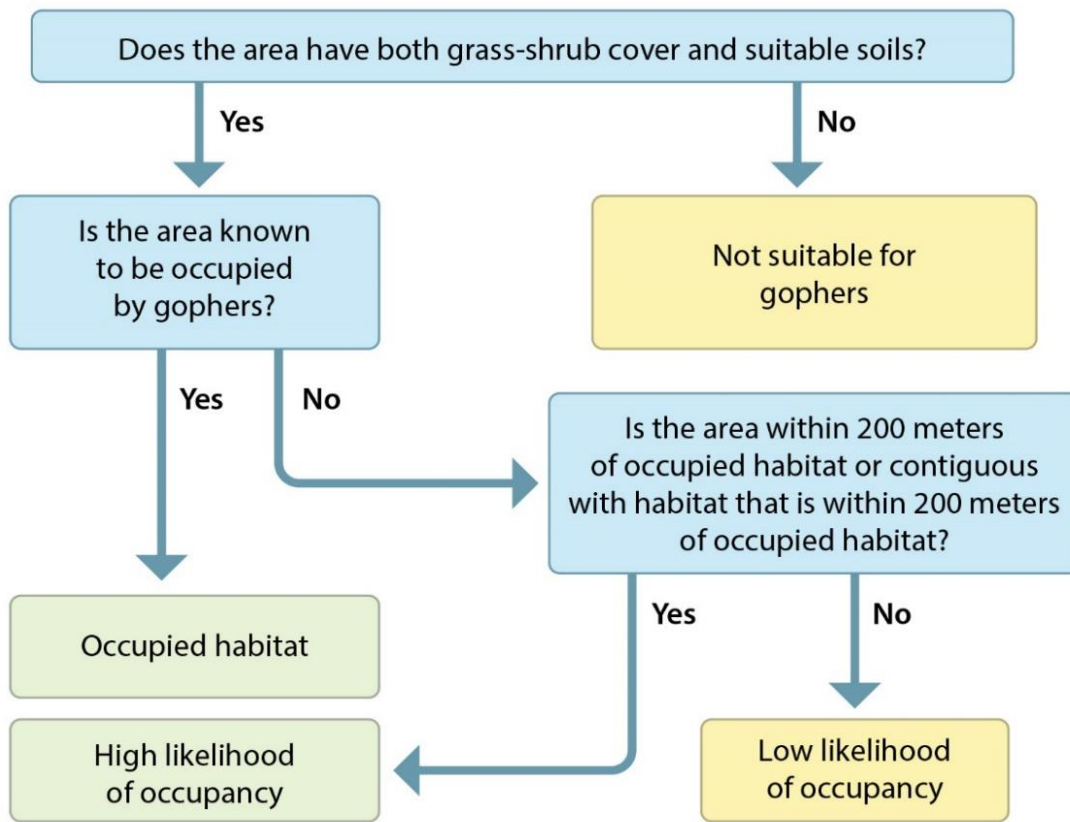
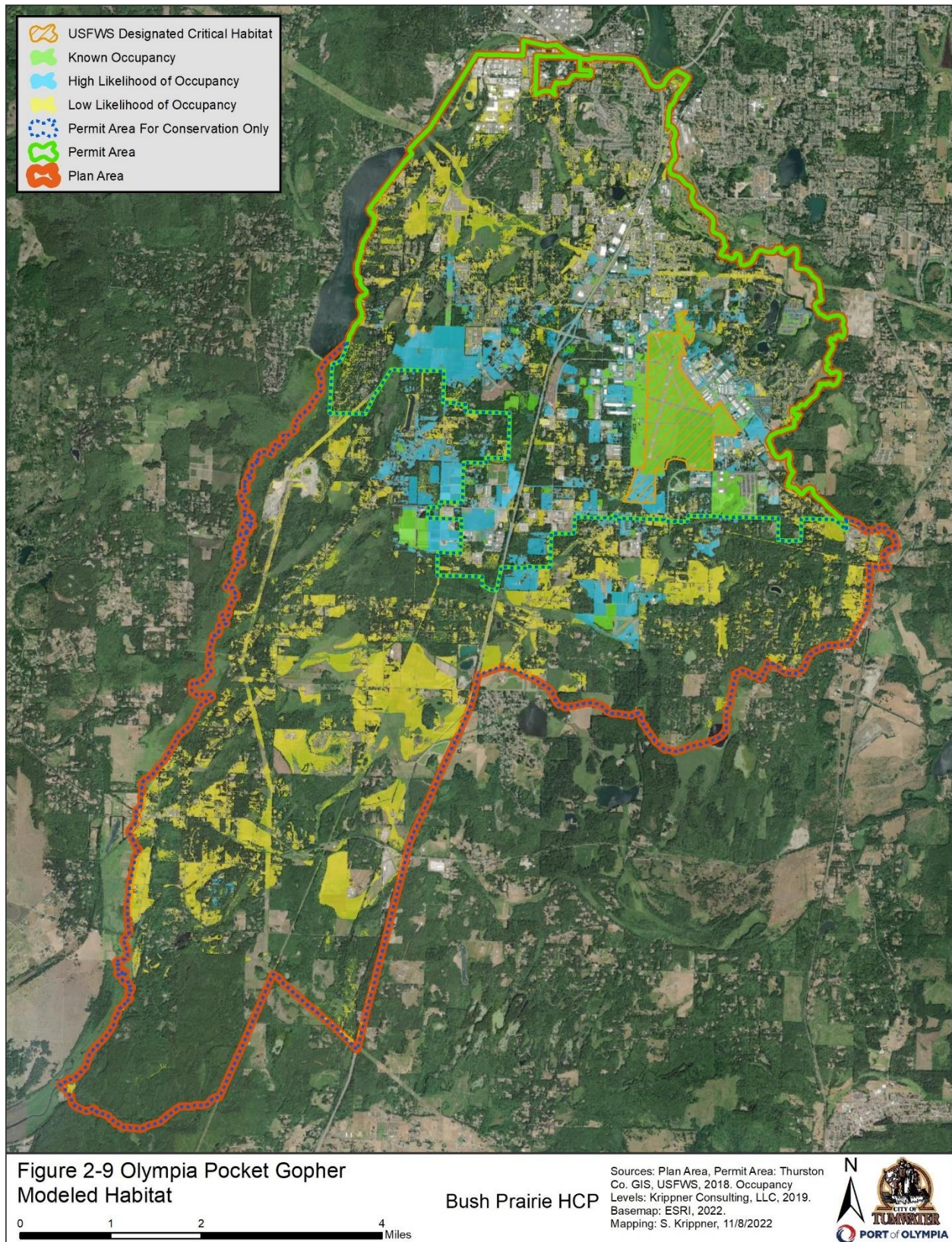


Figure 2-1. Olympia Pocket Gopher Model Flow Chart



2.6.1.7 Habitat Model Definitions

The Olympia pocket gopher habitat model defines habitat suitability based on known occupancy, soils, and vegetation cover. Within the Plan Area, there are three kinds of potential Olympia pocket gopher habitat defined for the purposes of this HCP.

- *Occupied habitat* includes areas where Olympia pocket gophers or their mounds have been surveyed by qualified biologists and found. Occupancy data collected at various scales was consolidated and refined for this model as described in Section 2.6.1.6, steps 1-3.
- Habitat that has a *higher likelihood of occupancy* (Figure 2-8, *Olympia Pocket Gopher Model Flow Chart*) is suitable habitat as defined here (has grass-shrub cover and suitable soils) within 200 meters (650 feet) of occupied habitat and suitable habitat that is contiguous with these areas extending farther than 200 meters (650 feet) away from occupied habitat. These areas have not been surveyed or have not been surveyed recently.
- Habitat that has a *lower likelihood of occupancy* is suitable habitat based on soils and vegetation cover but is not within the known dispersal distance of occupied habitat and therefore has a lower likelihood of being occupied than other potentially suitable habitat areas in the Plan Area. Most of these areas are smaller and more isolated by urban development than habitat in the other two categories. These areas have also not been surveyed, which could result in them being occupied if gophers were found.

Within the Permit Area, there are approximately 904 acres of occupied habitat, 1,087 acres higher likelihood of occupancy habitat, and 1,305 acres of lower likelihood of occupancy habitat. In the Plan Area, there are approximately 1,014 acres of occupied habitat, 1,630 acres of higher likelihood of occupancy habitat, and 4,360 acres of lower likelihood of occupancy habitat. This is modeled habitat, which is different than surveyed habitat. These acreages are modeled habitat and while suitable gopher soils within the Plan Area were included in the analysis, the differences between acreages listed in Section 2.2.4, *Soils*, is due to current land cover (e.g., areas of Douglas fir forest or developed land) occurring with these soil types. Not all acres shown in the model will be occupied but based on the presence of suitable soils and due to current land cover types and land uses, there is potential for gophers to occur at the sites shown on the model. A site-specific survey may find habitat is not present, even if the model suggests otherwise.

The model results are used in this HCP to provide perspective on the types of habitat projected to be affected by urban development and other human activities. Mitigation requirements for impacts to suitable habitat, regardless of whether it is identified as occupied or as having a higher or lower likelihood of occupancy, are the same and assume that any suitable habitat may be occupied by gophers. The model results also provide a valuable tool, along with on-site validation, for directing conservation efforts to locations that make the most sense for species recovery.

2.6.2 Oregon Spotted Frog

2.6.2.1 Listing Status

Scientific name: *Rana pretiosa*

Federal Status: Threatened (79 FR 51657–51710)

State Status: Endangered

Critical Habitat: Designated, 2016 (81 FR 29335–29396)

2.6.2.2 Population and Habitat Status

The Oregon spotted frog may no longer occur in 76 to 90% of its historical range (Hayes 1997). Precise historic data is lacking, but this species has been documented in British Columbia, Washington, Oregon, and California. It is believed to have been extirpated from California (U.S. Fish and Wildlife Service 2016). It is currently known to occur from extreme southwestern British Columbia, south through the eastern side of the Puget Trough and in the Cascades Range from south-central Washington at least to Klamath Basin in southern Oregon. In Washington, the Oregon spotted frog is known to occur in Whatcom, Skagit, Thurston, Klickitat, Pierce, and Skamania Counties, although historically they were also found in Snohomish, King, and Clark Counties.

This species is always found in or near a perennial body of water, such as a spring, pond, lake, sluggish stream, irrigation canal, or roadside ditch. While Oregon spotted frogs seem to prefer fairly large marshes (approximate minimum size of 9 acres) that can support a large enough population to persist despite high predation rates (Hayes 1994) and sporadic reproductive failures, they are also known to occur at wetland or pond sites as small as 2.5 acres. Oregon spotted frogs are typically found in areas with the following characteristics: (1) the presence of breeding and overwintering habitat with aquatic connectivity (Section 2.6.2.3, *Life History*); (2) reliable water levels that do not fluctuate rapidly during oviposition and metamorphosis; and (3) the absence of introduced predators, especially warm-water game fish and bullfrogs.¹⁶

2.6.2.3 Life History

The Oregon spotted frog is named for the black spots that cover the upper head, back, sides, and legs. The dark spots have ragged edges and light centers, which are usually associated with tubercles or raised areas of skin; these spots become larger and darker and the edges become more ragged with age. Body color also varies with age. Juveniles are usually brown or, occasionally, olive green on the back and white or cream with reddish pigments on the underlegs and abdomen. Adults range from brown to reddish brown but tend to become redder with age. Larger, presumably older individuals may be brick red over most of the back. Red also increases on the abdomen with age, and the underlegs become a vivid orange-red. Size disparity across the species range is summarized in McAllister and Leonard (1997). In Thurston County the size range is reported as 1.8–3.0 inches (McAllister and Leonard 1997). Mature females are typically larger than males (Leonard et al. 1993; Rombough et al. 2006).

This species typically begins to breed at 2 to 3 years of age. Breeding occurs in February or March at lower elevations (e.g., populations in the Permit Area) and between early April and early June at higher elevations outside the Permit Area. Females have high site fidelity and often deposit their egg masses at the same locations in successive years, in shallow, often temporary, pools of water; gradually receding shorelines; on benches of seasonal lakes and marshes; and in wet meadows. These sites are usually associated with emergent vegetation, and generally have surface water that is no more than 14 inches deep (Pearl and Hayes 2004:19–20). Most of these sites dry up later in the season, but they are connected via surface water to permanently wetted areas, such as streams, wetlands, and springs. The sun easily warms shallow water, and warmth hastens egg development

¹⁶ Oregon spotted frogs are often found coexisting in the same areas with these predators.

(McAllister and Leonard 1997:8). Many egg-laying locations have been used continually for over 20 years. Eggs can hatch within 3 weeks of being laid.

Tadpoles are primarily grazers, having rough tooth rows for scraping plant surfaces and ingesting plant tissue and bacteria. They also consume algae, detritus, and probably carrion (Licht 1974; McAllister and Leonard 1997). Tadpoles metamorphose into froglets during their first summer (Leonard et al. 1993). Post-metamorphic Oregon spotted frogs are opportunistic predators that feed on live animals, primarily invertebrate, found in or near the water.

2.6.2.4 Threats

Across their range, Oregon spotted frogs are threatened by wetland loss and alterations; loss of disturbance processes that set back succession; regulatory mechanisms that require shrub and tree plantings in wetlands; invasive plant species such as reed canarygrass (*Phalaris arundinacea*); introduced predators including bullfrog and warm-water fish; and alterations of stream and river channels (Hallock 2013). Oregon spotted frog populations are likely to be small and isolated, which makes the species more vulnerable than large, connected populations to random, naturally occurring events, such as drought, disease, and predation.

Changes in hydrology (due to construction of ditches and dams, impervious surfaces, and removal of beaver dams), and water quality (e.g., contaminants from urban and agricultural runoff, sedimentation) are partially responsible for the decline of spotted frogs. Urban and rural development and removal of beavers can result in habitat loss, alteration, and/or fragmentation. Rapid water level changes during critical times in the Oregon spotted frogs' life cycle pose another threat to the species. Oregon spotted frogs typically breed near wetland edges, so water level declines or fluctuations from altered wetlands and water regimes may strand egg masses or tadpoles and lead to desiccation (Pearl and Hayes 2004; Licht 1971).

Invasive plants and animals also pose a significant threat to Oregon spotted frog. Trees and shrubs are often planted along wetland edges and stream banks as part of riparian and fisheries habitat enhancement. These trees and shrubs may impair breeding habitat by creating a dense thatch or reducing solar exposure (Krippner Consulting 2018). Invasive reed canarygrass used for livestock grazing has also encroached into most wetlands in the Pacific Northwest and significantly degrades Oregon spotted frog habitat. Introduction of bullfrogs and nonnative fish have affected this species both directly, by predation of eggs, tadpoles, and adult frogs, and indirectly, by outcompeting or displacing frogs from their habitat. Managing water level stability, aquatic connectivity, vegetation structure, and introduced predators are vital to the recovery of the species in the Plan Area.

Urban development and regulations intended to preserve wetlands in the low elevations of the Puget Trough may also threaten wetland character (McAllister and Leonard 1997). Development may result in modifications of the seasonally flooded areas used by Oregon spotted frogs or it may create barriers between populations. Breeding habitats in Thurston County include seasonally flooded areas that were wetlands historically, but have since been converted to other uses (such as agriculture) and may not be identified as wetlands (U.S. Fish and Wildlife Service 2014b).

Grazing may be detrimental or beneficial to Oregon spotted frog habitat, depending on the level of intensity and management (Hayes 1997; McAllister and Leonard 1997; Watson et al. 2003). Much of the understanding of the effects of grazing stem from studies conducted in xeric portions of Oregon, where cattle concentrate in riparian zones where forage is palatable (Shovlain 2005). While heavy grazing can degrade habitat quality by removing excessive vegetative cover, managed grazing

during the dry season is likely a useful tool to restore emergent vegetation where reed canarygrass has overtaken seasonally wetted lands in the Plan Area (Watson et al. 2003).

2.6.2.5 Occurrence Data

WDFW's Priority Habitat and Species database is the main repository for both individual occurrences of Oregon spotted frog and egg mass locations (e.g., oviposition sites). The database contains significantly more records for the latter. The Oregon spotted frog is known to occupy much of the Black River/Black Lake watershed and its tributaries north of Highway 12. Staff and volunteers have recorded spotted frog egg masses deposited by adults during the breeding season at several locations in the Plan Area. Individual occurrences and/or egg masses were documented in wetlands, ponds, ditches, streams, and flooded agricultural fields associated with Allen, Beaver, Fish Pond, Michelle, and Salmon Creek drainages and the Black River within the Plan Area. The Oregon spotted frog is known to occupy much of the Black River/Black Lake watershed (shallows for egg laying, deeper water for summer and winter) north of Highway 12, which has been documented during annual egg mass surveys in Thurston County and the Plan Area.

2.6.2.6 Species Habitat Distribution Model

Oregon spotted frogs are known to occur in the Black River watershed in Thurston County, though more areas are being found as surveys proceed. The species model for Oregon spotted frog is based on known occurrence data from WDFW surveys and hydrologic connectivity as it relates to the ability of this species to disperse between wetlands and perennial waterbodies (Figure 2-10, *Oregon Spotted Frog Modeled Habitat*). Such dispersal often occurs during floods, so certain hydrologic maps likely underestimate the features of habitat connectivity important to species distribution in the Plan Area. The resulting habitat distribution model is shown in Figure 2-10, *Oregon Spotted Frog Modeled Habitat*. USFWS has also designated critical habitat for this species. Designated critical habitat is shown in Figure 2-10, *Oregon Spotted Frog Modeled Habitat*, but not included as an input to the habitat distribution model.

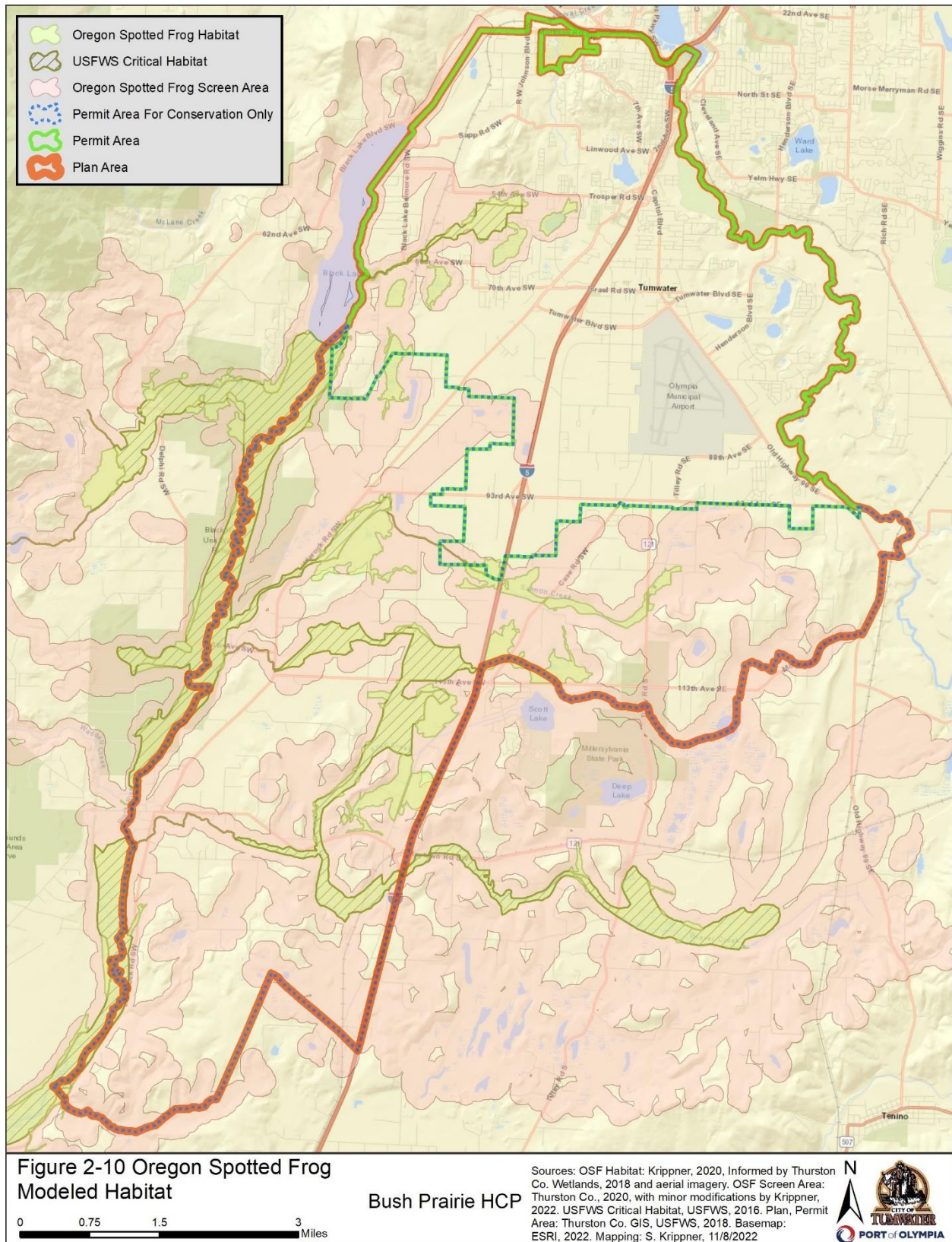
Occupied Streams and Wetlands

Oregon spotted frogs breed in shallow water areas in late winter through early spring and disperse into deeper water and emergent and shrub-scrub wetlands during other times of the year. The species likely occupies more areas than are currently known. This species model only encompasses Thurston County-mapped wetlands and contiguous wetland areas that are hydrologically connected within 330 feet of known occupancy points.¹⁷

¹⁷ Occupancy points are where egg masses are found and are not always where the other life stages of Oregon spotted frog are found, especially outside of the breeding season.

Although individual Oregon spotted frogs are known to move more than 330 feet,¹⁸ they are strongly associated with perennial water sources and are not normally found outside of wetland areas. Oregon spotted frogs are estimated to be found within an estimated 372 acres of wetlands in the Permit Area in three distinct locations and 2,654 acres of wetlands in the Plan Area (Figures 2-7, *Species Occurrence Data*, and 2-10, *Oregon Spotted Frog Modeled Habitat*). Occupied areas within the Permit Area include Fish Pond Creek and wetlands in the Black Lake drainage area in the western half of the Permit Area, just east of Black Lake. A site-specific survey may find habitat is not present, even if the model suggests otherwise. Most of the wetlands in the Permit Area for Conservation Only are located along the western border of the Plan Area and along and to the south of 113th Avenue.

¹⁸ 330 feet is a typical adult movement distance in a season. However, it is unknown how far juveniles disperse. The longest documented juvenile movement in the Black River watershed is 1.5 miles (McAllister and Walker 2003).



2.6.3 Streaked Horned Lark

2.6.3.1 Listing Status

Scientific name: *Eremophila alpestris strigata*

Federal Status: Threatened (78 FR 61451)

State Status: Endangered

Critical Habitat: Designated, 2013 (78 FR 61505 61589)

2.6.3.2 Population and Habitat Status

The streaked horned lark is endemic to the Pacific Northwest and is a subspecies of the wide-ranging horned lark (*Eremophila alpestris*). Historically, the streaked horned lark's range extended from southern British Columbia, Canada, south through the Puget Lowlands and outer coast of Washington, along the lower Columbia River, through the Willamette Valley, the Oregon coast and into the Umpqua and Rogue River Valleys of southwestern Oregon.

The streaked horned lark is extirpated throughout much of its range, including all its former range in British Columbia, Canada, the San Juan Islands, the northern Puget Lowlands, the Washington coast north of Grays Harbor, the Oregon coast, and the Rogue and Umpqua Valleys in southwestern Oregon. The current range of the streaked horned lark can be divided into three regions: (1) the Puget Lowlands in Washington, (2) the Washington coast and lower Columbia River islands (including dredge spoil deposition sites near the Columbia River in Portland, Oregon), and (3) the Willamette Valley in Oregon.

An analysis of recent data estimates the current range-wide population of streaked horned larks to be about 1,170–1,610 individuals (Altman 2011). In the south Puget Lowlands, which include the Plan Area, the streaked horned lark is currently known to occur at nine sites. These include three municipal airports (Olympia Regional, Tacoma Narrows, and Shelton Airports), and six sites at Joint Base Lewis-McChord (13th Division Prairie, Gray Army Airfield, 91st Division Prairie—Range 76, 91st Division Prairie—Range 50/Artillery Impact Area, 91st Division Prairie—Range 53 and McChord Airfield) in Pierce County. Approximately 114 breeding pairs of streaked horned larks were detected at these nine sites in 2018 (Washington Department of Fish and Wildlife 2019). There was a high of 130 breeding pairs in 2020 (Washington Department of Fish and Wildlife 2021).

Habitat used by streaked horned larks in the south Puget Lowlands is generally flat with substantial areas of bare ground and sparse low-stature vegetation, primarily composed of grasses and forbs (Pearson and Hopey 2004). Suitable habitat is usually between 12 and 20% bare ground and may be even more open at sites selected for nesting (Altman 1999; Pearson et al. 2005). Vegetation height is generally 17–25 cm (Altman 1999; Pearson et al. 2005), although nesting females tend to select areas with taller vegetation for nesting sites (Pearson and Knapp 2016). A key attribute of habitat used by streaked horned larks is an open landscape context. Data indicate that sites used by streaked horned larks are generally found in open (i.e., flat, treeless) landscapes. Breeding sites in the Puget Lowlands are mostly 300 acres or larger (Converse et al. 2010), but may be as small as 90 acres (Anderson and Pearson 2015).

Wintering streaked horned larks use habitats that are very similar to breeding habitats. Pearson et al. (2005) found that most streaked horned larks winter in the Willamette Valley (72%) and on the

islands in the lower Columbia River (20%) and the rest spend the winter on the Washington coast (8%) or in the south Puget Lowlands (1%). In the winter, most of the streaked horned larks that breed in the south Puget Lowlands migrate south to the Willamette Valley or west to the Washington coast. Streaked horned larks that breed on the Washington coast either remain on the coast or migrate south to the Willamette Valley; birds that breed on the lower Columbia River islands remain on the islands or migrate to the Washington coast; and birds that breed in the Willamette Valley remain there over the winter (Pearson et al. 2005). Streaked horned larks spend the winter in large groups of mixed subspecies of horned larks in the Willamette Valley, and in smaller flocks along the lower Columbia River and Washington coast (Pearson and Altman 2005; Pearson et al. 2005).

Streaked horned larks are found at many airports within the range of the subspecies because most of these sites were formerly native prairies that could have provided habitat for larks prior to airport development and now they are some of the only areas left that are managed as large, treeless areas, large enough and open enough to provide suitable nesting and foraging habitat for streaked horned larks.

2.6.3.3 Life History

Streaked horned larks are a subspecies of the wide-ranging horned lark (Altman 2011). Horned larks are small, ground-dwelling birds, approximately 6–8 inches in length (Beason 1995). Adults are pale brown, but the degree of brown shading varies geographically among the subspecies. The male's face has a yellow wash in most subspecies. Adults have a black bib, black whisker marks, black "horns" (feather tufts that can be raised or lowered), and black tail feathers with white margins (Beason 1995). Juveniles lack the black face pattern and are shades of gray, varying from almost white to almost black (Beason 1995). The streaked horned lark's back is dark brown. It has yellowish underparts, a walnut brown nape, and a yellow eyebrow stripe and throat (Beason 1995). This subspecies is conspicuously more yellow beneath and darker on the back than almost all other subspecies of horned lark. The combination of small size, dark brown back, and yellow underparts distinguishes this subspecies from all adjacent forms.

Nesting typically begins in mid-April and may continue into late August (U.S. Fish and Wildlife Service 2019). Streaked horned larks establish their nests in areas of extensive bare ground, and nests are placed adjacent to clumps of bunchgrass (Pearson and Hopey 2004). Studies from Washington sites (the open coast, Puget Lowlands, and the Columbia River islands) have found that streaked horned larks have strong natal fidelity to nesting sites, returning each year to the place they were born (Pearson et al. 2008).

The female commonly lays four greenish or grayish eggs speckled with brown. Incubation is 11 days, and the young are able to fly within 9 to 12 days after hatching. However, the young do not fly well right away, which may be why parents and young stay on breeding grounds until migrating to overwintering areas. Streaked horned lark adults eat mainly grass and forb seeds, but feed insects to their young. Young streaked horned larks leave the nest 8–10 days after hatching and are cared for by the parents until they are about 4 weeks old, when they become independent (Beason 1995).

2.6.3.4 Threats

Threats to the streaked horned lark identified include the following (U.S. Fish and Wildlife Service 2019).

1. Loss, conversion, and degradation of habitat
2. Successional changes in grassland habitat
3. Habitat loss from the absence of functioning natural processes that create and maintain habitat
4. Incompatible management activities of occupied sites (e.g., mowing, military trainings)
5. Predation on small populations
6. Pesticides
7. Low genetic diversity and small isolated populations
8. Avian pox
9. Spread of invasive grasses
10. Aircraft strikes
11. Recreation
12. Climate change
13. Stochastic weather effects on the concentrated overwintering congregations in the Willamette Valley
14. Disturbance and/or harm associated with creation or management of suitable nesting habitat

Two additional potential threats have also been identified: male-skewed sex ratio (Stinson 2016:6) and potential poisoning by the rodenticide zinc phosphide at Corvallis Airport.

Threats to the species also include inbreeding depression, low reproductive success, declining population size, and incompatible management actions (e.g., mowing, vehicle use on active breeding grounds, and dredge material deposition) (U.S. Fish and Wildlife Service 2019), which have been documented in the Puget Lowlands population. Without substantial efforts to stem the decline, streaked horned larks may disappear from the Puget Lowlands. Other ongoing threats from aircraft strikes and training activities at airports have been documented, and such threats put streaked horned lark populations at risk of further population declines throughout the range of the subspecies. Predation from raptors, coyotes, as well as domestic and feral cats and dogs also pose a threat to the streaked horned lark.

2.6.3.5 Occurrence Data

Streaked horned larks are ground nesters and breed in the south Puget Lowlands, in short, sparsely vegetated grassland communities with few trees or shrubs. Most breeding birds return to the same nesting areas year after year (Pearson et al. 2005). Most breeding sites in this region have at least 300 acres of contiguous, open grassland habitat (U.S. Fish and Wildlife Service 2019). One recent exception to this is at Tacoma Narrows Airport, where streaked horned larks are nesting in grassland habitat along a narrow, tree-lined runway, approximately 150 acres in size. Streaked horned lark in the south Puget Lowlands predominantly migrate south to the coast, lower Columbia River, and Willamette Valley for the winter (Pearson et al. 2005).

The only known occurrence of streaked horned lark in the Plan Area is at the Airport (Washington Department of Fish and Wildlife 2016). The estimated number of breeding pairs of streaked horned larks at the Airport has varied between 21 and 48 between the years 2010 and 2018 (Washington

Department of Fish and Wildlife unpublished data). Breeding pairs were estimated from the number of males detected. This may overestimate the number of females in the Plan Area because the male population appears to be increasing while the female population appears to be decreasing, resulting in a skewed sex ratio (Stinson 2016).

Approximately 252 individuals are in the Permit Area for Streaked Horned Lark Conservation Only. There are no known occurrences of streaked horned lark in the Permit Area for Conservation Only.

2.6.3.6 Species Habitat Distribution Model

The species distribution model for the streaked horned lark is based on known species occurrences, and the species preference for open grassland habitat.

Habitat

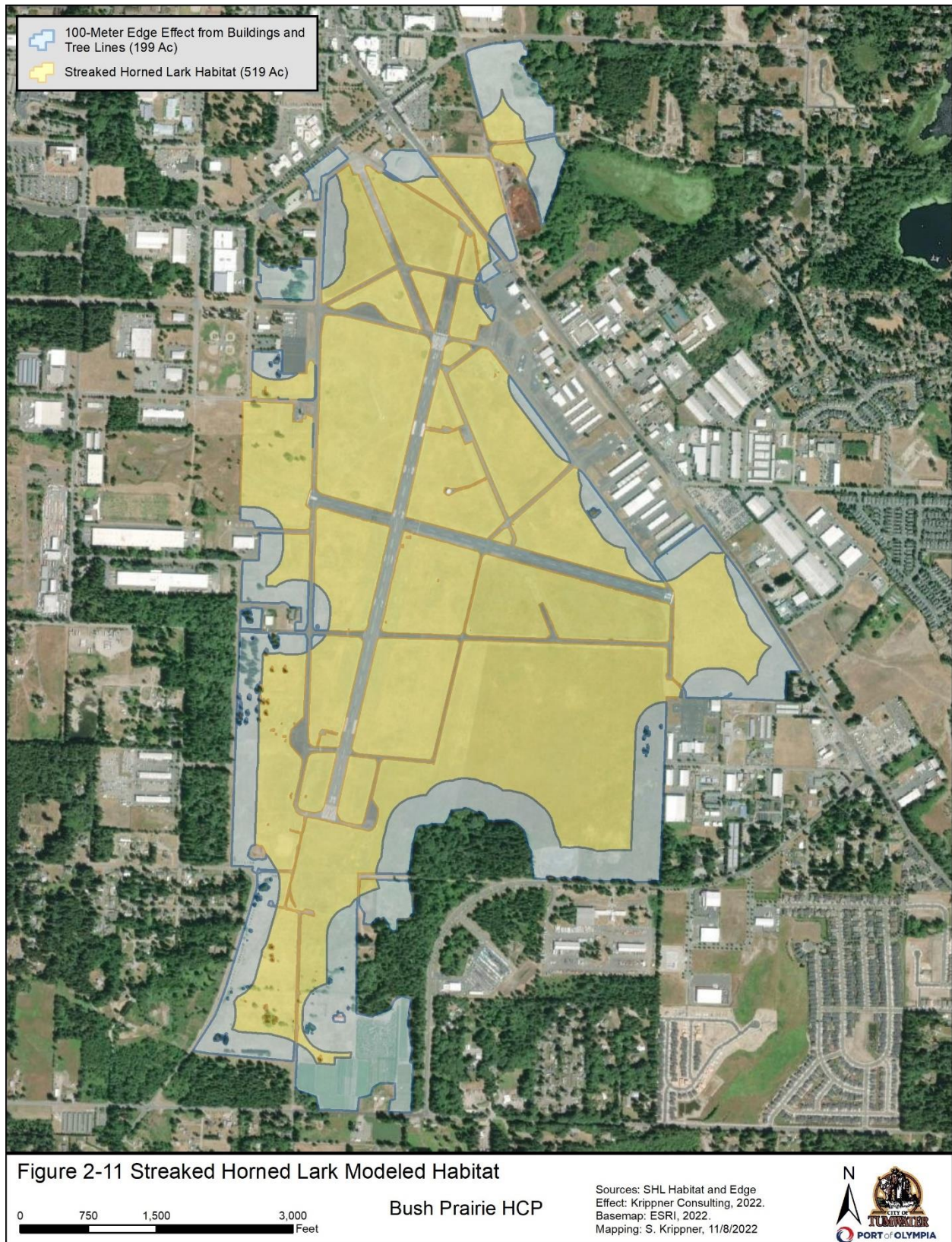
Because the only streaked horned lark occurrences within the Plan Area were recorded during the breeding season (there have been infrequent, unconfirmed reports of larks outside of the breeding season), the species distribution model is based on known breeding habitat characteristics. Pearson et al. (2005) found that the majority of streaked horned larks winter in the Willamette Valley (72%) and on the islands in the lower Columbia River (20%); the rest winter on the Washington coast (8%) or in the south Puget Sound (1%) (77 FR 61947). The primary constituent elements, or habitat characteristics, that USFWS determined are necessary to sustain populations of streaked horned lark include the following (U.S. Fish and Wildlife Service 2019).

- Short, sparsely vegetated grassland that has a minimum of 16% bare ground and grasses and forbs less than 13 inches high.
- Flat, contiguous grassland at least 300 acres in size. Some patches with appropriate characteristics (i.e., sand, bare ground, low-stature vegetation) may be smaller if the adjacent patches provide the required open landscape context.

Within the Plan Area, the mowed grassland at the Airport meets these criteria.

Suitable habitat for streaked horned larks at the Airport was modeled using polygon occurrence data from WDFW, aerial imagery, and land cover data. WDFW has been conducting standardized surveys for streaked horned lark at the Airport regularly since 2010. Their database information is based on habitat and nesting behavior and contains records of individual streaked horned larks identified by sight or sound (i.e., call, song) and identified by age and gender observations made during these surveys. Modeled habitat includes contiguous areas of grassland on Airport grounds (Figure 2-11, *Streaked Horned Lark Modeled Habitat*). This figure represents the extent of streaked horned lark habitat in the Plan Area. Open areas that include trees or buildings are excluded from modeled habitat. Other large open areas in the Plan Area may have suitable foraging habitat for the species but due to active land uses such as intensive farming or their being too small for larks to breed on (e.g., <300 acres), they are therefore not attractive to breeding larks. WDFW conducts surveys of new, potential breeding habitat in the off years when it is not surveying breeding sites; the agency has yet to locate another breeding site within the Plan Area.

The total area of currently suitable habitat modeled for streaked horned lark in the Plan Area (not including the larger Permit Area for Streaked Horned Lark Conservation Area Only) is 519 acres, all of which exist on the airport within the Permit Area (Figure 2-11, *Streaked Horned Lark Modeled Habitat*).



2.6.4 Oregon Vesper Sparrow

2.6.4.1 Listing Status

Scientific name: *Pooecetes gramineus* ssp. *affinis*

Federal Status: Under Review (FWS-R8-ES-2018-0027)

State Status: Endangered

Critical Habitat: None

2.6.4.2 Population and Habitat Status

The Oregon vesper sparrow is a subspecies of the wider ranging vesper sparrow. The range of vesper sparrow is widespread across North America (Jones and Cornely 2002). Historically, Oregon vesper sparrow was considered a relatively common species except in the northern part of its range in northwestern Washington and southwestern British Columbia (Altman 2011). The breeding range of the Oregon vesper sparrow subspecies includes southwestern British Columbia, western Washington, western Oregon, and the northwestern corner of California (Campbell et al. 2001; Jones and Cornely 2002; Altman 2003; Erickson 2008). Within that breeding range, the subspecies is further limited to grassland and savanna habitats in lowland valleys and foothills, except in the Klamath Mountains ecoregion, where it occurs in montane meadows. These areas are all embedded within a landscape dominated by forests; thus, the overall distribution is patchy.

A 2011 preliminary population estimate from a variety of sources indicated that the population of Oregon vesper sparrow was less than 3,000 birds (i.e., 1,540–2,770) (Altman 2011). A more recent range-wide inventory in 2013 (Altman 2015), in conjunction with additional surveys and anecdotal information, suggests that the population is approximately 1,900 – 2,800 birds (Altman 2016). The current Washington State estimate is approximately 300 individuals, of which approximately 270 are in south Puget Sound (Altman et al. 2020). There is currently a range-wide decline (5% decline per year over 45 years) in population and USFWS was petitioned in 2016 to federally list the bird under the Federal Endangered Species Act (American Bird Conservancy 2017).

In Washington, the historic breeding range of Oregon vesper sparrow is believed to have extended from northern Skagit County, the San Juan Islands, and Clallam County (Dungeness and Sol Duc), south through the southern Puget Lowlands and into Clark County (Camas and Vancouver) (Washington Department of Fish and Wildlife 2013). The vicinity of Yelm in the south Puget Lowlands was once considered a prime area for the subspecies (Jewett et al. 1953). The current breeding population in the state is predominantly on airports and remnant prairies in the south Puget Lowlands, especially on Joint Base Lewis-McChord. A few birds remain on San Juan Island, on islands in the lower Columbia River, and near Shelton in Mason County (Mlodinow 2005; Altman 2015).

Oregon vesper sparrows breed in open areas with short, sparse grass and scattered shrubs including, old fields, pastures, weedy fence lines and roadsides, hayfields, and native grasslands. Current habitat targets for Oregon vesper sparrow include structural diversity in all habitat layers, including tree cover less than 10%; shrub cover less than 15% and scattered (i.e., not contiguous as in fence rows, field buffers, etc.); bare ground 5 to 15% and scattered (i.e., not in one or a few large spots); herbaceous cover that is structurally and compositionally diverse with mean graminoid height of 15–46 centimeters (6–18 inches) and forb cover greater than 15% (Altman et al. 2021). In

the west, Oregon vesper sparrows breed in mountain meadows, grassy mesas, and sagebrush steppe up to 9,800 feet. They occupy similar habitats during migration and on the wintering grounds.

2.6.4.3 Life History

Oregon vesper sparrow is a medium- to large-sized species with three distinguishing characteristics: a chestnut or rufous shoulder patch (i.e., lesser coverts), white-edged outer tail feathers, and a white eye-ring (Sibley 2000). It also has a narrowly streaked breast, whitish belly, and notched brown tail. The legs are pinkish and the bill is dusky brown with a pinkish lower mandible (Rising 1996). Sexes are similar in plumage and juveniles are similar to adults but duller, and usually lack the chestnut shoulder patch (Pyle 1997). Compared with other similar-looking vesper sparrows, it is relatively larger and longer-tailed (Jones and Cornely 2002).

Oregon vesper sparrow nests are located on the ground and females construct the nest alone (Rising 1996). Nests can be bulky and loose or tightly woven of grasses and rootlets, often placed in a shallow depression (Berger 1968; Krueger 1981). They are usually located next to a clump of vegetation, crop residue, dirt clod, or at the base of a shrub or tree (Jones and Cornely 2002; Altman 2003). It is speculated this may help conceal the location from potential predators (Jones and Cornely 2002), as well as to help maintain optimal microclimate in the nest (Nelson and Martin 1999). They are not known to build alternate nests.

2.6.4.4 Threats

The primary range-wide threats to Oregon vesper sparrow are the following.

1. Continuing loss and degradation of grassland and savanna habitats (e.g., development and land conversion to non-suitable agricultural habitat)
2. Encroachment of invasive shrubs, trees, and tall, dense exotic grasses
3. Negative impacts of land use/management on nesting birds (e.g., type, degree, and timing of activities such as mowing, habitat restoration, overgrazing, military training, recreation)
4. Several factors related to small, isolated, and declining populations (e.g., genetic variability, recruitment/dispersal, stochastic events)
5. Predation from raptors, coyotes, as well as domestic and feral cats and dogs also pose a threat to the Oregon vesper sparrow.

2.6.4.5 Occurrence Data

Oregon vesper sparrow records have been compiled by WDFW from a variety of sources from the 1970s to 2019, and Bob Altman with the American Bird Conservancy (generally recognized as the leading expert on this species) surveyed Oregon vesper sparrows in south Puget Lowlands in 2013 (American Bird Conservancy 2016; Altman 2015; Altman et al. 2021; Slater 2021; Slater, unpublished data; WDFW unpublished data). There are several records of the species at the Airport (Altman 2015) and Altman reported hearing one to two males calling along the edges of the Airport grounds in 2013 (Altman 2015). Altman reported poor survey coverage at the Airport that year, which could mean there were more vesper sparrows than were detected. The last known sighting of one bird at the airport was recorded on eBird in 2015, none were detected during an intensive survey effort by WDFW at the airport in 2017-2018 (Altman et al. 2021).

Two other records have been documented in the Plan Area, but these records are nearly 30 years old and remaining habitat in these areas appears to be too degraded and isolated by development to sustain this species or provide suitable breeding sites. The records are dated January 1, 1989. Altman (2016) also did not detect Oregon vesper sparrows at any other location within the Plan Area during his comprehensive western Washington surveys in 2013.

Outside of comprehensive surveys conducted by Altman in 2013 – 2014, survey efforts for Oregon vesper sparrows in the Plan Area have been inconsistent except at the airport (Altman 2015). No Oregon vesper sparrows were detected during those surveys or during follow-up surveys in the highest known quality habitat in the region. Therefore, the extent and distribution of occupied sites is unknown. Oregon vesper sparrow is most detectable during the breeding season when males are singing, and during intensive periods of nesting activity when both adults are feeding young, either as nestlings or as fledglings. Detectability during migration and on the wintering grounds is reduced by the lack of singing. However, their movement in small flocks during those times enhances visual detectability to some degree. Visual detectability during all seasons is further challenged by potential confusion with several other “small, brown, grassland sparrows.” Although Altman’s 2013–2014 comprehensive survey effort provided an accurate estimation of Oregon vesper sparrow distribution and status within western Washington, there are likely additional occurrences that were undetected including within the Plan Area. Unknown detection probabilities combined with sporadic, opportunistic efforts to detect the species, result in an unknown distribution of Oregon vesper sparrow in the Plan Area.

2.6.4.6 Species Habitat Distribution Model

The model for the Oregon vesper sparrow is based on known species occurrences, and the species preference for open grassland habitat.

Habitat

Oregon Vesper Sparrow is migratory and overwinters almost entirely in California (AOU 1957; King 1968). They are not known to winter in Washington. Oregon vesper sparrow breeds in the south Puget Lowlands in open habitats including grassland, oak savanna, and some agricultural lands. Their ground nests are usually located next to a clump of vegetation, crop residue, soil clod, or at the base of a shrub or tree (American Bird Conservancy 2017). They prefer structurally diverse habitats, both within the herbaceous layer and among cover layers (e.g., trees, shrubs) (Altman et al. 2021). Varying vegetation heights appear to be important because birds forage on bare ground and short vegetation, and they nest in slightly taller vegetation. For diet, vesper sparrows scratch the ground to uncover seeds of grasses, weeds, and grain crops. They also pick insects and spiders from low plants during the breeding season. They bring their young to shrubby areas for cover after fledging, and they use taller vegetation for cover and singing perches (American Bird Conservancy 2017).

In the Puget Lowlands of Washington in the early 1900s, they were a bird of “cultivated land and open pastures” (Jewett et al. 1953). By the 1990s, they had become mostly restricted to the edges of open prairies and airports (Rogers 2000; Mlodinow 2005), with occasional birds in pastureland and Christmas tree farms (Rogers 2000). Clegg (1998, 1999) reported that all breeding territories (n = 23) at Joint Base Lewis-McChord, located just northeast of the Plan Area, were in areas of high-quality prairie supporting intact Idaho fescue (*Festuca idahoensis*) located near prairie edges.

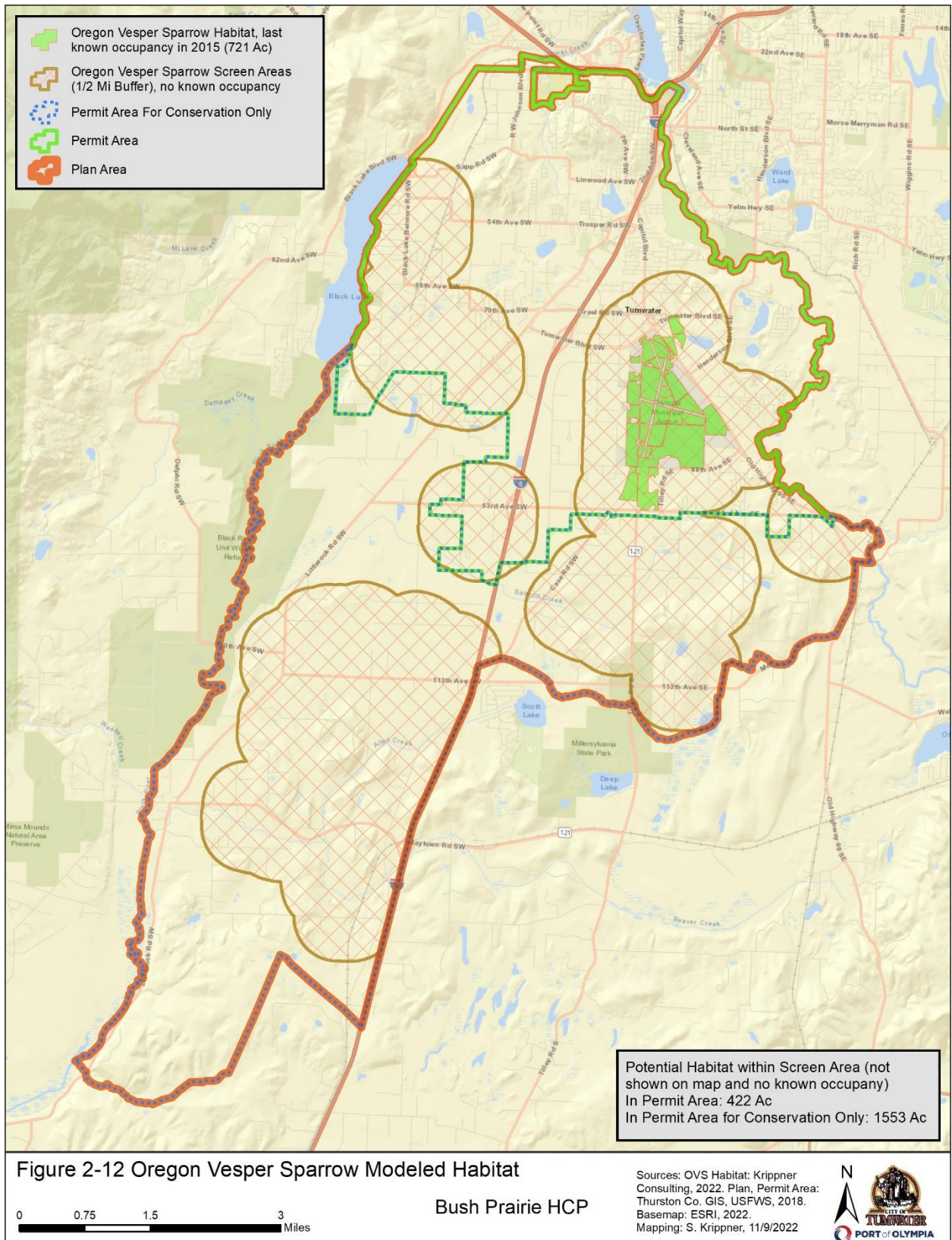
In prairies in the Puget Lowlands in 1998, Rogers (2000) reported reduced vegetation heights (average = 6.1–7.8 inches) and densities at foraging locations compared to random sites (10.5–13.6

inches). Foraging birds used sites with a mean cover of 32% bare ground, with the remainder grasses and forbs (American Bird Conservancy 2017).

Areas that meet the working definition for Oregon vesper sparrow habitat within the Plan Area are limited to grassland habitat, particularly edge areas adjacent to or interspersed with taller grasses, shrubs, and trees. These are more likely to meet habitat requirements for all life stages (nestling, fledging, and adults) and behaviors (nesting, foraging, and communicating by vocalization).

The mapped grass-shrub areas of the Airport predominantly meets the above working definition for Oregon vesper sparrow habitat in the Plan Area. This area is regularly mowed, which has the potential to affect nesting success opportunities. There could be some additional open lands within the Plan Area (e.g., farmlands) outside of the Airport areas that are occasionally suitable for this species, but there have been no recorded observations. Further, habitat on these lands likely occurs on a small percentage of any given parcel (i.e., around the edges) outside of the primary land use. This level and type of habitat use is difficult to estimate or model without a systematic survey effort of both habitat quality and species occurrence.

Within the Permit Area, there are approximately 721 acres of habitat for the Oregon vesper sparrow at the airport. Another 1,975 acres of potential habitat (422 acres outside of the airport in the Permit Area and 1,553 acres in the Permit Area for Conservation Only) within the screen areas that buffer potential habitat by 0.5 mile as shown on Figure 2-12, *Oregon Vesper Sparrow Modeled Habitat*. This figure represents the extent of potential Oregon vesper sparrow habitat in the Plan Area. See Figure 4-3, *Projected Development in Oregon Vesper Sparrow Habitat*, for a closer view of Oregon vesper sparrow habitat at the Airport.



3.1 Introduction

Covered activities are those projects or recurring activities that receive incidental take authorization under the ITP issued to the City and the Port as the Permittees. This chapter describes the methods used to determine which activities should be included as covered activities and the activities covered under the HCP. The effects covered activities may have on the covered species are described in Chapter 4, *Effects Analysis*.

3.2 Method for Identifying Covered Activities

The process for identifying covered activities began with discussions between the City, Port, and USFWS regarding the approach to be used to identify covered activities. This included discussion of past activities that have included measures to address federal ESA-listed species, as well as activities included in recent and ongoing project HCPs in the City that have addressed impacts on prairie-associated species (Table 1-1, *Proposed Covered Species*).

City and Port staff then developed comprehensive lists of activities and projects under their direct control or jurisdiction and that might require coverage under the ITP. The following six criteria were used to screen the lists. Candidate activities and projects meeting all six criteria are proposed as covered activities under the HCP.

- **Control:** The permittee will or has the authority to perform or authorize the activity.
- **Location:** The project or activity will occur within the Plan Area.
- **Timing:** A complete application for the project or activity filed with the City for approval is expected to occur after the HCP is approved (assumed to be in early 2024) and the project is completed within the expected term of the ITP (2024–2054).
- **Impact:** The project or activity may affect a covered species. Potential for incidental take that is unlikely or speculative does not meet this criterion.
- **Definition:** The location, size, and other relevant aspects of the project or activity can be defined well enough such that direct and indirect impacts on covered species can be evaluated and conservation actions developed to mitigate those impacts.
- **Practicability:** Inclusion of the project or activity as a covered activity will not result in undue delays or substantial additional cost to the HCP.

3.3 Covered Activity Categories

The City or Port, or project proponents under their jurisdictional authority, are expected to implement the projects and activities described below, all of which have the potential for take of one or more covered species.

Categories of covered activities are identified as follows.

- City
 - Urban development projects (residential, commercial, etc.).
 - Recurring activities.
 - Public facility operations and maintenance.
- Port
 - Aeronautical-related activities.
 - Capital infrastructure, support facilities, and utilities.
 - Facility operations and maintenance (see Sections 1.3.1.2, *Endangered Species Act 4(d) Rule for the Olympia Pocket Gopher*, and 1.3.1.4, *Endangered Species Act 4(d) Rule for Streaked Horned Lark*).
 - Recurring activities.
 - Non-aeronautical activities (urban commercial development).
 - Development on Port Owned Land.
 - Facility operations and maintenance.
- Conservation strategy implementation

The next sections describe the covered activities in each of the categories. The proposed covered activities are intended to define all the different types of activities covered by the HCP and provide the basis for the ITP requested by the City and Port through the HCP.

The intention of this chapter is to describe all activities or projects conducted by or authorized by the City or Port within the Plan Area that meet the criteria in Section 3.2, *Method for Identifying Covered Activities*. While all projects falling under the City's jurisdiction or authorized by the Port will be screened for coverage under the Plan, some may have been omitted unintentionally. This is the result of the HCP covering a 30-year permit term and the City and Port not having complete visibility into what may occur later in the permit term.

Future activities or projects that do not fall clearly within the descriptions provided in this chapter will be evaluated by the City or the Port on a case-by-case basis. If the City or Port determines that a specific type of project or activity is not included in the descriptions in this chapter, then it will not receive authorization under this Plan. Any uncertainties regarding whether a type of project or activity can receive coverage under this Plan will be resolved by the City or the Port, in consultation with USFWS as needed, depending on which entity has jurisdiction over the project or activity.

The HCP may be used to cover a project or activity under the Plan if it meets the following criteria.

- The activity or project does not preclude achieving the biological goals and objectives of the Plan (see Chapter 5, Conservation Strategy) at the time the covered activity is proposed. For projects where there is some question as to whether the biological goals and objectives of the HCP may be precluded, the determination will be made by the Permittees in coordination with USFWS.
- The activity or project is conducted by or is subject to the permitting authority or approval of the City or the Port.

- The activity or project is a type of impact evaluated in Chapter 4, Effects Analysis, of the Plan.
- Adequate incidental take coverage under the ITP remains available for covered activities described in this chapter and that remain to be implemented. See Chapter 4, *Effects Analysis*, for definitions of incidental take coverage.

3.4 City Covered Activities

Covered activities are described below. The lists of activities and project types do not mean these types of activities and projects would necessarily include an activity that would result in incidental take. Nor do the lists of activities and projects necessarily mean any particular activity requires a City permit or approval. The lists simply identify the types of projects that may request HCP coverage. How these projects could potentially affect covered species is described in Chapter 4, *Effects Analysis*.

3.4.1 Data Sources

The projects and activities listed below are based on information found in the Tumwater Municipal Code, the City's *Comprehensive Plan*, Subarea Plans, *Capital Facilities Plan*, and other associated plans, which may include master plans, bicycle or pedestrian plans, infrastructure plans, and other similar adopted plans that are consistent with and implement the City's *Comprehensive Plan* (City of Tumwater 2016a). The following plans apply to planning in the City and they will be amended as required by City ordinance or state law over the term of the HCP.

The City's *Comprehensive Plan* (City of Tumwater 2016a) includes the following elements and subarea plans, as amended.

- *Comprehensive Plan* (City of Tumwater 2016a) elements
 - *Conservation Element* (amended 2021)
 - *Housing Element* (amended 2021)
 - *Land Use Element* (amended 2021)
 - *Lands for Public Purposes Element* (amended 2019)
 - *Parks, Recreation, and Open Space Plan Update* (amended 2019)
 - *Transportation Plan* (2016)
 - *Utilities Element* (2016)
- *Economic Development Plan* (City of Tumwater 2019a)
- *Shoreline Master Program* (City of Tumwater 2019b)
- *Brewery District Plan* (City of Tumwater 2020a)
- *Black Hills Subarea Transportation Plan* (City of Tumwater 2003)
- *Capitol Boulevard Corridor Plan* (City of Tumwater 2014a)
- *Capital Facilities Plan 2022–2027* (City of Tumwater 2021)
- *Littlerock Road Subarea Plan* (City of Tumwater 2018a)

- *Tumwater/Thurston County Joint Plan* (City of Tumwater and Thurston County 2021)
- Other applicable City plans and documents include those listed below.
- *City of Tumwater Annexation Area Drainage Study* (City of Tumwater 2011)
- *City Wayfinding Signage Master Plan* (City of Tumwater 2008)
- *Citywide Design Guidelines* (City of Tumwater 2016b)
- *Comprehensive Emergency Management Plan* (City of Tumwater 2010a)
- *Stormwater Management Program Plan* (City of Tumwater 2019d)
- *Comprehensive Street Tree Master Plan* (City of Tumwater 2002)
- *Deschutes Riparian Habitat Rehabilitation Plan* (City of Tumwater 1993a)
- *Drainage Design and Erosion Control Manual for Tumwater* (City of Tumwater 2022)
- *Fire Master Plan* (City of Tumwater 2016c)
- *Tumwater Housing Action Plan* (City of Tumwater 2021)
- *Memorandum of Understanding: An Urban Growth Management Agreement, Tumwater and Thurston County* (City of Tumwater 1988)
- *Memorandum of Understanding: Urban Growth Area Zoning and Development Standards, Tumwater and Thurston County* (City of Tumwater 1995)
- *New Market Historic District Master Plan* (City of Tumwater 1993b)
- *Police Master Plan* (City of Tumwater 2001)
- *Salmon Creek Comprehensive Drainage Basin Plan* (Thurston County 2004)
- *City of Tumwater General Sewer Plan* (City of Tumwater 2015)
- *Strategic Plan (2010–2014) and Strategic Priorities 2021–2026* (City of Tumwater 2018c, 2021)
- *Thurston Climate Mitigation Plan* (City of Tumwater 2021)
- *Town Center Street Design* (City of Tumwater 2004)
- *Transportation Improvement Plan, 2017–2022* (City of Tumwater 2016d)
- *Union and Pioneer Calvary Cemeteries Master Plan* (City of Tumwater 2014b)
- *Urban Forestry Management Plan* (City of Tumwater 2021)
- *Water System Plan (2010–2015)* (City of Tumwater 2010b)
- *Wellhead Protection Plan* (City of Tumwater 2016e)
- Other applicable regional plans include those listed below.
- *2040 Regional Transportation Plan* (Thurston Regional Planning Council 2020)
- *Black Lake Basin Water Resource Protection Study* (Thurston County 2015a)
- *County-Wide Planning Policies* (Thurston County 2015b)
- *Deschutes River, Percival Creek, and Budd Inlet Tributaries TMDL Report* (Washington State Department of Ecology 2018)

- *Natural Hazards Mitigation Plan for the Thurston Region* (Thurston Regional Planning Council 2017)
- *Creating Places, Preserving Spaces: A Sustainable Development Plan for the Thurston Region* (Thurston Regional Planning Council 2013)
- *On-Site Sewage Management Plan* (Thurston County 2014)
- *Thurston Climate Adaptation Plan* (Thurston Regional Planning Council 2018)
- *Thurston County Solid Waste Management Plan* (Thurston Regional Planning Council 2009)
- *Thurston Regional Trails Plan* (Thurston Regional Planning Council 2007)
- *Tumwater School District Capital Facilities Plan* (Tumwater School District 2020)

3.4.2 Urban Development Projects

Urban development projects that occur in the Permit Area are undertaken to accommodate urban growth within the City and are subject to construction permits issued by the City. They include the construction of typical urban facilities (e.g., commercial, residential, industrial, and institutional buildings, parking lots and garages; utility infrastructure; landscaped areas), by both public and private proponents. Urban development projects include construction and maintenance of the following urban facilities and their accessory facilities and include all uses authorized or conditionally authorized through the City's zoning code, as it exists now, or it may be amended.

- *Residential, commercial, industrial, and other types of urban development projects in the City, including accessory uses supporting such development*, which may include commercial, residential, industrial, and institutional buildings; parking facilities; parking access ways; signs, water, sewer, and stormwater facilities; lighting and other utilities; landscaped areas; and other support structures.
- *Additions or modifications to developed sites that require a City permit*. Examples of these uses include building additions and changes to the landscaping, decks, patios, or outbuildings.
- *Transportation facilities*, such as sidewalks, paved and unpaved paths, streets, alleys, landscaping, bridges, signage, lighting, fencing, guardrails, signal systems, and transit facilities; all inclusive of ancillary components.
- *Public service and cultural facilities*, such as local government facilities, fire stations, police stations, operations and maintenance facilities, communications facilities, public administration centers, post offices, parcel delivery facilities, hospitals, medical facilities, schools, colleges, libraries, jails, places of worship, convention centers, theatres, museums, community centers, community gardens, concession buildings, and fish hatcheries.
- *Recreational facilities*, such as community and neighborhood parks, athletic fields, golf courses, sports courts, swimming pools, play toys, picnic facilities, indoor and outdoor sports centers, racetracks, campgrounds, dog parks, and trails; and associated infrastructure and amenities associated with these facilities, which may include access roads, utilities, restrooms, benches, signage, landscaping, parking facilities, launch ramps, trash receptacles, lighting, and drinking fountains.
- *Public and private utilities*, such as electric transmission and distribution lines, telecommunications lines, cable television lines and facilities, wireless communication facilities,

and underground and aerial telecommunications lines and facilities, aviation and other fuel lines, and gas pipelines.

- *Water delivery and storage facilities*, such as wells and well fields, water treatment plants, water supply pipelines, fill stations, water reservoirs/towers, water storage tanks, pump stations, and reclaimed water facilities.
- *Stormwater management facilities*, such as storm sewer systems, retention and detention facilities, stormwater and drainage collection systems, swales, and ditches, which may include roadside ditches, treatment facilities, nonpoint source reduction, outfalls, and drainage improvements.
- *Flood control facilities*, such as associated pipes and structures, culverts or outfall structures, dikes, and levees.
- *Waste-management facilities*, such as sewer lift stations, wastewater treatment plants, sanitary sewer systems, septic systems, water recycling, recycling centers, composting facilities, onsite hazardous waste treatment and storage facilities, solid waste handling facilities, transfer stations, and used oil collection facilities.
- *Funeral or interment services*, such as mortuaries, crematoria, columbaria, mausoleums, and similar services.
- *Agricultural facilities or services*, such as animal kennels, retail or wholesale nurseries, onsite commercial agricultural activities, which may include tree farms, accessory uses supporting the primary agricultural use, such as parking facilities, parking accessways, and stormwater facilities, and other support structures, which may include greenhouses, barns, toolsheds, and storage sheds (see Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*, for a list of activities that are not exempt from compliance with the ESA under the 4(d) Rule).

The City permits building additions and other improvements such as landscaping, decks, patios, or outbuildings depending upon their size and scope. The collective size of projects such as these that extend onto currently undeveloped land is small. From 2016 to 2018 the City processed over 30 such permits totaling less than 2.5 acres, collectively. These improvement projects are covered activities under the HCP, even though their collective impact on covered species is minimal to none. The ITP covers only otherwise lawful activities. An impact summary of urban development covered activities is described in Table 3-1, *City Urban Development Projects—Activity Summary*.

While the City can reasonably predict the range of urban development projects that are likely to occur during the permit term, locations and actual size of these projects are less clear over time. New development and redevelopment projected to occur within each zone district is summarized in Table 3-2, *Projected Development Per Zone District as of December 2020*.

Table 3-1. City Urban Development Projects—Activity Summary^a

<i>Duration</i>	Construction of an individual project would be approximately one year.
<i>Intensity</i>	Partial to complete habitat loss on individual parcels depending on construction impact area.
<i>Frequency</i>	With 1,702 parcels projected to develop over the 30-year permit term, the number of parcels in any individual year varies.
<i>Permanence</i>	An average of 162 acres of development or redevelopment per year (projects ranging in size from 0.1 acre to 117 acres, but typically less than 2 acres based on parcel size).

Location Throughout permit area

^a These are estimates only.

Table 3-2. Projected Development Per Zone District as of December 2020

Zone District	Number of Parcels ^{a, b, c}	Range (acres) ^d	Median (acres)	Total (acres)
Airport Related Industry	44	0.1–112	3	484
Business Park ^e	1	76	76	76
Brewery District	11	0.2–3	1	10
Capitol Blvd. Community	36	0.1–13	0.3	32
Commercial Development ^e	12	1–2	1	16
Community Services	4	0.4–35	20	75
General Commercial	53	0.1–18	2	223
Greenbelt	7	0.1–3	0.3	5
Light Industrial	224	0.1–39	2	853
Manufactured Home Park	2	0.2–10	5	10
Mixed Use	33	0.1–14	1	61
Multi-Family High Density	10	0.3–5	2	23
Multi-Family Medium Density	272	0.1–34	1	316
Neighborhood Commercial	12	0.5–5	2	24
Open Space	34	0.1–5	0.4	31
Residential/Sensitive Resource	76	0.1–36	3	350
Single Family Low Density	522	0.1–117	1	1,490
Single Family Medium Density	342	0.1–41	0.5	577
Town Center	24	0.1–20	2	102
Total				4,758

^a Areas that were less than 0.08 acre in size were deleted from the analysis because they did not represent zone district areas within parcels. Most of these areas appeared to be slivers along the edges of parcels resulting from the combination of different parcel data sources.

^b Includes parcels that the Thurston Regional Planning Council, Port of Olympia, Tumwater School District, and LOTT Alliance project will be developed during the 30-year term in the Permit Area.

^c Some parcels include more than one zoning designation so the number of parcels cannot be summed.

^d Range is the maximum and minimum development expected by parcel in each zone district.

^e Currently in the Urban Growth Area under County jurisdiction but may be annexed by the City during the permit term.

3.4.3 Recurring Activities

Recurring activities are activities that occur within the Permit Area and are subject to City authorizations or permits and that do not entail land clearing. They occur sporadically, are generally of limited duration, and include the following examples.

- Farmer's markets and roadside stands that occur in open areas suitable for the covered species.
- Temporary sales, such as yard sales and auctions that occur in areas suitable for the covered species.

- Authorized public or private events, such as neighborhood gatherings, festivals, parades, or other entertainment activities that occur on public or private lands in areas suitable for the covered species.
- Public firework displays.
- Public safety-related activities such as fire suppression, accident response, response to criminal activity, code enforcement, educational events, and training.

These activities may include related parking (i.e., off-pavement driving and parking), vegetation management, and temporary ground surfacing (tarps or weight-distributing mats) or temporary tables, tents, and signage erected only for the event duration (Table 3-3, *City Recurring Activities—Activity Summary*). Some of these activities will involve the use of equipment and vehicles that could disturb soil. These activities do not include permanent site modifications because most of these types of uses occur in urbanized areas that are heavily used and have no incidental take potential. However, the HCP description is being made as broad as possible to ensure HCP coverage is available.

Table 3-3. City Recurring Activities—Activity Summary

Recurring Activities	
<i>Duration</i>	Single day- to week-long events
<i>Intensity</i>	Variable; soil and vegetation disturbance
<i>Frequency</i>	Seasonal; typically April–October
<i>Permanence</i>	No permanent habitat loss per year; temporary habitat disturbance
<i>Location</i>	Throughout Permit Area

3.4.4 Public Facility Operations and Maintenance

Public facility operations and maintenance activities occur in the Permit Area and they are undertaken by the City or its direct contractors to maintain the utility of existing land uses, facilities, and services within the City. Covered public facility operations and maintenance activities are subject to direct control by the City, when City facilities are involved, or subject to a permit issued by the City. Public facility operations and maintenance activities are further subdivided into parks and open space; public services, infrastructure, and utilities; and transportation facilities. Public facility operations and maintenance activities involve mowing, landscaping, burning, pruning, cleaning, painting, stormwater facility maintenance, replacing minor components of existing infrastructure, and minor re-grading of previously graded areas. Operations and maintenance of private residential or commercial structures and grounds are not part of this activity.

Public facility operations and maintenance activities implemented by the Port are described in Section 3.5, *Port Covered Activities*.

3.4.4.1 Parks and Open Space

Parks and open space facility operations and maintenance activities performed by the City include the following, which are divided out between those activities that will result in soil disturbance and those that will not disturb soil. Parks and open space operations and maintenance activities are summarized in Table 3-4, *City Parks and Open Space Operations and Maintenance—Activity Summary*.

Activities Expected to Result in Soil Disturbance

- Placement and removal of infrastructure, which includes buildings, roads, and trails.
- Habitat enhancement and restoration projects.
- Maintenance of water irrigation systems on City parks and golf courses.
- Golf course maintenance and uses (e.g., excavation to repair sprinkler system).

Activities Not Expected to Result in Soil Disturbance

- Repair, maintenance, and replacement of signage.
- Landscaping and turf management.
- Erosion control and revegetation.
- Maintenance, repair, and replacement of parks equipment (including athletic fields, playgrounds, sport courts, and other similar outdoor recreation area use and maintenance).
- Trail maintenance (e.g., clearing trails from fallen trees and other debris, vegetation management, picking up trash and litter), abandonment, and restoration.
- Management of natural resources, including enhancement of freshwater resources, sensitive species management and monitoring outside of the Reserve System¹⁹, prescribed burns, invasive vegetation management, management of nuisance species, and managed grazing.

¹⁹ The term *Reserve System* is defined in Chapter 5, *Conservation Strategy*.

Table 3-4. City Parks and Open Space Operations and Maintenance—Activity Summary^a

Activity	Typical Duration	Expected to Result in Soil Disturbance?	Typical Frequency	Typical Size of Soil Disturbance	Permanent or Temporary	Location of Activity
<i>Maintenance and removal of infrastructure (trails, buildings, and roads)</i>	One week	Yes	2 times per year	0.1 acre	Temporary	On City-owned parks throughout Permit Area
<i>Management of Natural Resources and Habitat Enhancement and Restoration</i>	Two months	Yes	2 times per year	0.25	Temporary	Throughout Plan Area
<i>Maintenance of Water Irrigation Systems in Parks and Golf Courses</i>	One week	Yes	2 times per year outside of hardscape	0.25 acre	Temporary	Throughout Permit Area
<i>Golf Course Maintenance (e.g., excavation to repair sprinkler system)</i>	Year round	Yes	12 times per year	0.25 acre	Temporary	On the municipal golf course
<i>Repair, Maintenance, and replacement of signage</i>	One day	No	10 times per year	--	Temporary	Throughout Permit Area
<i>Landscaping and Turf Management</i>	One day	No	50 times per year	--	Temporary	Throughout Permit Area
<i>Erosion Control and Revegetation</i>	One week	No	2 times per year	--	Temporary	Throughout Permit Area
<i>Maintenance and Repair of Parks Equipment</i>	Year round	No	50 times per year	--	Temporary	On City-owned parks throughout Permit Area
<i>Trail Maintenance</i>	Year round	No	25 times per year	--	Temporary	Throughout Permit Area
<i>Management of Natural Resources</i>	One week–one month (Primarily June–September)	No	50 times per year in covered species habitat	--	Temporary	Throughout Permit Area

^a The impacts that these activities are expected to have on covered species habitat are shown in Chapter 4, *Effects Analysis*.

3.4.4.2 Public Services, Infrastructure, and Utilities

Although public infrastructure is diverse in nature, it often shares common facility operations and maintenance needs. The City performs a wide variety of facility operations and maintenance activities associated with public services, infrastructure, and utilities. These activities are divided below between those activities that are expected to result in soil disturbance and those that are not expected to result in soil disturbance (Table 3-5, *City Public Services, Infrastructure, and Utilities Operations and Maintenance—Activity Summary*).

Activities Expected to Result in Soil Disturbance

- Replacement and maintenance of culverts and flood control structures and associated stormwater conveyance infrastructure.
- Municipal stormwater system maintenance, which includes the following.
- Excavation, inspection, cleaning, repair, replacement, and reburial of in-ground facilities (e.g., manholes, vaults, pipes, culverts, outfall structures).
- Installation, maintenance, removal, and replacement of soils within the stormwater facility.
- Cleaning, grading, and repair of ditches, swales, and ponds.
- Utility facilities operations and maintenance, which includes natural gas, electric, water, sewer, communications, irrigation, and other utility infrastructure. Activities include surveying, excavation, trenching, replacement of aboveground or belowground infrastructure, transmission line reconductoring, storage of overburden material, and restoration of disturbed ground at maintenance sites. Maintenance of underground utilities often requires trenching around existing pipelines and conducting repairs or replacing segments of pipeline. Utility infrastructure includes overhead and underground facilities in rights-of-way as well as on private property to the service meter (typically found on the side of the business or residential building). Utility work in right-of-way activities may occur at any time of year, and at varying intensity, frequency, and permanence. Common practices for installing and maintaining underground utilities include the following activities that disturb soil.
 - Excavation for maintenance purposes typically uses a backhoe. Equipment is usually staged on the pavement and excavation spoils are directly loaded into trucks for disposal offsite.²⁰ Excavations are minimized to the extent practical, both to control cost and to minimize restoration requirements.
 - Use of a bore machine, which involves placing the boring machinery and initiating a bore pit where the bore head is inserted into the ground and a receive pit where the bore head ends. The communications cable or conduit is attached and pulled back through the hole created by the bore head.
- Mechanical and manual vegetation management includes mowing (limited soil disturbance) and disking.

²⁰ In some cases, spoils may be reused as native backfill.

Activities Not Expected to Result in Soil Disturbance

- Mechanical and manual vegetation management includes pruning, tree and shrub planting and replacement, maintenance of fire fuel management zones along existing infrastructure, grazing for purposes of vegetation management, removal of dead or downed wood or live vegetation that threatens the integrity of structures, and seeding or planting of disturbed areas.²¹
- Installation and maintenance of fencing.
- Installation and maintenance of lighting.
- Maintenance of conveyance or storage capacity of stormwater infrastructure through sediment removal, bank stabilization, vegetation management, and natural and trash debris removal.
- Beaver control and dam removal to prevent hazardous flooding.
- Installation of flow leveler.²²

²¹ Harvest, control, or other management of noxious weeds and invasive plants through mowing, disking, herbicide and fungicide application, fumigation, or burning is covered under the 4(d) Rule for Olympia Pocket Gopher (Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*).

²² A flow leveler is a device, typically pvc or other type of piping, that allows water to flow through a beaver dam or plugged culvert reducing the chances of harmful flooding.

Table 3-5. City Public Services, Infrastructure, and Utilities Operations and Maintenance—Activity Summary^a

Activity	Duration	Expected to Result in Soil Disturbance?	Frequency	Typical Size of Soil Disturbance	Permanent or Temporary	Location of Impacts
Activities that Result in Soil Disturbance						
<i>Replacement and Maintenance of Culverts</i>	Year round—one week	Yes	10 times per year	0.1 acre	Temporary	Within public utility ROWs throughout Permit Area
<i>Stormwater System Maintenance</i>	One week—one month	Yes	50 times per year	0.1 acre	Temporary	Within public utility ROWs throughout Permit Area
<i>Utility System Maintenance</i>	One week—one month	Yes	50 times per year	0.1 acre	Temporary	Within public utility ROWs throughout Permit Area
<i>Mechanical and Manual Vegetation Management</i>	One week	Yes/No	50 times per year in covered species habitat	--0.1	Temporary	Within public utility ROWs throughout Permit Area
<i>Installation and Maintenance of Fencing</i>	One week	No	2 times per year	--	Temporary	Within public utility ROWs throughout Permit Area
<i>Installation and Maintenance of Lighting</i>	One day	No	5 times per year	--	Temporary	Within public utility ROWs throughout Permit Area
<i>Maintenance of Flood Control Structures</i>	One week–six months	No	1 time per year	--	Temporary	Within public utility ROWs throughout Permit Area
<i>Beaver Dam Removal</i>	One day	No	10 times per year	--	Temporary	Throughout Permit Area
<i>Installation of Flow Leveler</i>	One week	No	1 time per year	--	Temporary	Throughout Permit Area

ROW = right-of-way

^a The impacts that these activities are expected to have on covered species habitat are shown in Chapter 4, *Effects Analysis*.

3.4.4.3 Transportation Facilities

Transportation infrastructure includes transit facilities, public and private roadways, bicycle paths, sidewalks, pedestrian trails and other paths, roadside parking and viewing facilities, and ancillary drainage systems (Table 3-6, *City Transportation Facilities Operations and Maintenance—Activity Summary*). Facility operations and maintenance activities occur within the rights-of-way. Facility operations and maintenance activities at these facilities are performed by the City or require City authorization and include the following activities that are categorized by those that are expected to result in soil disturbance and those that are not expected to result in soil disturbance.

Activities Expected to Result in Soil Disturbance

- Drainage system maintenance, which includes modification of ditches and conveyance facilities, back-slopes, and shoulders.
- Bridge and culvert repair activities.
- Repair and replacement of damaged pavement that requires disturbance to adjacent soils. This activity occurs year-round and involves all activities to repair or replace existing pavement, including sidewalk repairs and upgrades for the Americans with Disabilities Act. Repair or replacement of damaged pavement that does not include disturbance of adjacent soils is not a covered activity.

Activities Not Expected to Result in Soil Disturbance

- Repair and maintenance of fencing and guardrails.
- Signal, lighting, and signage system maintenance.
- Snow and ice control (chemical treatment of road surfaces to melt snow and prevent icing).
- Roadside vegetation management.

Table 3-6. City Transportation Facilities Operations and Maintenance—Activity Summary^a

Activity	Duration	Expected to Result in Soil Disturbance?	Frequency	Typical Size of Soil Disturbance	Permanent or Temporary	Location of Impacts
<i>Drainage System Maintenance</i>	Year round	Yes	10 times per year	0.1 acre	Temporary	On City-owned transportation ROWs throughout Permit Area
<i>Bridge and Culvert Repair Activities</i>	One day – six months	Yes	10 times per year	0.1 acre	Temporary	On City-owned transportation ROWs throughout Permit Area
<i>Repair and Replacement of Damaged Pavement and Sidewalk Replacement that involves disturbance to adjacent soils</i>	Year round	Yes	10 times per year	--	Temporary	On City-owned transportation ROWs throughout Permit Area
<i>Repair and Maintenance of Fencing and Guardrails</i>	One day–one week; (Primarily March–June)	No	10 times per year	--	Temporary	On City-owned transportation ROWs throughout Permit Area
<i>Signal, Lighting, and Signage System Maintenance</i>	One day	No	5 times per year	--	Temporary	On City-owned transportation ROWs throughout Permit Area
<i>Snow and Ice Control</i>	One day	No	5 times per year	--	Temporary	On City-owned transportation ROWs throughout Permit Area
<i>Roadside Vegetation Management/Mowing</i>	Up to 1 mile/day (Primarily June–September)	No	Entire right-of-way each year	--	Temporary	On City-owned transportation ROWs throughout Permit Area

^aThe impacts that these activities are expected to have on covered species habitat are shown in Chapter 4, *Effects Analysis*.

3.5 Port Covered Activities

All covered activities of the Port will occur in the Permit Area and will be limited in the HCP to projects and activities occurring on the Airport, which the Port owns and operates, and Port-owned properties outside the Airport and in the Permit Area. The Port has authority to limit and condition all activities on Port lands consistent with the authority of the Port Commission.

3.5.1 Data Sources

The Port operates consistent with the following currently applicable plans.

- *Comprehensive Scheme of Harbor Improvements & Development Guidelines* (Port of Olympia 2017) and Subsequent Series.
- *Olympia Airport Master Plan Update* (Port of Olympia 2016) and Subsequent Series.
- *New Market Industrial Campus Real Estate Master Plan* (Port of Olympia 1993) and Subsequent Series.
- *Tumwater Town Center Land Use Plan* (Port of Olympia 2004).

The Port is engaged in the same categories of activity as the City.

- **Urban Development Projects.** Except as noted in Section 3.5.2, *Aeronautical-Related Activities*, all urban development projects on Port lands are subject to City permitting authority and thus are City covered activities, as described in Section 3.4.2, *Urban Development Projects*.
- **Recurring Activities.** Except as noted in Section 3.5.2, *Aeronautical-Related Activities*, all recurring activities on Port lands are subject to City permitting authority and thus are City covered activities, as described in Section 3.4.3, *Recurring Activities*.
- **Facility Operations and Maintenance (Park and Open Space Facilities; Public Services, Infrastructure and Utilities; Transportation).** Facility operations and maintenance on Port lands are subject to Port Commission authority.

3.5.2 Aeronautical-Related Activities

Aeronautical-related activities are those that occur within the Air Operations Area of the Airport that support Airport and aircraft operation, but do not include actual aircraft operation (e.g., landings, take-offs). Projects may be funded all or in part by grants from the FAA, thus establishing a federal nexus. Projects that are not eligible for federal or state funding are usually funded solely with Port funds. These projects must occur consistent with any provisions of the FAA-accepted Airport Master Plan and ALP documents as well as Airport Deed Restrictions, FAA Grant Assurances and FAA Order 5190.6 (Series). From time to time, unanticipated projects not specifically identified in these documents may be required or desired but will be similar in nature and scope to those projects identified in the *Airport Master Plan* and ALP and subject to FAA review and approval.

The projects and activities listed in the following subsections are based on previous information presented in the most recent *Airport Master Plan Update* (Port of Olympia 2016) affecting Airport facilities under the jurisdiction of the FAA. Most of these activities and projects are not eligible for ESA compliance via ESA Section 7 because there is no federal nexus, such as federal funding or a federal approval.

The *Airport Master Plan Update* (2016) establishes a strategy to implement the necessary improvements to satisfy the forecast aviation demand at the Airport, while also providing guidance on what will be required to demonstrate the Port's ability to fund the identified improvement projects. The overall concept is to maximize the opportunities to receive federal and state grants in the context of and in recognition of the amount of local funds available for capital needs.

3.5.2.1 Capital Infrastructure, Support Facilities, and Utilities

Aeronautical-related activities related to infrastructure, support facilities, and utilities on the Airport include those on the following list (Table 3-7, *Port Capital Infrastructure, Support Facilities, and Utilities—Activity Summary*). FAA or Washington State Department of Transportation grants may fund some of these activities.

- Capital transportation infrastructure construction (new and rehabilitation) such as runways, taxiways, aprons, ramps, taxi lanes, heliports, helipads, and motor vehicle roadways and travel lanes would include pavement removal, seal coating, signage and lighting, pavement marking, reflectors, and construction staging.
- Construction of airfield and facility lighting, instrument approach facilities, navigational aids, visual approach lighting systems, precision approach lighting systems, and weather observation and reporting facilities would include facility maintenance, vehicle travel lanes, and other miscellaneous Airport support facilities.
- Construction (new and rehabilitation) of aircraft hangar facilities, commercial and corporate air service terminals, maintenance support facilities, office buildings, air traffic control facilities, Airport Rescue & Fire Fighting facilities and associated ground support, training and vehicle access and parking areas. Construction of these areas is most likely to occur in areas shown on red on Figure 3-1, *Projected Development at Olympia Regional Airport*.

Table 3-7. Port Capital Infrastructure, Support Facilities, and Utilities—Activity Summary

<i>Duration</i>	Could occur year-round; projects are typically completed in 1 year
<i>Intensity</i>	Varies from temporary disturbance to permanent habitat loss
<i>Frequency</i>	One project every 3 years
<i>Permanence</i>	Permanent habitat loss based on demand for land over the permit term
<i>Location</i>	On Port-owned lands, inside Airport fence

3.5.2.2 Facility Operations and Maintenance

Facility operations and maintenance activities are undertaken to maintain the utility of existing Airport facilities, services, and operations (Table 3-8, *Port Facility Operations and Maintenance—Activity Summary*). Covered facility operations and maintenance activities are subject to direct control by the Port and subject to FAA regulations. Facility operations and maintenance activities are implemented to ensure regulatory compliance, safe and efficient Airport flight and ground operations, Airport passenger and personnel safety, and the safety of the public. This includes maintaining 350 acres of the Airport airfield safety area in a low grassland condition through ongoing maintenance and land management strategies consistent with FAA Grant Assurances.

Some maintenance activities may be covered in regard to Olympia pocket gopher under the 4(d) special rule (50 CFR Part 17, Vol. 78, No. 192), as long as it remains in place.

The Port performs these airside and landside activities with no FAA approval or funding. These activities are divided between those that do result in soil disturbance and those activities that do not.

Activities Expected to Result in Soil Disturbance

- Utility facilities maintenance, which includes natural gas, electric, water, sewer, communications, irrigation, and other utility infrastructure. Activities include surveying, excavation, trenching, replacing aboveground or belowground infrastructure, replacing transmission lines, storing overburden material, and restoring disturbed ground at maintenance sites. Maintenance of underground utilities often requires trenching around existing pipelines and conducting repairs or replacing segments of pipeline.
- Culvert and drainage ditch replacement and maintenance.
- Vegetation management, including activities to manage rodents, insects, and disease. This includes mowing or disking for weed abatement and for insect and disease management.^{23, 24}

Activities Not Expected to Result in Soil Disturbance

- Repair, maintenance, and replacement of signage.
- Erosion and vegetation control/replacement.
- Installation and maintenance of fencing and lighting.
- Maintenance of conveyance or storage capacity of stormwater infrastructure through sediment removal, bank stabilization, vegetation management, and natural and trash debris removal.
- Airport building rehabilitation and landscaping,
- Dust and erosion management.
- Removal of dead and dying wood, trees, and vegetation to manage rodents, insects, and disease.
- Mechanical and manual vegetation management, which includes pruning, grazing for purposes of vegetation management, removal of dead or downed wood or live vegetation and seeding or planting of disturbed areas. Also includes invasive vegetation management, management of nuisance species, and managed grazing.
- Sensitive species monitoring.

²³ Harvest, control, or other management of noxious weeds and invasive plants through mowing, disking, herbicide and fungicide application, fumigation, or burning is covered under the 4(d) Rule for Olympia Pocket Gopher (Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*).

²⁴ The use of pesticides or herbicides is not a covered activity because USFWS has not authorized the U.S. Environmental Protection Agency to certify their use. Trapping is not a covered activity.

Table 3-8. Port Facility Operations and Maintenance—Activity Summary

Activity	Duration	Expected to Result in Soil Disturbance?	Frequency	Typical Size of Soil Disturbance	Permanent or Temporary	Location of Impacts
<i>Utility Facilities Maintenance</i>	One day–one week	Yes	10 times per year	0.1 acre	Temporary	On Port-owned property within Airport fence
<i>Culvert and Drainage Ditch Replacement and Maintenance</i>	One day–one week	Yes	5 times per year	0.1 acre	Temporary	On Port-owned property within Airport fence
<i>Vegetation Management including Invasive Vegetation Management (disking and mowing)</i>	One week–one month (primarily June–September)	No	Two times per year	0.1 acre	Temporary	On Port-owned property within Airport fence
<i>Repair, Maintenance, and Replacement of Signage</i>	One day	No	3 times per year	--	Temporary	On Port-owned property within Airport fence
<i>Erosion and Vegetation Control</i>	One day–one week	No	One time per year	--	Temporary	On Port-owned property within Airport fence
<i>Installation and Maintenance of Fencing and Lighting</i>	One week	No	One time per year	--	Temporary	On Port-owned property within Airport fence
<i>Maintenance of Stormwater Conveyance Infrastructure</i>	One week–one month	No	10 times per year	--	Temporary	On Port-owned property within Airport fence
<i>Airport Building Rehabilitation</i>	One week–one month	No	3 times per year	--	Temporary	On Port-owned property within Airport fence
<i>Dust and Erosion Management</i>	One day; summer months	No	50 times per year	--	Temporary	On Port-owned property within Airport fence

Activity	Duration	Expected to Result in Soil Disturbance?	Frequency	Typical Size of Soil Disturbance	Permanent or Temporary	Location of Impacts
<i>Mechanical Snow and Ice Control</i>	Winter months	No	10 times per year	--	Temporary	On Port-owned property within Airport fence
<i>Vegetation Management including Invasive Vegetation Management, Management of Nuisance Species, and Managed Grazing</i>	One week–one month (Primarily June–September)	No	Two times per year	--	Temporary	On Port-owned property within Airport fence
<i>Removal of Dead/Dying Wood</i>	One week (Primarily June–September)	No	Two times per year	--	Temporary	On Port-owned property within Airport fence
<i>Sensitive Species Monitoring</i>	Several months (Primarily June–September)	No	One time per year	--	Temporary	On Port-owned property within Airport fence

^aThe impacts that these activities are expected to have on covered species habitat are shown in Chapter 4, *Effects Analysis*.

3.5.2.3 Recurring Activities

The Olympia Air Show is held annually. The air show includes three phases of activity: set-up, the event itself, and teardown. Set-up typically takes 2 days, the event itself takes 2 days, and teardown takes 2 days. Throughout the event, vehicles may park on the grass adjacent to the hangars, and in a designated 6-acre grass parking area on the east side of Old Highway 99. Pedestrians walk in these areas as well. Fencing is used to limit the area of this disturbance. During the air show, approximately 3,000 people visit the Airport, using areas not prohibited from access by signage and/or fencing.

Each year, the Olympia Air Show requires a federal action from FAA in the form of an Airspace Waiver. Because of this federal action, the FAA consults with USFWS each year, forwarding a biological assessment developed by the Port that evaluates the potential impacts of the air show on listed species. USFWS has historically issued a biological opinion with incidental take authorization subject to terms and conditions. The most recent USFWS Biological Opinion 01EWF00-2018-F-0584 for the Olympia Air Show(s) 2018–2023 was conducted in accordance with ESA Section 7. In the future, the HCP is designed to cover the air show.

In addition to the air show, the Airport hosts training events that include related parking (i.e., off-pavement driving, and parking associated with these events), vegetation management, and temporary ground surfacing (tarps or weight-distributing mats) or temporary tables, tents, and signage erected only for the event duration. These activities do not include permanent site modifications.

Port recurring activities are summarized in Table 3-9, *Port Recurring Activities—Activity Summary*.

Table 3-9. Port Recurring Activities—Activity Summary

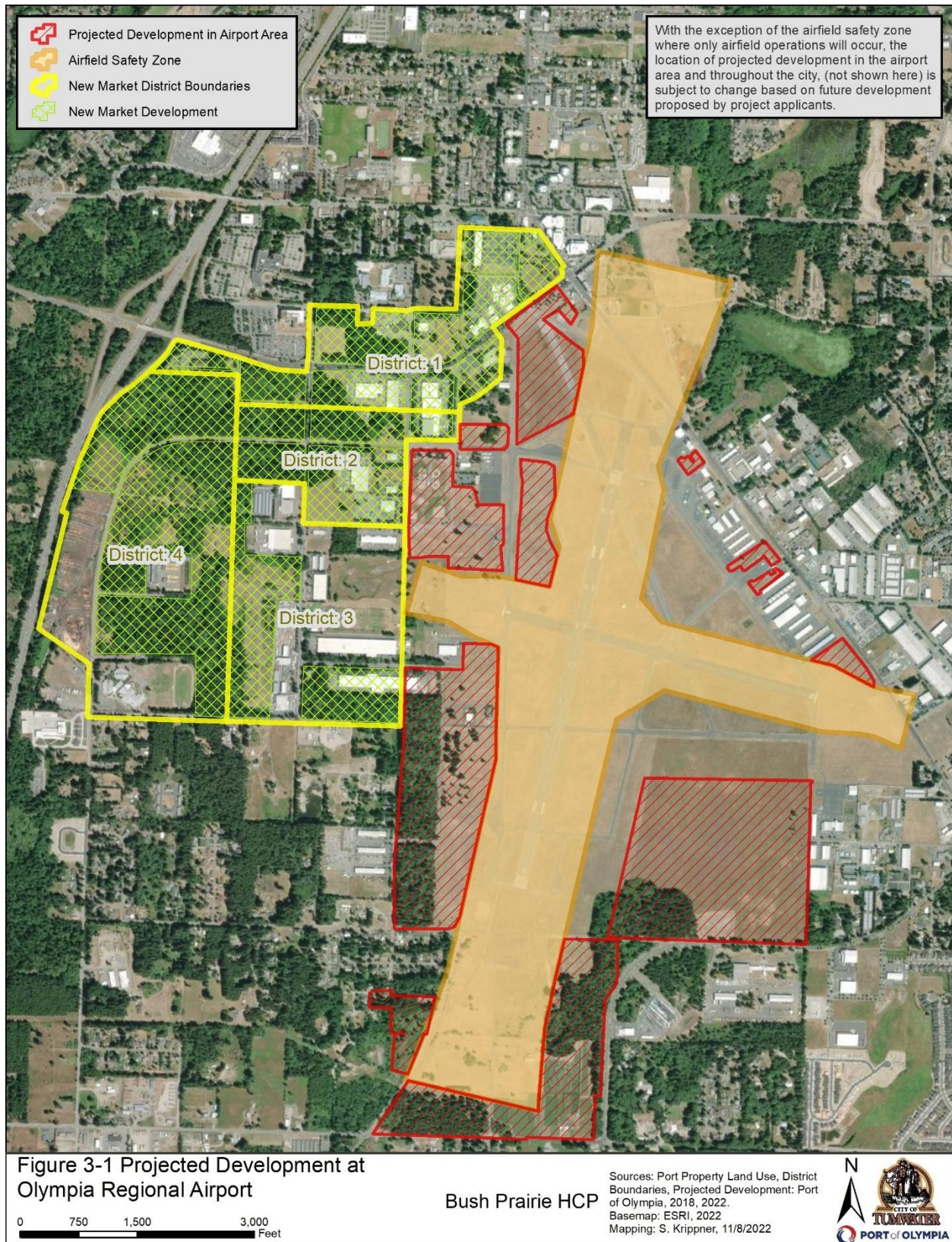
<i>Duration</i>	6 days
<i>Intensity</i>	Variable; soil and vegetation disturbance
<i>Frequency</i>	One per year
<i>Permanence</i>	No permanent habitat Loss but temporary disturbance
<i>Location</i>	On Port-owned lands, inside Airport fence

3.5.3 Non-Aeronautical Activities

3.5.3.1 Development on Port-owned Land

Projected development in the airport area on Port-owned land includes development of aviation-related and industrial developments shown in red, and development in the New Market Industrial area, as shown on Figure 3-1, *Projected Development at Olympia Regional Airport*. Development of areas shown in red will be based on future aeronautical-related development such as new aircraft hangars as described in Section 3.5.2, *Aeronautical Activities* and future non-aeronautical, industrial demand for this land.

The Port is preparing a *New Market Industrial Campus Real Estate Master Plan*, in concert with the *Comprehensive Scheme of Harbor Improvements* (Port of Olympia 2017), which will guide future marketing and development on Port-owned properties within the New Market Industrial Campus, which is next to the Airport, within the Plan Area and the City limits (Figure 3-1, *Projected Development at Olympia Regional Airport*). Upon completion, the *New Market Industrial Campus Real Estate Master Plan* will guide the Port's future planning and investments for this area. The Port intends to develop the Tumwater Town Center in this area, in a manner that is consistent with allowable City land use designations established in the *Comprehensive Plan* (City of Tumwater 2016a).



Development at the New Market Industrial Campus will include a mix of commercial, office, manufacturing, and retail uses, with gateway anchors on each end of Tumwater Boulevard. Additional major uses include industrial business park and flexible space; land reserved for hospitality; a major public or private institution such as a hospital; a larger-scale retail complex; or a corporate business campus. The *New Market Industrial Campus Real Estate Master Plan* divides the campus into four districts. All development activities described in the *New Market Industrial Campus Real Estate Master Plan* will be covered by the HCP.

- District One is 108 acres and it will include mixed-use development at the north end of the campus and centers around Tumwater Boulevard.
- District Two is a commercial transition district just south of District One. Development within the district will include a mix of office buildings and buildings with flex or light industrial uses, similar to current tenants.
- District Three is the industrial center with current large-scale tenants Cardinal Glass and International Wood Products. Future development will center on large-scale industrial businesses.
- District Four is the planned campus district, which is the largest of the districts. The district is intended to accommodate large-scale uses. The area along Interstate 5 will be developed as a mix of retail, flex space, and light industrial uses. The land to the east will be used to develop a combination of light industrial and heavier industrial businesses.

A summary of the duration, intensity, frequency, and permanence of non-aeronautical activities are included in the description and summary provided in Table 3-1, *City Urban Development Projects—Activity Summary*, under City urban infrastructure activities.

3.5.3.2 Facility Operations and Maintenance

Facility operations and maintenance activities associated with non-aeronautical activities would be the same as those described for the City in Section 3.4.4, *Public Facility Operations and Maintenance*, and are implemented under Port direction. Covered activities do not include facility maintenance conducted by Port tenants unless their maintenance plan implements the HCP conservation actions and is subject to Port approval, monitoring, and enforcement. The extent and frequency of these activities are included in Table 3-4, *City Parks and Open Space Operations and Maintenance—Activity Summary*, Table 3-5, *City Public Services, Infrastructure, and Utilities Operations and Maintenance—Activity Summary*, and Table 3-6, *City Transportation Facilities Operations and Maintenance—Activity Summary*.

3.6 Conservation Strategy Implementation

Conservation strategy implementation projects and activities could occur in either the Permit Area or Permit Area for Conservation Only and are undertaken to create and maintain mitigation lands. These activities will be undertaken by the Permittees or by the Permittees' contractors. The HCP conservation strategy includes a network of dedicated mitigation lands, complemented by lands that are protected and maintained pursuant to conservation easements. The HCP conservation strategy also includes measures to restore habitat for the covered species on mitigation lands and lands already owned and maintained by the City and the Port.

Implementation of the conservation strategy consists of work done on parcels added to the Reserve System (see Chapter 5, *Conservation Strategy*) and performed to improve its value as habitat for covered species. A conservation strategy project may include the following activities, which would be performed during the establishment of the Reserve, and as a means to enhance it for covered species over the long term.

If a unit of the conservation Reserve System is located outside the City, then construction and maintenance at that reserve unit will be subject to constraints placed by the applicable jurisdictional entity, in addition to the HCP. In most cases, the applicable entity is Thurston County.

Portions of the conservation Reserve System may be open for public access. If so, any associated trails, parking areas, signage, etc. would be covered activities, which are defined in Section 3.4.2, *Urban Development Projects*, and Section 3.4.4, *Public Facility Operations and Maintenance*.

All monitoring and management activities on Reserve lands are covered by the ITP except species translocation, which would need to be covered by future 10a1A recovery permits based on the specifics of the program at that time.

3.6.1 Activities Expected to Result in Soil Disturbance

- Demolition of existing structures, roads, drainage structures, or other infrastructure and removal of demolition debris from the site.
- Recontouring or regrading of the site to achieve desired gradients and contours, in both uplands and wetlands.
- Construction of light-duty roads or tracks exclusively for purposes of site access and maintenance.

3.6.2 Activities Not Expected to Result in Soil Disturbance

- Vegetation removal and installation, potentially including removal of trees and shrubs, grinding or removal of stumps, controlled burning, control of undesirable herbaceous or woody vegetation, herbicide application, soil amendments, and planting or seeding using native species.
- Wetland or stream enhancement to improve habitat for Oregon spotted frog.
- Fencing and signage.
- Monitoring for the covered species consistent with Chapter 6, Monitoring and Adaptive Management.

3.7 Projects or Activities Not Covered

As described in Section 3.3, *Covered Activity Categories*, the goal of the covered activities descriptions is to be as inclusive as possible. That is, all projects and activities that meet the criteria and that are described in this chapter are included as covered activities. A described activity or project may be covered under the HCP, if the criteria listed in Section 3.3, *Covered Activity Categories*, are met.

The following projects and activities were considered but rejected for authorization.

- Private-sector urban development projects on existing development that do not obtain a construction permit. Construction permits involve land disturbance for the purposes of making land improvements, which may include the construction of buildings, roads, and driveways. Private-sector activities that are not required to obtain these development permits are not subject to the land use approvals of the City and therefore are not covered by the HCP. Although not proposed for coverage under the HCP, such activities may still obtain coverage as a Participating Special Entity, if needed. Details on Participating Special Entities are discussed in Section 7.4, *Participating Special Entity*.
- Projects and activities, other than conservation strategy implementation, outside the City's boundaries are not covered by the HCP.
- Flight activities at the Airport not associated with the annual air show. This includes take-off, landing, and taxiing of aircraft and all support crews during any of those processes.
- Agricultural activities that do not go through a City permitting process (e.g., a site plan or a building or grading permit) are not subject to local approval and therefore cannot be covered by the HCP. Any agricultural activity that does require a City grading permit, including the conversion of agricultural lands to urban uses, is covered under the HCP and is described earlier in this chapter.
- Expansion of cultivated agriculture into natural lands. The expansion of cultivated agriculture into natural lands is not covered by the HCP unless it receives an authorization from the City (e.g., a site plan approval).
- The use of pesticides or herbicides is not a covered activity because USFWS has not authorized the U.S. Environmental Protection Agency (EPA) to certify their use.
- Mining, including mining of rock, sand, and gravel. Due to the potentially extensive impacts associated with new or expanded mines, and the extensive state and federal review processes involved, the development of new or expanded mines is not covered by the HCP.
- New and expanded landfills. Due to the potentially extensive impacts associated with new or expanded landfills and a lack of understanding about what future projects might be proposed, the development of new or expanded landfills is not covered by the HCP.
- Emergency activities not defined as a changed circumstance in the HCP. During the permit term, the Permittees and those under their jurisdiction may need to respond to emergencies. Existing consultation regulations will apply to emergency activities (50 CFR 402.05).

4.1 Introduction and Approach

This chapter discusses the potential effects from the activities described in Chapter 3, *Covered Activities*, both adverse and beneficial, on covered species within the Plan Area. The effects analysis establishes a base level for these potential effects prior to avoidance, minimization, or mitigation measures, which are discussed in Chapter 5, *Conservation Strategy*.

The effects analysis identifies activities that may result in incidental take of covered species and encompasses the immediate, often obvious, effect of an activity on a species or its habitat as well as effects that occur later in time, but are still reasonably certain to take place. This includes direct mortality or injury to individuals or the removal or degradation of suitable habitat (defined as *harm* by the federal ESA).

This chapter first describes effects mechanisms (i.e., how covered activities are expected to affect habitat for covered species), followed by a decision on the effects assessment methodology. This section describes the methods used to quantify take of covered species. The final sections of this chapter discuss the effects on covered species, both qualitative and quantitative, as well as impacts on critical habitat.

4.2 Effects Mechanisms

This section describes the expected mechanisms of effects—how covered activities are expected to affect habitat for covered species. Effects on covered species are discussed in Section 4.4, *Effects on Covered Species*. Effect mechanisms are grouped for the purposes of analysis in accordance with the categories of covered activities described in Chapter 3, *Covered Activities*, and listed below.

1. City
 - Urban development projects.
 - Agricultural development projects.
 - Recurring activities.
 - Facility operations and maintenance.
2. Port
 - Aeronautical-related activities.
 - Capital infrastructure, support facilities, and utilities.
 - Facility operations and maintenance.
 - Recurring activities.
 - Non-aeronautical activities.

- Development on Port Owned Land.
 - Facility operations and maintenance.
3. Conservation strategy implementation

4.2.1 Urban Development Projects

The major effect of new urban development projects (described in Section 3.4.2, *Urban Development Projects*) is habitat conversion from undeveloped to developed land cover types (Table 4-1, *Summary of Impact Mechanisms*). In addition to the net loss of undeveloped land cover in the Permit Area, such conversion may further isolate and fragment remaining natural habitat and populations of covered species within the urban area, rendering it less suitable or unsuitable for covered species and decreasing the genetic exchange between populations of covered species.

4.2.1.1 Effects Mechanisms

Residential and urban development in covered species habitat will result in permanent effects on covered species because it is assumed that complete loss of covered species habitat would occur at project sites (1.0 acre or less) in urban areas unless habitat or species occurrence is specifically set aside for protection.²⁵ For the purposes of this HCP, projects that occur on parcels of 1.0 acre or less, any habitat loss will be considered a total loss, because any habitat remaining on that parcel is assumed to be functionally lost for the covered species. For parcels that are larger than 1.0 acre, habitat loss from the project would be the total acres of covered species habitat lost from the covered activity (this includes the entire project footprint, landscaping, parking, etc.), with a minimum of 1.0 acre.

Habitat removal could alter species use patterns and cause displacement to less hospitable habitat types or conditions, reducing the ability to find food, shelter, or mates. Effects could also result in injury or mortality through crushing of, or collision with species during construction, either because they are already there, or because they move into a construction area during construction. The permanent removal of habitat would eliminate a species ability to reside at the development site which cumulatively across projects causes further population decline. Effects could also occur in the form of harm, as defined under the ESA.

For the covered species, harm will likely occur through the loss or substantial degradation, disturbance, and compaction of habitat. It is assumed that no temporary effects on covered species may result from this effect type because construction-related activities will either occur within the development envelope, which will be permanently built out, or those activities will be staged from areas that are already hardscape (non-habitat). Therefore, temporary effects for urban development projects are included in the permanent effect estimates for each covered species.

²⁵ Development that adheres to the City's CAO or other mitigation requirements would reduce effects on covered species. However, since those assessments are made on a project-by-project basis, the degree to which they would reduce or eliminate effects was not modeled in this HCP.

Table 4-1. Summary of Impact Mechanisms

Covered Activity	Habitat Loss	Habitat Fragmentation	Disturbance from Human Presence	Increased Noise or Light	Increased Vehicle-Related Disturbance and Mortality	Spread of Invasive Exotic Plants or Wildlife; Nonnative Predators	Direct Mortality and/or Increased Disturbance from Pets	Increased Runoff of Urban Pollutants/Change in Hydrology
City Activities								
Urban Development Projects	✓	✓	✓	✓	✓	✓	✓	✓
Agriculture and Livestock Development Projects	✓	✓	✓	✓	✓	✓	✓	--✓
Recurring Activities	--	--	✓	--✓	--	--	✓	--
<i>Facility Operations and Maintenance</i>								
Public Services, Infrastructure, and Utilities	--	--	✓	✓	✓	✓	--	--
Transportation Facilities	--	--	✓	✓	✓	✓	--	--
Port Activities								
<i>Aeronautical-Related Activities</i>								
Capital Infrastructure, Support Facilities, and Utilities	✓	✓	✓	✓	✓	✓	✓	✓
Facility Operations and Maintenance	--	--	✓	✓	✓	✓	--	--
Recurring Activities	--	--	✓	✓	✓	--	✓	✓--
<i>Non-Aeronautical Activities</i>								
Capital Infrastructure, Support Facilities, and Utilities	✓	✓	✓	✓	✓	✓	✓	✓
Facility Operations and Maintenance	--	--	✓	✓	✓	✓	--	--
Conservation Strategy Implementation								
Enhancement or Restoration Activities	--	--	✓	✓	✓	--	--	✓
Monitoring	--	--	✓	--	✓--	--	--	--

Residential and commercial development can have effects on biological resources, especially when urban effects occur on or adjacent to species habitat. An increase in human use could have an effect on the habitat quality of adjacent lands, which may result in animals avoiding those adjacent habitat areas.

Several other effects may be expected as residential and commercial development increases the human population in the Permit Area. Increased human use within the Permit Area may have adverse effects on biological resources through the introduction or spread of diseases, higher noise levels, increased risk of collision with vehicles, increased risk of collisions by birds with building windows, increased light pollution at night, spills of hazardous materials, increased frequency of wildfire ignitions, and competition from or predation by nonnative species including pests.

Human population growth can exacerbate the introduction or spread of nonnative species. If unmanaged, ornamental plants and native cultivars²⁶ spread to adjacent protected areas, they may outcompete and displace native species, further degrading habitat for covered species.

Domestic and feral cats can pose a serious threat to birds, especially the two covered species that nest on or near the ground. Feral cats can also cause a shift in small mammal populations from native to nonnative species. In addition, human presence can increase the risk of predation on all covered species by other commensal animals, including corvids (crows, ravens, or jays), coyotes, skunks, opossums, raccoons, and bullfrogs. These animals are often found in higher concentrations in areas with denser human populations.

4.2.2 Recurring Activities

Recurring activities covered by the HCP (described in Section 3.4.3, *Recurring Activities*) are subject to City authorizations or permits but do not entail land clearing. These activities include farmer's markets, festivals, parades, other entertainment activities, and public fireworks displays that occur on public or private lands in areas suitable for the covered species. All recurring activities would be temporary.

4.2.2.1 Effects Mechanisms

Effects in areas where recurring activities occur could include habitat disturbance associated with increased vehicular and human disturbance that may crush vegetation and disturb foraging behaviors, introduction or spread of nonnative species, higher noise levels, and increased light pollution at night (Table 4-1, *Summary of Impact Mechanisms*). A temporary increase in human use could affect habitat quality of adjacent lands, which may result in animals avoiding adjacent habitat areas.

Recurring activities also include effects of increased human use within the Permit Area. An increase in human use could have an effect on the habitat quality of adjacent lands, which may result in animals avoiding adjacent habitat areas. Effects from recurring activities on biological resources also include the potential introduction or spread of invasive species, temporary increased noise levels, temporary increased risk of collision with vehicles, increased risk of collisions by birds with

²⁶ *Native cultivars* are plants cultivated from native species and bred for specific characteristics; they have lost the original genetic diversity of the species or population from which they were derived.

buildings, increased light pollution at night, and competition from or predation by native or nonnative species.

4.2.3 Facility Operations and Maintenance

Facility operations and maintenance activities (described in Section 3.4.4, *Public Facility Operations and Maintenance*) are those activities that maintain the utility of existing land uses, facilities, and services within the City. Facility operations and maintenance activities that would affect covered species are related to parks and open space; public services, infrastructure, and utilities; and transportation facilities. Facility operations and maintenance activities occur in the Permit Area. The City or its direct contractors will undertake them to maintain the utility of existing land uses, facilities, and services within the City.

For the purposes of this HCP and the effects analysis, operations and maintenance activities have potential for incidental take, when equipment operations, vegetation management, or facility repairs disturb soil. Although soil disturbance would not occur during most City-approved maintenance projects, there are some locations where exposure of covered species may be unavoidable. The City estimates that these activities will affect covered species when the activity occurs in modeled habitat (Table 4-1, *Summary of Impact Mechanisms*). Some operations and maintenance activities involving vegetation management may be currently exempt under the 4(d) rule (see Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*).

4.2.3.1 Effects Mechanisms

The City and Port conduct maintenance of facilities including, but not limited to, utilities and utility facilities, transportation facilities, and water conveyance structures and bridges. Maintenance also occurs on recreation and park infrastructure and associated grounds such as trails, roads, parking lots, park equipment, that may include activities such as vegetation management (described in Section 3.4.4.1, *Parks and Open Space*), creation of firebreaks (through vegetation management), and maintain the integrity of infrastructure. Such maintenance could result in temporary effects on covered species, especially if work is conducted in covered species habitat. For example, utility trenching may temporarily disturb soils occupied by gophers or road improvements adjacent to Oregon spotted frog habitat may impact habitat through stormwater runoff.

Maintenance also occurs on recreation and park infrastructure and associated grounds such as trails, roads, parking lots, park equipment, and offices that may include treatments such as vegetation management (described in Section 3.4.4.1, *Parks and Open Space*) to maintain vegetation on City-owned recreational properties, create firebreaks, and maintain the integrity of infrastructure. Such maintenance could result in temporary effects on covered species, especially if work is conducted in covered species habitat.

Effects can be associated with accessing vegetation areas with vehicles or heavy equipment, clearing vegetation to perform maintenance activities, removal and replacement of native plant species (planting woody vegetation in prairie soils rather than prairie plants), digging soil to depths that affect pocket gopher (*Thomomys mazama pugetensis*), or managing vegetation to prevent overgrowth or for fire prevention and management. Effects related to vegetation management may be permanent or temporary (e.g., trees completely removed may not reestablish, while mowed vegetation will likely regrow in a short time).

Effects from facilities operations and maintenance also include increased and frequent human use within the Permit Area. An increase in human use could have an effect on the habitat quality of adjacent lands, which may result in animals avoiding adjacent habitat areas. Effects from maintenance activities may also include the introduction or spread of nonnative vegetation, which over a period will reduce the quality of species habitat. Adding more elevated structures near occupied covered species habitat, such as buildings, towers, or utility lines, may increase perch sites for predatory bird species, reducing the quality of the immediate area as a nesting location for covered bird species and reducing the quality of the habitat for Olympia pocket gopher.

4.2.4 Aeronautical-Related Activities

Aeronautical-related activities (described in Section 3.5.2, *Aeronautical-Related Activities*) encompass all activities included in the support of operations at the Airport (excluding take-offs, landings, or actual operation of aircrafts), including infrastructure, support facilities, and utilities as well as facility operations and maintenance activities required to maintain the utility of existing Airport land uses, facilities, services, and operations. This would include the development of new aeronautical-related facilities, the annual air show, vegetation management (see Sections 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher* and 1.3.1.3, *Endangered Species Act 4(d) Rule for Streaked Horned Lark*, for vegetation management activities currently covered under the 4(d) rule for both species), and runway maintenance and replacement inside the air safety zone.

4.2.4.1 Capital Infrastructure, Support Facilities, and Utilities

Aeronautical-related activities related to infrastructure, support facilities, and utilities on the Airport include the following activities described in Section 3.5.2.1, *Capital Infrastructure, Support Facilities, and Utilities*.

Effects Mechanisms

The construction of new aeronautical-related facilities and replacement runways are likely to result in effects on covered species—in this case, Olympia pocket gopher, streaked horned lark, and Oregon vesper sparrow—when individuals are injured or killed or when their normal behaviors are disrupted, and when their habitat is lost on a permanent or temporary basis. Adding more elevated structures around the airfield, such as buildings or aeronautical-related equipment, would reduce the extent of open-space habitat for streaked horned lark, reduce the extent of tree/grassland edge habitat for Oregon vesper sparrow, and increase perch sites for predatory bird species, reducing the quality of the Airport as a nesting area for covered bird species and reducing the quality of the habitat for Olympia pocket gopher.

It is typical that when a runway or taxiway is reconfigured there is a net reduction in the total amount of hardscape, which may result in expansion of grasslands used by covered species. For this analysis, though, those habitat gains were not quantified because doing so would be speculative, so the focus for this analysis is on disturbances that may be caused by the installation of runways or taxiways in areas of covered species habitat. Effects from runway or taxiway reconfiguration may include direct mortality, injury, disturbance, or displacement of individual animals and/or habitat loss or degradation. Effects on covered species may also occur if habitat is degraded by construction activities (Table 4-1, *Summary of Impact Mechanisms*).

An increase in human use could affect habitat quality of adjacent lands, which may result in covered species, particularly the two avian species, avoiding adjacent habitat areas. Increased human presence and ground-based activities may have adverse effects on biological resources through the introduction or spread of nonnative species (i.e., altered forage) and/or diseases, and higher noise levels.

4.2.4.2 Facility Operations and Maintenance

Facility operations and maintenance activities are undertaken to maintain the utility of existing Airport facilities, services, and operations. These activities are described in Section 3.5.2.2, *Facility Operations and Maintenance*. This includes vegetation management activities at the Airport.

Effects Mechanisms

The Airport conducts maintenance of facilities including, but not limited to, utility facilities and airport-related transportation facilities (e.g., runways, taxiways, parking areas). Some of these activities may affect existing habitat on non-developed land cover types resulting in effects similar to other effects described in this section (e.g., permanent and temporary loss of natural land covers, temporary increases in light and noise pollution). Vegetation management, mainly mowing regularly throughout the growing season, is also included in aeronautical-related activities because the primary purpose is to support safe airfield operations. Vegetation management activities in suitable habitat have the potential to disturb covered species and could possibly injure or kill individuals of species that occur in this habitat (Table 4-1, *Summary of Impact Mechanisms*).

Effects from facilities operations and maintenance at the Airport also include increased and frequent human use of covered species habitat. An increase in human presence during operations or maintenance activities could have an effect on the habitat quality of adjacent lands, which may result in animals avoiding adjacent habitat areas. Effects from maintenance activities may also include the introduction or spread of nonnative vegetation, which over a period of time will reduce the quality of species habitat at the Airport.

Maintenance activities may also enhance habitat types required by many of the covered species, such as the grasslands that are maintained by the Port to support Airport activities and safety. Airport grounds maintenance protects the low-stature grassland conditions that provide forage for Olympia pocket gopher and sustains the bare-ground conditions important for streaked horned lark nesting and foraging. If general operations and maintenance activities were to cease, currently suitable habitat would experience natural vegetative succession and habitat for Olympia pocket gopher, streaked horned lark, and Oregon vesper sparrow at the Airport would likely become unsuitable.

4.2.4.3 Recurring Activities

The only recurring activity at the Airport that is covered by the HCP is the annual Olympia Air Show. A description of the Olympia Air Show can be found in Section 3.5.2.3, *Recurring Activities*.

Effects Mechanisms

Air shows generally occur during the breeding season for the covered species. During this time, young of the year are more vulnerable to adverse effects from disturbance. Adults are also vulnerable to direct air strike by planes. Both adults and juveniles are more vulnerable to aircraft

when concentrated, as during breeding season on breeding sites such as the Airport. The high intensity of human use at the airfield before and following an air show significantly disturbs wildlife on sites that normally have low-level and predictable disturbance. In addition, use of covered species habitat as parking areas or gathering locations for participants and spectators can reduce the quality of habitat in the immediate area by removing forage, crushing gopher burrows, and displacing nesting birds, likely resulting in a failure of any active nests.

4.2.5 Non-Aeronautical Activities

Non-aeronautical activities (described in Section 3.5.3, *Non-Aeronautical Activities*) include development on Port-owned properties within the New Market Industrial Campus and operations and maintenance of those facilities and associated infrastructure (see Section 3.5.3.2, *Facility Operations and Maintenance*). Effect mechanisms (Table 4-1, *Summary of Impact Mechanisms*) would be the same as those described in Section 4.2.1, *Urban Development Projects*; Section 4.2.2, *Recurring Activities*; and Section 4.2.3, *Facility Operations and Maintenance*.

4.2.6 Conservation Strategy Implementation

Conservation strategy implementation activities (described in Section 3.6, *Conservation Strategy Implementation*) will generally have a positive effect on covered species, particularly over the long term. There could be some short-term effects from conservation management activities as described in the following subsections.

4.2.6.1 Effects Mechanisms

Most conservation properties will be occupied by covered species when they are acquired for HCP mitigation purposes. Any management actions, including restoration activities, that occur to improve habitat quality for covered species have the potential to result in take. Site preparation activities, including disking or tree removal, could result in mortality of Olympia pocket gopher if not done carefully. These activities are consistent with the current 4(d) special rule for Olympia pocket gopher (see Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*) and may be necessary to transition a conservation property from nonnative prairie covered primarily with nonnative vegetation, with limited suitability for covered species, to a prairie with native vegetation and higher suitability. Disking or tree removal activities could also result in short-term loss of habitat until the area can be reseeded into a prairie condition. Prairie burns will temporarily remove above ground forage for the Olympia pocket gopher, but this is not likely to result in mortality or too much stress to individual gophers because underground forage will still be available as well as cached food until plants start to sprout again.

Prairie restoration actions would have limited negative effects on the streaked horned lark and Oregon vesper sparrow because those activities would be conducted outside of the nesting season where those species have been documented on Reserve System lands. The long-term effects on those species would be similarly beneficial. However, monitoring and translocation would occur during nesting season and are likely to cause take.²⁷

²⁷ Translocation activities would be covered under a 10a1A recovery permit held by the biologist(s) conducting the activity.

Conservation actions in Oregon spotted frog habitat could also have some short-term effects on the species. Restoration or enhancement activities in wetland habitat could reduce habitat quality initially, until suitable wetland vegetation is established.

Management and monitoring activities would be scheduled to minimize the effect of human presence on covered species. Any access on conservation sites would be controlled and likely do not lead, further minimizing effects on covered species. Long-term effects of the conservation strategy are expected to improve the status of covered species in the Plan Area.

4.3 Effects Assessment Methodology

Covered activities may result in some level of incidental take of covered species.²⁸ In order to meet regulatory requirements and properly mitigate effects, the amount of take must be quantified and monitored. Because of the broad geographic and temporal scope of the Plan, the effects assessment has been conducted at a programmatic level. The effects presented reflect assumptions about where urbanization will occur and approximate losses rather than a precise quantification of effects on land cover types. The total allowable effects as described and quantified in the Plan represent the limit, or cap, on total effects allowed under the Plan. Once these limits are reached, no further take is permitted pursuant to the Plan without an HCP amendment (see Chapter 7, *Implementation*, for a description of the amendment process). These limits are established for the Plan as a whole, not by covered activity type or by the Permittees. The Permittees will track effects during implementation to ensure that collectively, covered activities do not exceed allowable take limits for the Plan.

Impacts on covered species will be quantified as habitat acres affected. Effects on individuals would be difficult to detect because the covered species are small-bodied and cryptic in coloration/behavior or are fossorial (i.e., burrowing animals). As a result, this HCP uses habitat surrogates to quantify impacts on covered species, using acres of habitat impact to quantify impacts on covered species. Therefore, the allowable amount of take from permanent effects is quantified by estimating effects on covered species habitats (methods for impact estimation are described below). Total effects are the allowable effects under the ITP and will be tracked during implementation to ensure ITP compliance (see Sections 7.9, *Tracking Compliance* and 7.10, *Annual Reporting*).

Using the best available survey data collected by USFWS, WDFW, and other researchers and consultants, effects were assessed based on the intersection in GIS of maps of the expected locations of covered activities and maps of modeled habitat for each covered species. This method uses habitat models that identify the location and amount of habitat assumed suitable for each species. Estimates of suitable habitat are inflated (i.e., conservative) because (1) habitat models likely overestimate the actual extent of suitable habitat, and (2) not all suitable habitat is occupied by the subject species. Therefore, species modeled habitat is used as a proxy for species occurrence because of the limitations of survey data and impracticality of surveying every site in the Permit Area.

In addition to using the intersection of GIS modeled habitat and covered activities to determine permanent effects on habitat, it is assumed that 0.5 acre per year (15 acres for the permit term) of

²⁸ This assumes development is implemented without adherence to CAO or other mitigation requirements, which would reduce or eliminate effects on covered species. Since those assessments are made on a project-by-project basis, the degree to which they would reduce or eliminate effects was not modeled in this HCP.

modeled gopher habitat would be lost due to potential permanent habitat loss from facility operations and maintenance activities (e.g., landscaping that results in a habitat conversion) or activities associated with public utility infrastructure (e.g., trenching) that reduce habitat quality once the work is complete (see Section 6.3, *Compliance Monitoring*, for the monitoring protocol for City operations and maintenance activities). In some cases, permanent structures may be installed during maintenance activities (e.g., utility boxes, pipeline access) but these structures are very small and collectively result in a minor total acreage of species habitat over the permit term. Due to the size of this type of habitat removal, it is not possible to accurately quantify it. The inclusion of 0.5 acre of habitat loss annually is meant to account for those small instances of habitat removal and is a conservative estimate.

Estimates of incidental take are based on the habitat models developed for each of the covered species. See Section 2.6, *Covered Species Accounts*, for descriptions and methods used for these habitat models.

The resulting models were then used to estimate potential effects from covered activities and to identify potential mitigation sites for the covered species. The amount of take is described by estimating effects, either permanent or temporary, from the expected urban growth in areas with modeled habitat for covered species. These estimates of effects are estimates only. Given the use of modeling and the lack of site-specific data and mitigation, it cannot be assumed any take would occur from covered activities, either individually or cumulatively. The City requires project proponents to adhere to its critical areas ordinance (CAO), wetlands, and fish and wildlife regulations (Section 1.4.5, *Tumwater Municipal Code*). While implemented through the GMA, and not the ESA, typically such compliance indirectly results in any ESA issues being at least minimized, if not fully addressed.

Effects were estimated and summarized for each covered species in five categories: urban development projects, agricultural development projects, aeronautical-related activities, non-aeronautical activities, and conservation strategy implementation.

4.3.1 Olympia Pocket Gopher Proportional Habitat Assessment for Facility Operations and Maintenance Activities

The exact timing and location of operations and maintenance activities are not known. Information about the frequency and size of these covered activities was obtained from City planning documents, historical frequencies of activities, and the knowledge of City staff. Because operations and maintenance activities occur on existing City facilities and infrastructure it is assumed that they could occur anywhere that City facilities occur. There is also an underlying assumption that operations and maintenance activities will occur evenly across the Permit Area.

If operations and maintenance activities occur evenly across the Permit Area then the proportion of operations and maintenance activities that should be expected to occur in Olympia pocket gopher habitat would be the same proportion as covered species habitat to the Permit Area as a whole. In other words, if 50% of the Permit Area were habitat for one of the covered species it would be plausible that 50% of the operations and maintenance activities would occur in habitat for that covered species. A more detailed description of the steps used to calculate potential effects from operations and maintenance activities is provided below.

The following steps were used to calculate the proportional effects on covered species from operations and maintenance activities.

1. Determine the extent of where City operations and maintenance activities are likely to occur. For this analysis, the Permit Area (12,877 acres) was used as the area in which operations and maintenance activities are likely to occur.
2. Determine the proportion of covered species habitat in the Permit Area. For example, there are 3,296 acres of modeled Olympia pocket gopher habitat in the Permit Area. To determine the proportion, the 3,296 acres of Olympia pocket gopher habitat was divided by the total Permit Area ($3,296 / 12,877 * 100 = 26\%$ of the Permit Area is Olympia pocket gopher habitat). Table 4-2, *Proportion of Olympia Pocket Gopher Habitat in the Permit Area*, shows the proportion of habitat for Olympia pocket gopher.
3. Apply the proportion of habitat to all operations and maintenance activities to determine how many times each activity is likely to occur in covered species habitat. For example, the proportion of Olympia pocket gopher habitat in the Permit Area is 26%. If there is an operations and maintenance activity that happens 10 times a year, there would be an assumption that the activity would occur in Olympia pocket gopher habitat approximately three of those times ($26\% * 10 \text{ times} = 2.6 \text{ times in Olympia pocket gopher habitat}$).
4. Based on the size of each activity as described in Chapter 3, *Covered Activities*, the acres of effects were calculated for each species (Table 4-2, *Proportion of Olympia Pocket Gopher Habitat in the Permit Area*). For example, if each of those three activities results in 0.25 acre of impact, that would be 0.75 acre of impact each year for Olympia pocket gopher from that activity.

Table 4-2. Proportion of Olympia Pocket Gopher Habitat in the Permit Area^a

Covered Species	Permit Area (acres)	Covered Species Habitat in Permit Area (acres)	Proportion of Covered Species Habitat in Permit Area
Olympia pocket gopher	12,877	3,296	26%

^a Refers to modeled habitat, as opposed to habitat delineated by site-specific survey.

4.3.2 Habitat Assessment for Port Operations and Maintenance Activities

Because covered species habitat covers most, if not all, of the Airport, the proportional analysis used for City operations and maintenance activities described in Section 4.3.1, *Olympia Pocket Gopher Proportional Habitat Assessment for Facilities Operations and Maintenance Activities*, would not produce the same results for Port operations and maintenance activities. To determine habitat impacts from Port operations and maintenance activities, data from Port records was used to determine the number of times a specific activity is done in a typical year and the average impact size of that activity. To determine a per year effect from a specific operations and maintenance activity, the number of times the activity occurs per year was multiplied by the typical size of the project. For example, if an activity is assumed to occur four times per year and its typical size is 0.25 acre, then that activity would have approximately 1.0 acre of effect on covered species per year. There is no proportional analysis needed for operations and maintenance activities on the Airport.

4.3.3 Oregon Spotted Frog Effects Assessment

Urban development and other covered activities are already strictly regulated in wetlands, streams and ponds where Oregon spotted frogs live. To comply with the City's CAO, project applicants are required to avoid where possible first, then minimize impacts if complete avoidance is not possible, then mitigate any unavoidable impacts in wetlands, streams, and their protective buffers. In addition, one of the main goals of the City's stormwater management requirements is to protect aquatic resources from the effects of urban development. The requirements in the City's stormwater manual include specifications for managing storm flows and preventing erosion, sedimentation and pollution.

The City's CAO for wetlands (TMC 16.28) and fish and wildlife habitat (TMC 16.32) protection, and their requirements for stormwater management (<https://www.ci.tumwater.wa.us/departments/water-resources-sustainability/water-resources/stormwater/plans-program-guidance>) are updated on a regular basis to stay current with best practices and best available science. TMC Chapter 16.28, *Wetland Protection Standards*, requires site planning to avoid or minimize damage to wetlands where possible. TMC Chapter 16.32, *Fish and Wildlife Habitat Protection*, requires the protection of streams, ponds, and habitat for any state or federally listed species, including Oregon spotted frogs.

Along with information on projected development, the following City of Tumwater code requirements were taken into account when evaluating and estimating impacts to Oregon spotted frogs and their habitat. These requirements include avoiding and minimizing adverse wetland impacts (see Table 16.28.170(5), *Measures to Minimize Impacts to Wetland*, in Appendix E, *Tumwater Municipal Code 16 Environment*). For complete details on the CAO compliance, see Appendix E, *Tumwater Municipal Code 16 Environment*.

1. Requirement to avoid (TMC Section 16.28.180) the impact to Oregon spotted frog habitat altogether by not taking a certain action or parts of an action; or to minimize and mitigate impacts on wetlands, including those that provide Oregon spotted frogs' habitat. This would be accomplished through the use of wetland buffers as determined by wetland classification (see Section 16.28.170, *Wetland Buffers*, in Appendix E, *Tumwater Municipal Code 16 Environment*).
2. Requirement to minimize impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts.
3. Requirement to minimize impermeable surfaces to only those necessary to achieve project objectives on site.
4. Requirement to rectify the impact by repairing, rehabilitating or restoring the affected environment to the conditions existing at the time of the initiation of the project.
5. Requirement to retain all stormwater runoff on site, in retention basis, to prevent changes in nearby stream hydrology from new impermeable surfaces and to reduce pollution of waterbodies from the built environment.

4.4 Effects on Covered Species

This section describes the potential effects on covered species. The amount of incidental take of covered species has been estimated in accordance with the methods described above. Estimates of incidental take are based on habitat models developed for the covered species and on projected development information provided by TRPC, City, Port, Tumwater School District, and LOTT Alliance.

The major effects on the Olympia pocket gopher are assumed to result from habitat loss associated with residential and commercial development. The major effects on lark and vesper sparrow are likely Airport buildout (both aeronautical and non-aeronautical related) and operations and maintenance, while effects on the Oregon spotted frog would be loss or conversion of shallow emergent wetlands to development, changes in hydrology from projects, and nonnative invasive species.

Effects on each species under the Plan are described below. Descriptions providing additional specificity on the type and location of covered activities anticipated to affect each species are provided; however, these descriptions do not preclude other covered activities from affecting the covered species in different locations within the Plan Area. As long as the activity is covered under the Plan, impacts described for each covered species are allowed up to the maximum allowable amount as estimated in this Chapter over the entire permit term. Maximum allowable impacts estimated as habitat acres and/or nesting pairs for each covered species are described in the following sections of this Chapter.

4.4.1 Olympia Pocket Gopher

The Olympia pocket gopher only occurs in Thurston County, Washington, almost entirely within the City and areas immediately south of the City. The distribution of the Olympia pocket gopher in Thurston County is somewhat patchy because the species is restricted by vegetation cover as well as the types of soils it can use, which are naturally patchy in distribution. Species surveys and knowledge of their geographical distribution allow identification of areas where the Olympia pocket gopher are known to occur and could occur based on available suitable habitat (soil and land cover) and proximity to occupied areas. Removal or degradation of suitable habitat, including soils, by covered activities could adversely affect the species.

4.4.1.1 Effects

Any covered activities that disturb soils, mainly construction activities related to new developments or infrastructure projects, may result in habitat loss and/or the death or injury of Olympia pocket gophers. Grading, excavating, stockpiling, harrowing, or other activities in suitable habitat could remove or destroy underground burrow systems and/or crush or bury Olympia pocket gophers and their young, resulting in injury or death. Injury or mortality effects on Olympia pocket gopher could also result from vehicle and equipment use during facility operations and maintenance activities. Parking and operating heavy equipment and vehicles can compact soils or crush burrows, resulting in injury or death, or reduce the quality of soil for burrowing.

Covered activities could result in harm to Olympia pocket gophers by removal or degradation of suitable burrow and foraging habitat. Grading, excavating, stockpiling, or other construction-related earth-disturbance activities that would alter the vegetative structure would reduce the quantity of

food available. Loss of this food source would displace Olympia pocket gophers by forcing them to abandon an area to avoid harm and to seek out new foraging habitats. This displacement would cause individuals to expend additional energy and could result in impairment or disruption of normal behavior patterns if it becomes difficult for individuals to find new suitable habitat. The resulting effect could reduce productivity and survival because individuals displaced from established territories are unlikely to establish new territories nearby or will encounter competition from other established gophers and will likely starve.

There are no data available on the effects on fossorial rodents from underground sound vibrations; however, Olympia pocket gophers retreat to deeper nests when something approaches above ground, suggesting that they have a high sensitivity to low-frequency sounds and seismic vibrations (Stinson 2020). Due to the duration of the construction and operation of heavy equipment, Olympia pocket gophers in and near construction areas may experience a measurable disruption to their normal behavior during the time of day that construction occurs. Because Olympia pocket gophers are highly territorial, any affected or displaced individuals are expected to experience impairment to their survival because individuals displaced from established territories are unlikely to establish new territories nearby and will likely starve.

Short-term effects on the species could occur from noise and human presence during construction, facility operations and maintenance activities, and recurring events. These effects would be similar to the displacement effects but they would occur to individuals that are outside of but near the area of land disturbance.

Long-term effects range from acute (death) to sub-acute effects, which could significantly disrupt normal behavioral patterns and result in reduced or delayed reproduction, reduced feeding behavior, or increased juvenile mortality due to changes in behavior.

Long-term effects could occur in the form of urban *edge effects*, which are related to the physical and biological alterations associated with landscape fragment boundaries. An increase in fragmentation of the landscape could lead to an increase in the area where urban landscapes interface with Olympia pocket gopher habitats. These interface areas generate edge effects, which can result in human-occupied urban areas encroaching on Olympia pocket gophers. Long-term effects from expanded roads could result in increased petrochemical-laden runoff (e.g., oil, grease, engine fluids), debris, increased sediment deposition, and higher traffic volumes, which can reduce habitat quality or accessibility. All of these effects may be hazardous to wildlife, including Olympia pocket gopher. These effects also genetically isolate populations of covered species, decreasing the likelihood of genetic exchange.

Vegetation management that occurs as part of a managed urban environment may create or enhance habitat for the Olympia pocket gopher. However, most activities at the urban edge adversely affect Olympia pocket gophers, including the introduction of nonnative species, accidental spills of hazardous materials, increased fire frequency, increased predation (e.g., injury or death from domestic/feral cats and dogs), and increased potential for invasive weed colonization.

Permanent Effects on Habitat

Covered activities could result in the permanent removal of up to 1,509 acres of Olympia pocket gopher habitat in the Plan Area (Table 4-3, *Maximum Allowable Permanent Effects on Habitat for Olympia Pocket Gopher*). This figure is estimated based on modeling of where urban growth is expected in the Permit Area and the current extent of habitat. In practice, this number is considered

a worst-case scenario because it assumes that all parcels will be fully developed, as allowed by their zoning, and it assumes effects on the species regardless of habitat occupancy or quality. Nonetheless, this serves as an upper cap on the number of acres that would be authorized to be permanently removed under the HCP and ITP.

Habitat that could be affected includes up to 277 acres of known occupied habitat (27% of occupied habitat in Plan Area), 635 acres of modeled habitat (see Section 2.6.1.6, *Species Habitat Distribution Model*) with a high probability of Olympia pocket gopher occurrence (39% of high-probability habitat in Plan Area), and 597 acres of un-surveyed modeled habitat with a low probability of Olympia pocket gopher occurrence (14% of low-probability habitat in Plan Area).

Table 4-3. Maximum Allowable Permanent Effects on Habitat for Olympia Pocket Gopher

Modeled Habitat Type	Total Amount of Modeled Habitat in Plan Area (acres)	Maximum Amount Removed by Covered Activities (acres) ^a	Modeled Habitat Remaining in Plan Area Following Loss from Covered Activities (acres) ^b	Percent Lost During Permit Term
Occupied	1,014	277	737	27
Higher Likelihood of Occupancy	1,630	635	995	39
Lower Likelihood of Occupancy	4,360	597	3,763	14
Total	7,004	1,509	5,495	21

^a Impacts on modeled habitat will be counted toward acreage removed as determined through the HCP application process and verified by the City during the HCP application review process. Verification will either occur with GIS maps of modeled habitat or field verification, as described in Section 7.3.1, *HCP Application Package*. For the purposes of this HCP, for projects that will occur on parcels of 1.0 acre or less, any habitat loss will be considered a total loss because any habitat remaining on that parcel is assumed to be functionally lost for the covered species. For parcels that are larger than 1.0 acre, habitat loss from the project would be the total acres of covered species habitat lost from the covered activity, with a minimum of 1.0 acre.

Over the 30-year permit term, it is estimated that an average of 50 acres would be developed in Olympia pocket gopher habitat each year. Development in the City will not occur in a linear way, so there will always be more or less than 50 acres developing each year, but this provides a reasonable indication of the pace and scale of habitat loss during the permit term.

Table 4-4. Projected Habitat Impacts by Zone Districts in Olympia Pocket Gopher Habitat

Zone District	Number of Parcels ^a	Range (acres) ^b	Median Habitat Lost (acres)	Total (acres)
Airport-Related Industry	44	0.02–94	0.5	255 ^c
Business Park	1	4.3	4.3	4
Brewery District	7	<0.01–0.3	0.1	0.7
Capitol Blvd. Community	36	<0.01–5	0.1	13
Commercial Development	11	0.02–0.6	0.3	3
Community Services	3	0.07–3.3	2.4	6
General Commercial	53	<0.01–9	0.4	78

Zone District	Number of Parcels ^a	Range (acres) ^b	Median Habitat Lost (acres)	Total (acres)
Greenbelt	1	0.01	0.01	0.01
Light Industrial	219	<0.01–11	0.3	213
Manufactured Home Park	2	<0.01 – 1	0.5	1
Mixed Use	33	<0.01–11	0.3	35
Multi-Family High Density	9	<0.01–4.7	0.1	7
Multi-Family Medium Density	206	0.04–33	0.1	114
Neighborhood Commercial	11	0.1–4.5	0.5	9
Open Space	9	<0.01–0.8	<0.01	1
Residential/Sensitive Resource	55	<0.01–19	0.3	75
Single Family Low Density	486	<0.01–97	0.1	470
Single Family Medium Density	222	<0.01–30	0.1	195
Town Center	24	0.04–6	0.4	29
Total		<0.01–97	<0.01–4.3	1,509

^a Some project development parcels have habitat in more than one zone district so the total number of parcels cannot be summed.

^b Range is the maximum and minimum area affected per parcel for the zone district.

^c This zoning district also allows development that is not directly related to airport facilities. Actual acreage lost during the Permit Term would be demand driven.

Temporary Effects on Habitat

Covered activities could result in temporary effects on Olympia pocket gopher. These effects will vary considerably depending on the scope of the specific covered activity, but could potentially result in temporary habitat degradation (i.e., take in the form of harm) or disturbance to individuals. Temporary effects are most likely to occur during construction or agriculture from: (1) equipment damaging or degrading burrow habitat and forage vegetation especially outside the permanently affected area of a project site, and (2) staging areas temporarily degrading or removing burrow and foraging habitat during construction or agricultural operations.

These activities will result in temporary loss of up to 191 acres of Olympia pocket gopher habitat and food sources that would not be restored until the area is revegetated to pre-project conditions or ecologically improved conditions (Table 4-5a, *Proportional Impact Analysis for Parks and Recreation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat*; Table 4-5b, *Proportional Impact Analysis for Public Services Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat*; Table 4-5c, *Proportional Impact Analysis for Transportation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat*; and Table 4-5d, *Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat*). Temporary effects could displace individual Olympia pocket gophers with effects like those described in Section 4.4.1.1, *Effects*. However, most temporary construction effects will be avoided or minimized through the appropriate use of avoidance and minimization measures (see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*).

Facilities operations and maintenance activities related to vegetation management could also result in temporary effects on Olympia pocket gophers (see Section 1.3.1.2, *Endangered Species Act 4(d)*

Rule for Olympia Pocket Gopher). For example, these activities may include mowing or temporary vegetation removal for fuel breaks or to conduct maintenance activities, which would result in temporary effects until vegetation grows back or is replanted that could displace an individual with an effect similar to what is described under Section 4.4.1.1, *Effects*.

Using heavy mowing or other equipment may temporarily compact soils and reduce quality for gopher burrowing. Recurring activities will be avoided or minimized through the appropriate use of avoidance and minimization measures (see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*). While these activities may result in temporary impacts, take of the Olympia pocket gopher is unlikely. When BMPs as described in Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*, are implemented with vegetation management practices, vegetation maintenance²⁹ can be beneficial to the Olympia pocket gopher by reducing the encroachment of woody species and maintaining vegetation in a manner that supports gophers.

Off-road passenger vehicles such as sport-utility vehicles or light trucks, which would likely be used for facility operations and maintenance activities, are lighter than heavy machinery. Low-frequency noise and vibrations that are generated by these vehicles and equipment, however, may cause Olympia pocket gophers to retreat to deeper tunnels (Stinson 2013). Some Olympia pocket gophers will likely need to rebuild their feeding tunnels because of vehicle traffic and parking associated with operations and maintenance activities in occupied habitat. If tunnel damage is substantial, the temporary effects could result in take.

Effects from recurring activities, including the annual air show at the Airport, would consist of temporary set-up and takedown activities as well as increased human activities during events. In addition to disturbance from increased human presence, noise, and vibrations, Olympia pocket gopher adults and young could be crushed and killed during set-up and staging activities. Set-up and takedown could crush shallow feeding burrows and reduce the Olympia pocket gopher forage base, decreasing food availability for adults and their young. Parking vehicles on prairie soils occupied by pocket gophers would also compact soil and potentially collapse burrow systems. Regarding the Olympia Airshow, see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*, BMP 16 for BMPs to avoid and minimize impacts on covered species during events at the Airport.

Table 4-5a. Proportional Impact Analysis for Parks and Recreation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Frequency (times per year in Olympia pocket gopher habitat) ^a	Total Acres of Temporary Effect Per Year ^b	Total Temporary Impacts for Permit Term
Maintenance and removal of infrastructure (trails, buildings, and roads)	2	0.1	1	0.1	3

²⁹ Under the 4(d) Rule for the Olympia pocket gopher, harvest, control, or other management of noxious weeds and invasive plants is achieved through mowing, discing, herbicide and fungicide application, fumigation, or burning are allowed, use of herbicides, fungicides, fumigation, and burning must occur in such a way that non-target plants are avoided to the maximum extent practicable (Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*).

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Frequency (times per year in Olympia pocket gopher habitat) ^a	Total Acres of Temporary Effect Per Year ^b	Total Temporary Impacts for Permit Term
Management of natural resources and habitat enhancement and restoration	2	0.25	1	0.25	7.5
Maintenance of water delivery system	2	0.25	1	0.25	7.5
Golf course maintenance (e.g., excavation to repair sprinkler system)	12	0.25	3	0.75	22.5
Total				1.35	40.5

^a Frequency = Estimated frequency of activity per year in Permit Area multiplied by the proportion of Olympia pocket gopher habitat in the Permit Area (26%).

^b Total Acres = Estimate frequency to occur in Olympia pocket gopher habitat multiplied by the typical project size.

Table 4-5b. Proportional Impact Analysis for Public Services Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Frequency (times per year in Olympia pocket gopher habitat) ^a	Total Acres of Temporary Effect Per Year ^b	Total Temporary Impacts for Permit Term (acres)
Replacement and maintenance of culverts	10	0.1	3	0.3	9
Stormwater system maintenance	50	0.1	13	1.3	39
Utility system maintenance	50	0.1	13	1.3	39
Total				2.9	87

^a Frequency = Estimated frequency of activity per year in Permit Area multiplied by the proportion of Olympia pocket gopher habitat in the Permit Area (26%).

^b Total Acres = Estimate frequency to occur in Olympia pocket gopher habitat multiplied by the typical project size.

Table 4-5c. Proportional Impact Analysis for Transportation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Frequency (times per year in Olympia pocket gopher habitat) ^a	Total Acres of Temporary Effect Per Year ^b	Total Temporary Impacts for Permit Term (acres)
Drainage system maintenance	10	0.1	3	0.3	9

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Frequency (times per year in Olympia pocket gopher habitat) ^a	Total Acres of Temporary Effect Per Year ^b	Total Temporary Impacts for Permit Term (acres)
Bridge and culvert repair activities	10	0.1	3	0.3	9
Total				0.6	18

^a Frequency = Estimated frequency of activity per year in Permit Area multiplied by the proportion of Olympia pocket gopher habitat in the Permit Area (26%).

^b Total Acres = Estimate frequency to occur in Olympia pocket gopher habitat multiplied by the typical project size.

Table 4-5d. Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Olympia Pocket Gopher Habitat

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Total Acres of Temporary Effect Per Year	Total Temporary Impacts for the Permit Term (acres)
Utility facilities maintenance ^a	10	0.1	1	30
Culvert and drainage ditch replacement and maintenance	5	0.1	0.5	15
Total			1.5	45

^a See Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher* for details on the overlap of activities covered under the 4(d) rule and this HCP.

4.4.1.2 Effect Summary

The Permittees seek incidental take authorization for Olympia pocket gopher from the covered activities. The HCP addresses the potential, and at most, permanent loss in the Permit Area of up to 277 acres of occupied modeled habitat, up to 635 acres of modeled habitat with a higher likelihood of occupancy, and up to 597 acres of modeled habitat with a lower likelihood of Olympia pocket gopher occupancy. Covered activities will also result in the temporary loss of up to 190.5 acres of Olympia pocket gopher habitat.

Take is possible, but less likely, to occur via the killing or wounding of Olympia pocket gophers through recurring activities. Noise and activity disturbance associated with these activities are unlikely to have a significant negative effect on Olympia pocket gophers; they would likely retreat deeper into their burrows until the activity has passed. Additionally, recurring operations and maintenance activities that result in the maintenance or creation of grassland habitat are likely to benefit Olympia pocket gophers by maintaining suitable habitat conditions.

4.4.1.3 Implementation of the Conservation Strategy

Implementation of the conservation strategy includes those activities that would occur on lands acquired as part of the Reserve System (Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*). Conservation strategy activities are expected to benefit the Olympia pocket gopher. However, some conservation actions could have temporary or short-term adverse effects that may result in limited take of the species.

Conservation actions that would be implemented for the Olympia pocket gopher include enhancement, restoration, and creation of prairie habitat to offset the loss of existing, degraded

habitat. These actions will generally only be disruptive in the short term due to soil disturbance, removal of undesirable vegetation, and limited grading. If individuals are present in the area during any of these activities, effects could range from mortality and crushing of burrows to displacement effects that could result in harm or substantial disturbance (see Section 4.4.1.1, *Effects*).

Implementation of Conservation Action 5: Best Practices to Avoid and Minimize Impacts will reduce and minimize impacts associated with conservation actions on Reserve System lands.

Biologists will conduct surveys for covered species and other resources within the Reserve System lands on a regular basis for monitoring, research, and adaptive management purposes. Though effects on species will be insignificant due to on-the-ground survey work occurring on foot, the presence of biologists, including noise generated during activities, could disrupt normal behavioral patterns if Olympia pocket gophers are present. Mortality would be unlikely, however, as vehicles would be kept off suitable habitat.

4.4.1.4 Impact on the Species

The largest contiguous area known to be occupied by the Olympia pocket gopher and which has the highest recorded density of gophers is at the Airport and undeveloped areas connected to the Airport (Figure 4-1, *Projected Development in Olympia Pocket Gopher Habitat*). The Olympia pocket gopher is also found in remaining agricultural areas in the southwest portion of the City and south of the City. Most other known occupied areas are smaller sites including vacant lots, yards, and pastures. These sites are often contiguous to other sites containing the appropriate soils and likely occupied by gophers but have yet to be surveyed and thus confirmed occupied. Olympia pocket gophers on all occupied sites are unlikely to persist without active habitat management.

Recurring operations and maintenance activities that result in the maintenance or creation of grassland habitat are likely to benefit Olympia pocket gophers by maintaining suitable habitat conditions. Suitable habitat at the Airport is managed for airport safety.³⁰ Mowing helps maintain the grasses and likely prevents some woody encroachment. It is likely that taller nonnative species would continue to thrive at the airfield if not managed. If general operations and maintenance activities were to cease, currently suitable habitat would experience natural vegetative succession and habitat at the Airport would soon become unsuitable for Olympia pocket gopher.

The amount of modeled habitat potentially lost from HCP covered activities is conservatively calculated at 1,509 acres, or approximately 21% of all modeled habitat in the Plan Area, including 277 acres of known occupied habitat. Mitigation to offset these impacts is described in detail in Chapter 5, *Conservation Strategy*.

³⁰ It is against FAA grant assurances for the Airport to conduct any activity that could increase populations or enhance/create habitat. Activity conducted to maintain grassland conditions at the Airport is done to maintain compliance with airport safety regulations.



4.4.2 Oregon Spotted Frog

The Oregon spotted frog is only found in or near water, including springs, ponds, lakes, sluggish streams, irrigation canals, and roadside ditches, and flooded agricultural fields. In Washington, the Oregon spotted frog primarily occurs on lands managed by USFWS (Nisqually and Conboy Lake National Wildlife Refuges), WDFW, and on private lands. Species surveys and their known habitat distribution model allow identification of areas where Oregon spotted frog is known to occur and could occur based on available suitable habitat. The species has high breeding site fidelity, limited dispersal ability, and specific habitat requirements associated with low-velocity water and emergent vegetation. Within this Plan, impacts on habitat were used as a surrogate for impacts on individuals. Removal or degradation of suitable habitat that provides one or more life history function for the species (i.e., breeding, overwintering, or dispersal) by covered activities could adversely affect the species, as described below in more detail.

4.4.2.1 Effects

TMC Chapter 16.28, *Wetland Protection Standards* (see Appendix E, *Tumwater Municipal Code 16 Environment*), requires avoidance and minimization of wetland impacts whenever possible. Activities not dependent on wetland locations must be located in uplands; wetland buffers are protected; and there are requirements for no net loss of wetland through the restoration or enhancement of degraded wetlands or creation of new wetlands to offset unavoidable losses.

A permit is required prior to undertaking activities in a regulated wetland or its buffer. Protective wetland buffers range from 25 feet to 300 feet depending on the wetland's rarity, sensitivity to disturbance, and ecological functions. Therefore, development in wetland and wetland buffer areas, which would affect Oregon spotted frog, is generally prohibited, though there is a pathway to obtaining a permit or variance for unavoidable wetland or wetland buffer impacts under certain conditions (TMC 16.28.115 *Exceptions – Infrastructure*, TMC 16.28.140 *Permit Applications, Requirements*, and TMC 16.28.190 *Reasonable Use Exception*). Wetlands are also protected in accordance with the federal Clean Water Act. In addition to meeting City permit requirements, a federal or state permit is usually required for impacts on wetlands in the Plan Area.

If development is permitted within wetland areas, Oregon spotted frogs could be affected by conversion of wetland habitat to other land uses. Because Oregon spotted frogs lay eggs in the shallow margins of waterbodies, those sites are highly vulnerable to conversion and disturbance associated with urban development and other human activities. Grading, excavating, stockpiling, or other construction-related earth-disturbance activities that occur in wetland habitat could crush or bury Oregon spotted frogs or their eggs, resulting in injury or death.

Operations and maintenance activities, such as beaver dam removal and maintenance of stream banks, water delivery systems and stormwater systems, and channel rights-of-way (e.g., bank repair, vegetation management), could increase erosion and sediment discharge into adjacent wetlands and waterbodies, degrading water quality and Oregon spotted frog habitat. In addition, beaver dam removal often reduces habitat availability by altering the hydrological regime and dewatering wet areas associated with the beaver dam. This could result in the loss of or degradation of suitable aquatic habitat for egg laying and permanent surface water areas for all stages of frog development. It also may be difficult for individuals in these areas to move to new suitable habitat because Oregon spotted frogs can only disperse a limited distance via aquatic corridors. However, beaver dam removal will only be conducted outside of breeding season for the Oregon spotted frog, which

occurs in February and/or March in the Permit Area (see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*).

Other routine operations and maintenance activities, including repair of existing structures, infrastructure improvements, utilities, public or private roads (Section 3.4.4, *Public Facility Operations and Maintenance*) that do not require construction permits under TMC Chapter 16.28, *Wetland Protection Standards*, may occur as long as the activity does not alter or increase impacts on, or encroach within, the critical area or designated wetland buffer (25–300 feet depending on wetland classification) (see Appendix E, *Tumwater Municipal Code 16 Environment*). Operation and maintenance includes vegetation management, which must be performed in accordance with BMPs that are part of ongoing maintenance of structures, infrastructure, or utilities. Vegetation management actions may not expand further into the critical area and may not directly affect Oregon spotted frog.

BMPs required under TMC Chapter 16.28, *Wetland Protection Standards* (Appendix E, *Tumwater Municipal Code 16 Environment*), that would be implemented during operations and maintenance activities, include practices and management measures designed to:

1. Control soil loss and reduce water quality degradation caused by nutrients, animal waste, toxics, and sediment.
2. Minimize adverse impacts on surface water and groundwater flow, circulation patterns, and to the chemical, physical, and biological characteristics of wetlands.
3. Retain and protect vegetation through fencing and buffers. Critical-area buffers shall remain completely undisturbed.

Permanent Effects on Habitat

Due to protective wetland regulations, work in and around wetlands is generally prohibited. However, if work were to be permitted, covered activities could permanently affect up to 20 acres of Oregon spotted frog habitat in the Permit Area over the 30-year permit term (Table 4-6, *Maximum Permanent Impacts on Habitat for Oregon Spotted Frog*). The pace of development is unknown, but it can be assumed that these effects would likely be spread roughly evenly over those 30 years, resulting in effects on approximately 0.6 acre per year.

The 20 acres of permanent impacts were adjusted down to reflect the level of impact for this specific modeled habitat type due to the likelihood of projects avoiding impacts because of City CAO regulations. See Section 4.3.3, *Oregon Spotted Frog Effects Assessment*, and Appendix E, *Tumwater Municipal Code 16 Environment*, for the process of complying with the City CAO and municipal codes.

TMC Chapter 16.28, *Wetland Protection Standards*, establishes standards for the protection of wetlands, including a development buffer ranging from 25 feet to 300 feet depending on the wetland's rarity, sensitivity to disturbance, and ecological importance. These local protections, which implement state law requirements, coupled with state and federal permitting requirements, will reduce expected impacts and 20 acres of expected development is consistent with the amount of wetland development in the City the previous 10 years.

Table 4-6. Maximum Permanent Impacts on Habitat for Oregon Spotted Frog

Modeled Habitat Type	Total Modeled Habitat in Plan Area (acres)	Maximum Loss of Modeled Habitat in Permit Area (acres) ^a	Total Habitat Remaining Following Modeled Habitat Loss from Covered Activities (acres) ^b	Percent Lost During Permit Term
Occupied Wetlands	2,654	20 ^c	2,634	0.7

^a Impacts to actual habitat as defined in Appendix G. *Oregon Spotted Frog Screening Process* will be counted toward acreage removed as determined through the HCP application process and verified by the City during the HCP application review process as described in Section 7.3.1, *HCP Application Package*.

^b This does not account for any habitat loss from activities that occur in the Plan Area that are authorized under other ITPs.

^c The value in this cell is less than the total amount of GIS-generated overlap (145 acres) between Oregon spotted frog modeled habitat and the covered activities effects footprint data layer. Because of the City's CAO, impacts are expected to be minimized significantly (see Section 4.3.3, *Oregon Spotted Frog Effects Assessment*, and Appendix E, *Tumwater Municipal Code 16 Environment*, for the process of complying with the CAO and reducing impacts on covered species). Despite the distribution of Oregon spotted frog habitat relative to locations where covered activities are likely to occur the cap on Oregon spotted frog habitat loss under the HCP and permits is 20 acres. This estimate is based on historical development and permitting patterns within the City and the strength of local (CAO), state, and federal wetlands policies and regulations.

Temporary Effects on Habitat

Protective wetland regulations generally prohibit work in and around wetlands. There is the potential for covered activities to result in the temporary loss of 117 acres³¹ of Oregon spotted frog habitat (Table 4-7a, *Impact Analysis for Parks and Recreation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat*; Table 4-7b, *Impact Analysis for Public Services Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat*; Table 4-7c, *Impact Analysis for Transportation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat*). However, this estimate is based on typical project size. Because of the CAO, temporary impacts will be minimized significantly and are capped at 20 acres total for the Permit Term. Ground-disturbing activities that occur in and around wetlands could increase sedimentation, reducing water quality and habitat quality for Oregon spotted frog.

Table 4-7a. Impact Analysis for Parks and Recreation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat

Activity	Estimated Frequency in Oregon Spotted Frog Habitat (times per year)	Typical Project Size (acres)	Total Acres of Temporary Effects Per Year ^b	Total Temporary Impacts for the Permit Term (acres)
Maintenance and removal of infrastructure (trails, buildings, and roads)	1	0.1	0.1	3

³¹ Based on typical project size, temporary impacts to Oregon spotted frog are estimated to be 117 acres. However, because of the City's CAO, these impacts will be minimized significantly. Temporary impacts will be capped at 20 acres.

Activity	Estimated Frequency in Oregon Spotted Frog Habitat (times per year)	Typical Project Size (acres)	Total Acres of Temporary Effects Per Year ^b	Total Temporary Impacts for the Permit Term (acres)
Management of natural resources and habitat enhancement and restoration	0.2	1	0.2	6
<i>Maintenance of Irrigation Systems in Parks and Golf Courses^d</i>	10	0.250	0.250	7.50
Total			0.553	16.9^c

^a Due to the limited extent of Oregon spotted frog habitat in the Permit Area, only a subset of covered activities are expected to occur in Oregon spotted frog habitat.

^b Total Acres = Estimate frequency to occur in Oregon spotted frog habitat multiplied by the typical project size.

^c Because of the City's CAO, temporary impacts will be minimized (See Section 4.3.3, *Oregon Spotted Frog Effects Assessment*, and Appendix E, *Tumwater Municipal Code 16 Environment*. Total temporary impacts will be capped at 20 acres.

^d There is no overlap with stormwater systems and is not expected to have an impact on the Oregon spotted frog.

Table 4-7b. Impact Analysis for Public Services Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat

Activity	Estimated Frequency in Oregon Spotted Frog Habitat (times per year) ^a	Typical Project Size (acres)	Total Acres of Temporary Effects Per Year ^b	Total Temporary Impacts for the Permit Term (acres)
Culvert maintenance and replacement	5	0.1	0.5	15
Stormwater system maintenance	50	0.1	0.5	15
Utility system maintenance	5	0.1	0.5	15
Beaver dam removal	2	0.25	0.5	15
Flow leveler installation	1	0.1	0.1	3
Maintenance of flood control structures	1	0.1	0.1	3
Total			2.2	66^c

^a Due to the limited extent of Oregon spotted frog habitat in the Permit Area, only a subset of covered activities are expected to occur in Oregon spotted frog habitat.

^b Total Acres = Estimate frequency to occur in Oregon spotted frog habitat multiplied by the typical project size.

^c Because of the City's CAO, stormwater management requirements, and best practices in Conservation Action 5 (Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*) temporary impacts will be minimized (Section 4.3.3, *Oregon Spotted Frog Effects Assessment*, and Appendix E, *Tumwater Municipal Code 16 Environment*). Total temporary impacts will be capped at 20 acres.

Table 4-7c. Impact Analysis for Transportation Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Spotted Frog Habitat

Activity	Estimated Frequency in Oregon Spotted Frog Habitat (times per year) ^a	Typical Project Size (acres)	Total Acres of Temporary Effects Per Year ^b	Total Temporary Impacts for the Permit Term (acres)
Drainage system maintenance	5	0.1	0.5	15
Bridge and culvert repair activities	5	0.1	0.5	15
Total			1	30^c

^a Due to the limited extent of Oregon spotted frog habitat in the Permit Area, only a subset of covered activities are expected to occur in Oregon spotted frog habitat.

^b Total Acres = Estimate frequency to occur in Oregon spotted frog habitat multiplied by the typical project size.

^c Because of the City's CAO, temporary impacts will be minimized (Section 4.3.3, *Oregon Spotted Frog Effects Assessment*, and Appendix E, *Tumwater Municipal Code 16 Environment*). Total temporary impacts will be capped at 20 acres.

4.4.2.2 Effects Summary

The Permittees seek incidental take authorization for Oregon spotted frog that is reasonably certain to result from the covered activities.³² The approval would cover the permanent loss of an estimated 20 acres of currently suitable Oregon spotted frog habitat. This habitat loss represents less than 1% of the suitable habitat present in the Plan Area. Covered activities will also result in the temporary loss or disturbance of up to 20 acres³³ of Oregon spotted frog habitat.

Take could also occur via the mortality or wounding of Oregon spotted frog through ongoing activities such as beaver dam removal. However, removal of beaver dams will take place outside of breeding season for the Oregon spotted frog in the Permit Area (i.e., February and March, see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*, BMP 12) to reduce impacts on Oregon spotted frog. Reoccurring operations and maintenance activities such as vegetation maintenance can benefit Oregon spotted frog by maintaining suitable habitat conditions.

4.4.2.3 Implementation of the Conservation Strategy

Implementation of the conservation strategy involves those activities that would occur on lands acquired as part of the Reserve System (Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*). Conservation strategy activities are expected to have a net benefit on the Oregon spotted frog. However, some conservation actions could have temporary or short-term adverse effects on the species. Conservation actions that could be implemented for the Oregon spotted frog include enhancement, restoration, and the creation of wetland habitat to offset the loss of existing habitat.

³² This assumes development is implemented with adherence to CAO or other mitigation requirements, which further reduces or eliminates effects on covered species. Since those assessments are made on a project-by-project basis, the degree to which they would reduce or eliminate effects, was not modeled in this HCP, and instead was reliant on historical levels of effects within the City.

³³ Based on typical project size, temporary impacts to Oregon spotted frog are estimated to be 117 acres. However, because of the City's CAO, these impacts will be minimized significantly. Temporary impacts will be capped at 20 acres.

Given the limited extent of Oregon spotted frog habitat, it is expected that habitat creation would occur in an area hydrologically disconnected from occupied habitat. Therefore, all soil disturbance, vegetation management, and grading activities would occur prior to the restoration habitat being connected to occupied habitat, limiting potential effects on Oregon spotted frog. If enhancement activities (see Section 5.5.1.5, *Reserve Management and Enhancement*) occur in occupied habitat, short-term effects could range from mortality to displacement that could result in harm and substantial disturbance (see Section 4.4.2.1, *Effects*). These impacts will be avoided or minimized to the extent possible, by conducting projects outside the breeding season when spotted frogs are normally in connected, deeper water channels

Species surveys, monitoring, and research could also have temporary or short-term adverse effects that may result in limited take of the species. Biologists will conduct surveys for covered species, natural communities, and other resources within the Reserve System lands on a regular basis for monitoring, research, and adaptive management purposes. Presence of biologists could disrupt normal behavioral patterns if individuals are present; if this disruption is substantial, take of Oregon spotted frogs could result. Biologists also must walk within wetlands to locate spotted frog egg masses and harm can be done to all life stages through trampling.

4.4.2.4 Impact on the Species

The majority of Oregon spotted frog populations are small and isolated, making them more vulnerable than large, connected populations to random, naturally occurring events, such as drought, disease, and predation. On a species-wide basis, the amount of habitat that is estimated as permanently lost because of covered activities will be 20 acres over 30 years. The pace of development is unknown, but it is assumed that these impacts would be spread roughly evenly over those 30 years, resulting in impacts of approximately 0.6 acre per year on average.

As described above, the effects of covered activities may result in the death of individual egg masses, tadpoles, metamorphs, and adult Oregon spotted frogs by crushing; behavioral changes that might put an individual at greater risk of predation due to physical disturbance of their habitat; or an energetic cost to individuals, possibly leading to death, from the temporary removal of protective cover or food sources immediately following the disturbance. However, because wetlands and wetland buffers are protected by the City's CAO regulations (TMC Chapter 16.28, *Wetland Protection Standards*), impacts on the Oregon spotted frog are expected to be minimal overall (see Section 4.3.3, *Oregon Spotted Frog Effects Assessment*, and Appendix E, *Tumwater Municipal Code 16 Environment*).

4.4.3 Streaked Horned Lark

The only known occurrence of streaked horned lark in the Plan Area is the short, sparsely vegetated grassland communities at the Airport (Washington Department of Fish and Wildlife 2016). The estimated number of breeding pairs of streaked horned lark at the Airport has varied between 26 and 48 between 2010 and 2018 (Stinson 2016). Larks likely occupied the site of the Airport historically when it was still prairie and prior to its conversion to an airfield. Ongoing management of the grasses for aeronautical purposes under the regulations of the FAA at the Airport has allowed larks to continue to use the site for nesting.

Streaked horned lark can occur in the Plan Area at any time of year, with significantly greater abundance during the breeding season. Streaked horned lark is generally present in the Plan Area

during the breeding season from February to October (breeding season is generally April through September). During the rest of the year, individuals are less likely to be present. However, Pearson and Altman (2005) indicated that two birds were observed using habitat at the Airport during winter months. Winter surveys for streaked horned lark have not occurred in most years, so the abundance of birds present outside the breeding season is poorly understood. Removal or degradation of breeding and foraging habitat at the Airport by covered activities could adversely affect the species.

Covered activities could affect the streaked horned lark at the Airport by creating noise and activity disturbances that could disrupt streaked horned lark behavior if they are conducted when streaked horned larks are present. The covered activities could also affect the streaked horned lark through the loss of suitable habitat in the Plan Area, especially at the Airport, which is at least seasonally occupied by the subspecies (e.g., due to seasonality, Port development activities often occur at the same time as sites provide suitable streaked horned lark habitat used for nesting or wintering in the prior season, even if streaked horned larks are not actually present when development begins).

4.4.3.1 Effects

Covered activities that occur at the Airport, including construction, facility operations and maintenance activities, and routine aeronautical-related activities,³⁴ could result in the death or injury of the streaked horned lark.

Grading, excavating, stockpiling, or other construction-related earth-disturbance activities in nesting habitat could result in crushing or abandonment of eggs, nestlings, or flightless fledglings if conducted during the nesting season. Streaked horned larks that are breeding, feeding, or sheltering during construction and are unable to escape the area could be injured or killed by construction vehicles or equipment, or by placement of construction materials on the ground in areas where streaked horned larks are active.

Facility operations and maintenance activities related to vegetation management (e.g., mowing), or other maintenance activities could result in impacts on streaked horned lark. Crushing nests and immobile juveniles by mowers and off-pavement vehicle driving is one of the most significant impacts on larks on airfields and during training events. Similar injury or mortality of streaked horned larks could also result from collisions with vehicles, and other equipment in use during facility operations and maintenance activities. However, as described in Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts* BMPs 13 and 14 the Airport's grassland management regime maintains a short grassland condition required for persistence of the streaked horned lark population and must be maintained as part of the conservation strategy associated with this HCP.

Loss of nesting habitat through conversion to non-habitat is the greatest threat to streaked horned lark, but that loss can occur at any time. Loss of nesting habitat during the non-nesting season (i.e., when streaked horned larks are not present) could reduce the productivity of returning streaked horned larks. Streaked horned larks exhibit high site fidelity, meaning that breeding birds return to the same nesting areas year after year (Anderson and Pearson 2015). Similar injury or mortality of streaked horned larks could also result from collisions with vehicles, and other equipment in use during facility operations and maintenance activities.

³⁴ See Section 1.3.1.3, *Endangered Species Act 4(d) Rule for Streaked Horned Lark*, for activities that may overlap with operations and maintenance at the Airport and subsequently covered under the 4(d) Rule.

Covered activities could result in take of foraging streaked horned larks by removal or substantial degradation of foraging habitat. Grading, excavating, stockpiling, or other construction-related earth-disturbance activities that would remove foraging habitat would disrupt normal streaked horned lark behavior by reducing overall forage availability of a site. If the scale and behavioral impact of this habitat removal were substantial, it could result in take.

Conversion of habitat to non-habitat in the Plan Area would result in a reduction in grasses, seeds, and insects, which are all food sources during the breeding season. Loss of these food sources without which they can no longer find food or feed their young would displace foraging streaked horned larks by forcing them to abandon an area to avoid injury or mortality. This displacement would cause individuals to expend additional energy and could result in significant impairment or disruption of normal behavioral patterns if it becomes difficult for individuals to find new suitable foraging habitat. The resulting effect could reduce productivity and survival. This potential effect could be exacerbated by limitations on existing open landscapes that could support streaked horned lark.

Covered activities could result in harm or substantial disturbance to foraging or nesting streaked horned larks through noise, machinery, and human presence during construction-, operation-, and maintenance-related activities. Activities that occur within 100 feet of streaked horned larks have a higher likelihood of flushing them (Pearson and Hopey 2004) thus disrupting nesting and nest protection. Flushing events could decrease the overall fitness of the affected individuals, as energy is expended or foraging is interrupted to flee from the disturbance. It is possible that severe or repeated flushing could disrupt the behavior of streaked horned larks to the extent that they result in streaked horned larks permanently abandoning an area to avoid harm. The flushing of adults from nests, thereby leaving the eggs and young exposed to predators and weather, pose a significant threat. This displacement could reduce productivity and fledgling survival if nesting pairs abandon nests during the breeding season.

Even temporary disruptions causing an adult to leave the nest more frequently can increase the risk of predation on eggs, nestlings, or flightless fledglings. Adult birds are also at an increased risk of predation if they must spend additional time and energy finding a new territory for nesting or searching for less disturbed foraging areas. These effects would be exacerbated where there is no adjacent or nearby unoccupied habitat, likely resulting in mortality of individuals.

While increased presence from operations and maintenance could affect the species, streaked horned larks at the Airport are accustomed to human disturbances and they have returned to nest for many years in the airfield safety management area. Noise and human presence could cause streaked horned larks to abandon nests temporarily that are near the activity, resulting in egg, young, or fledgling injury or mortality (i.e., predation or lack of feeding).

Long-term effects could occur primarily in the form of urban edge effects, which are related to the physical and biological alterations associated with landscape fragment boundaries. An increase in fragmentation of the landscape could lead to an increase in the area where urban landscapes interface with streaked horned lark foraging and nesting habitats. These interface areas affect the open landscape context required by streaked horned larks, thereby further reducing suitable habitat.

In addition, other impacts can include nearby human activities such as noise, motion, and night lighting at the Airport and adjacent development; introduction of nonnative species; trash dumping and spills of hazardous materials; increased unplanned fire frequency; increased predation; vehicle-

or aircraft-related collisions; and increased potential for invasive weed colonization. The magnitude of potential effects from urban edge effects would depend on the proximity of individuals or populations to the activity and the type of activity, as well as the cumulative growth of the fragmentation-induced urban edge effects over time.

In addition, long-term effects from expanded impervious surfaces (e.g., roads, parking lots) could result in increased petrochemical-laden runoff (e.g., oil, grease, engine fluids), debris, increased sediment deposition, and higher traffic volumes, which can create substantial noise and physical disturbances. All of these effects may be hazardous to wildlife, including streaked horned lark.

Long-term effects could range from acute (death) to sub-acute effects, which could significantly disrupt normal behavioral patterns and result in reduced or delayed reproduction, reduced feeding behavior, or increased fledgling mortality due to changes in behavior.

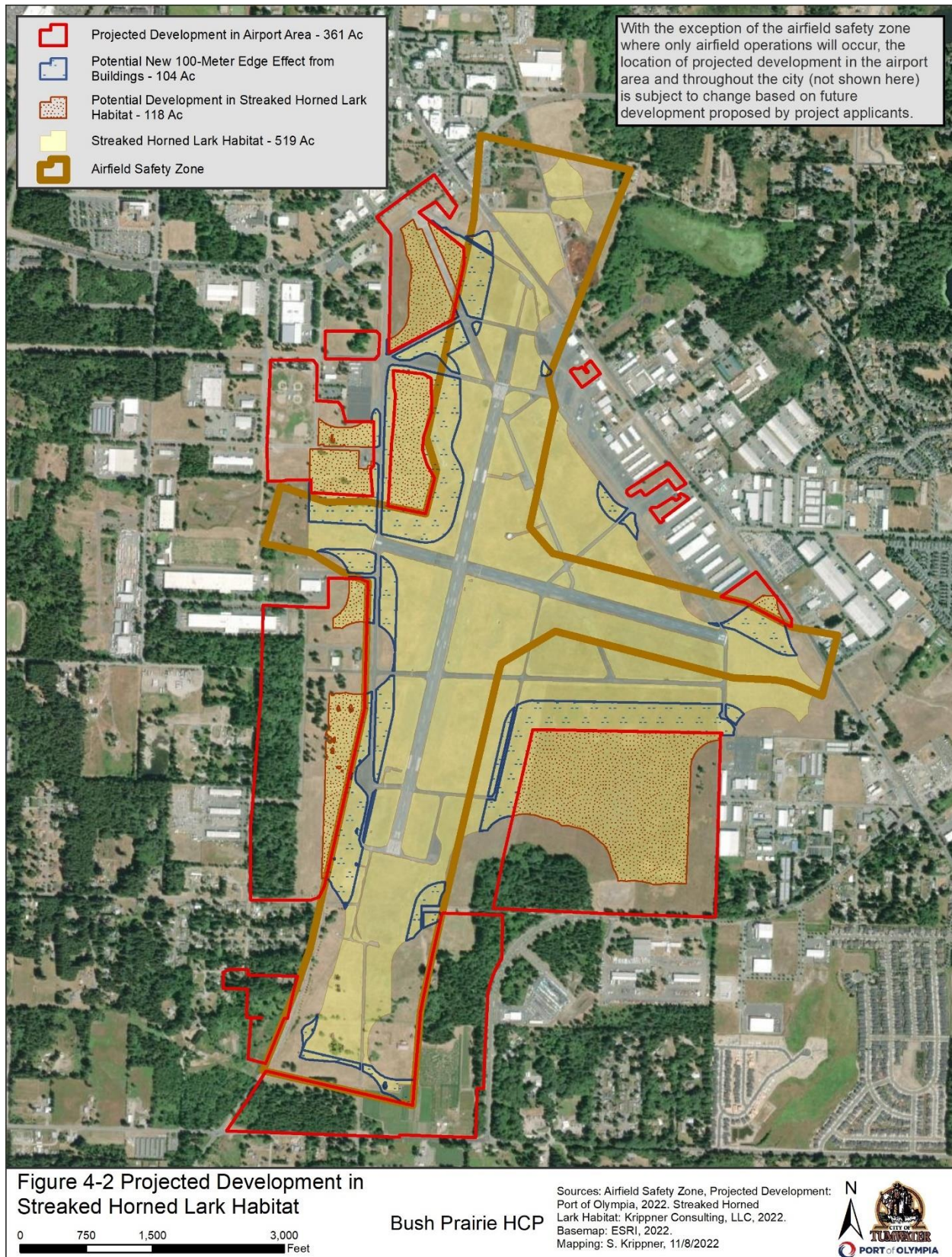
Permanent Effects on Habitat

There are approximately 519 acres of suitable streaked horned lark habitat in the Plan Area and covered activities would result in a permanent loss of up to 222 acres (43%) of suitable habitat (Table 4-8, *Maximum Permanent Effects on Habitat for Streaked Horned Lark*). Figure 4-2, *Projected Development in Streaked Horned Lark Habitat*, shows potential development occurring at the Airport in streaked horned lark habitat during the permit term.

Streaked Horned Lark Interim Strategy for Development at the Airport

Due to the challenges inherent in finding and securing a suitable mitigation site for the streaked horned lark in the Plan Area for this species, a special provision is provided to the City and Port in the HCP, allowing time to collect HCP fees for impacts to streaked horned lark habitat before mitigation land is secured (Section 7.6.1, *Special Stay-Ahead Provision for Streaked Horned Lark*). These funds can then be used to acquire Reserve System lands suitable for streaked horned lark mitigation. In order to collect these funds, some impacts will need to occur prior to having a mitigation site that is large enough to meet the species habitat criteria (>300 acres) and ensure the presence of a breeding population there. To accommodate these challenges, up to 100 acres of habitat loss in streaked horned lark habitat is allowed to occur before having a suitable streaked horned lark mitigation site as part of the Reserve System.

Development of the initial 100 acres of streaked horned lark habitat impacts will occur within the Interim Agreement Period/Potential Development Areas shown in Figure 4-3, *Interim Agreement Period for Development at the Airport*. During this interim period, the Airport will use a program of monitoring and BMPs to maintain a baseline number of nesting pairs of larks (based on a 3-year average, using counts from the latest two survey years and 2023) at the Olympia Airport. If a streaked horned lark mitigation site is acquired, occupied, and meeting performance standards, the 100-acre cap on habitat loss will be lifted and the program to maintain the baseline number of nesting pairs of larks at the Olympia Airport can be terminated. If the City and Port reach 100 acres of permanent habitat loss and a streaked horned lark mitigation site has not been acquired, then no more permanent streaked horned lark habitat loss will be permitted until an adequate mitigation site(s) have been acquired and the program to maintain the baseline number of nesting pairs of larks at the Olympia Airport must be continued (see Appendix F, *Streaked Horned Lark Memorandum*, for full details on the streaked horned lark strategy at the Airport).



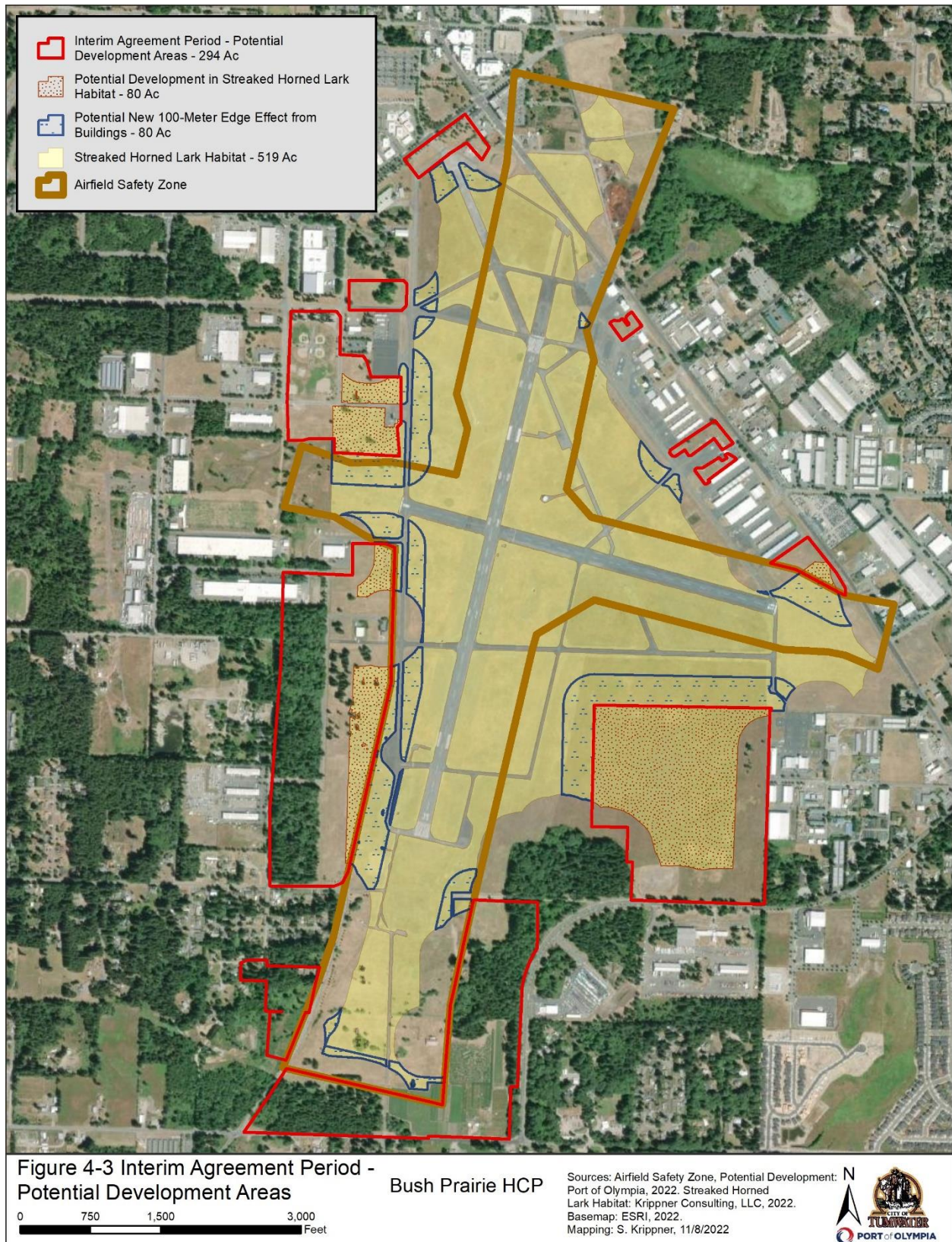


Table 4-8. Maximum Permanent Effects on Habitat for Streaked Horned Lark

Modeled Habitat Type	Total Amount of Modeled Habitat in Plan Area (acres)	Maximum Amount of Modeled Habitat Lost in Permit Area (acres) ^a	Amount of Modeled Habitat Remaining Following Projected Habitat Loss under HCP (acres)	Percent of Habitat Lost During Permit Term
Suitable Habitat	519	222	297	43

^a Impacts on modeled habitat will be counted toward acreage removed as determined through the HCP application process and verified by the City during the HCP Application review process. Verification will either occur with GIS maps of modeled habitat or field verification, as described in Section 7.3.1, *HCP Application Package*. This estimate includes both direct loss of habitat and potential edge effect impacts.

Temporary Effects on Habitat

Covered activities could result in temporary effects on streaked horned larks. These effects will vary considerably depending on the scope of the specific covered activity but could potentially result in substantial degradation of habitat (take in the form of harm) or disturbance to individual birds.

Temporary effects are most likely to occur during construction from the movement of: (1) construction equipment from staging areas to construction areas passing next to locations causing birds to flush and/or temporarily damaging habitat, and (2) construction staging areas, temporarily degrading or displacing nesting and foraging habitat during construction. These impacts may be avoided and/or minimized through implementation of best practices (best practices 13, 14, and 19) to avoid and minimize impacts as listed in Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*.

These activities will result in the temporary loss of 45 acres of habitat and food sources that would not be restored until the area is revegetated to pre-project conditions or ecologically improved conditions (Table 4-9, *Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Streaked Horned Lark Habitat*). Temporary effects could displace individual streaked horned larks. While displacement is a normal response by streaked horned lark to vegetation succession, there is no other known suitable habitat within the Plan Area for them to occupy.

Table 4-9. Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Streaked Horned Lark Habitat

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Total Acres of Temporary Effects Per Year	Total Temporary Impacts for the Permit Term
Utility facilities maintenance ^a	10	0.1	1	30
Culvert and drainage ditch replacement and maintenance	5	0.1	0.5	15
Total			1.5	45

^a See Section 1.3.1.3, *Endangered Species Act 4(d) Rule for Streaked Horned Lark* for details on the overlap of activities covered under the 4(d) rule and this HCP.

4.4.3.2 Effect Summary

The Permittees seek incidental take authorization for streaked horned larks that is reasonably certain to result from covered activities.³⁵ Take is likely to result from the permanent loss of up to 222 acres of currently suitable streaked horned lark habitat (Figure 4-2, *Projected Development in Streaked Horned Lark Habitat*) and up to 45 acres of temporary habitat loss at the Airport.

Take could also occur via killing or wounding streaked horned lark individuals or crushing of nests through ongoing activities during the annual Airport. Effects from the annual air show would include construction of infrastructure and increased human activities during the month of June each year. Noise and activity disturbance associated with ongoing and recurring activities are unlikely to have a significant negative effect on streaked horned lark because these activities are not new and are not expected to change significantly during the Permit Term. The continued implementation of best practices to avoid and minimize impacts should also ensure that negative impacts to sparrows are minimized to the extent possible (see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*). Reoccurring operations and maintenance activities ultimately benefit streaked horned lark by maintaining suitable habitat conditions

4.4.3.3 Implementation of the Conservation Strategy

Implementation of the conservation strategy includes activities that would occur on lands acquired as part of the Reserve System (Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*). Conservation strategy activities are expected to have a net benefit to the streaked horned lark. While some conservation actions could have temporary or short-term adverse effects and may result in limited take of the species, no adverse effects would occur prior to species establishment. Once larks are nesting at the site, habitat maintenance activities would only occur outside of the nesting season avoiding and/or minimizing the potential for any adverse effects to occur.

Take is not likely to occur initially at conservation sites because degraded sites that are being restored for conservation are unlikely to provide habitat for streaked horned lark until they are restored. However, once they are restored and larks are nesting there, maintenance activities could result in limited take of the species.

Conservation actions for the streaked horned lark will include enhancement, restoration, and creation of nesting and foraging habitat. These actions will generally be disruptive only in the short term because they may involve soil disturbance, removal of undesirable vegetation, and limited grading. If individuals are present in the area during any of these activities, effects could range from mortality from construction equipment collisions (although unlikely due to the species mobility) to displacement effects that could result in harm and substantial disturbance (see Section 4.4.3.1, *Effects*).

Species surveys, monitoring, and research could also have temporary or short-term adverse effects that may result in limited take of the species. Biologists will conduct surveys for covered species, natural communities, and other resources within the Reserve System lands on a regular basis for monitoring, research, and adaptive management purposes. Presence of biologists and noise

³⁵ This assumes development is implemented without adherence to CAO or other mitigation requirements, which would reduce or eliminate effects on covered species. Since those assessments are made on a project-by-project basis, the degree to which they would reduce or eliminate effects was not modeled in this HCP.

generated during activities could disrupt normal behavioral patterns if individuals are present and could result in mortality if vehicles were to collide with an individual, although unlikely due to the species mobility. Biologists also walk through nesting habitat while conducting breeding surveys and could potentially crush a nest or eggs.

Surveys by WDFW or other USFWS-approved entity for covered species, will also be conducted on private land being considered for acquisition under the Plan. Although these surveys are not expected to require handling of specimens, take may still occur through stepping on nests, disturbance, or disruption of normal behavior patterns.

4.4.3.4 Impact on the Species

The streaked horned lark's current range includes the Puget lowlands in Washington, Washington coast and lower Columbia River islands (including dredge spoil deposition sites near the Columbia River in Portland, Oregon), and the Willamette Valley in Oregon. In the Plan Area, streaked horned larks depend on open spaces on lands at the Airport with low-stature grasses and bare ground. They are sensitive to mowing, equipment operation, and visual disturbances. Construction on Port lands at the airport will reduce the area of habitat through conversion of habitat to developed land uses, and through an increase of visual disturbance rendering habitat edges unsuitable for larks.

Up to 222 acres of habitat may be lost from activities covered under this Plan. The loss of habitat will occur gradually over the 30-year permit term. The gradual nature of the habitat loss is expected to have minimal effects on the regional population of the species. See Appendix F, *Streaked Horned Lark Memorandum*, for details on the development of the first 100 acres of streaked horned lark habitat at the Airport.

The Port currently manages 1,572 acres of Airport lands. Management of these lands must comply with FAA Grant Assurances (Amended in 79 FR 18755) to maintain the airfield safety area and meet other operational needs of a regional general aviation airport. Of these 1,572 acres, approximately 350 acres are undeveloped and managed by the Port to maintain aircraft safety, which results in a short grassland condition³⁶ allowing for consistent visibility in the active airport operational areas and minimizing hazards to aircraft safety. These grasslands are also managed to prevent ponding water that could attract concentrations of waterfowl or shorebirds, which could increase risks of bird strikes.

Implementation of covered activities at the Airport would result in effects on the species that may be detrimental to the only occupied site in the permit area and Thurston County. Therefore, care must be taken early in the permit term to ensure that too much habitat is not removed before sufficient mitigation habitat can be acquired to mitigate any effects of habitat loss. Because the Airport is currently the only known location of streaked horned lark in the Permit Area, offsetting the impact of loss of habitat will need to be accomplished through the protection and management of mitigation lands that are large enough to attract and support nesting larks. It is assumed that attracting streaked horned lark to a new nesting area will take time. This will be challenging because habitat loss at the Airport will precede the ability to obtain mitigation credit. Receiving mitigation credit and subsequent increased operational flexibility will not be realized until a suitable site is protected and performance standards are achieved. Appendix F, *Streaked Horned Lark Memorandum*, describes the strategy for interim and long-term streaked horned lark conservation.

³⁶ Mowing typically occurs May through October due to limited accessibility from wet conditions during the rest of the year to align with the growing season for vegetation.

4.4.4 Oregon Vesper Sparrow

The only known occurrence of Oregon vesper sparrow in the Plan Area is the short, sparsely vegetated grassland communities, particularly edge areas adjacent to taller grasses/shrubs/trees, at the Airport (Washington Department of Fish and Wildlife 2016). Removal or degradation of habitat at the Airport could adversely affect the species. Effects on Oregon vesper sparrow from the covered activities would be like those described above for streaked horned lark (Section 4.4.3, *Streaked Horned Lark*).

4.4.4.1 Effects

Effects on Oregon vesper sparrow are similar to those described in Section 4.4.3.1, *Effects*. Covered activities that occur at the Airport including construction, facility operations and maintenance activities, and the Olympia Air Show could result in the death or injury of individual Oregon vesper sparrows.

Grading, excavating, stockpiling, or other construction-related earth-disturbance activities in nesting habitat could result in crushing or abandonment of eggs, nestlings, or flightless fledglings. Covered activities could result in harm or disturbance to foraging Oregon vesper sparrow by removal of habitat. Grading, excavating, stockpiling, or other construction-related earth-disturbance activities that would remove habitat would disrupt normal Oregon vesper sparrow behavior.

Facility operations and maintenance activities related to vegetation management (e.g., mowing), or other maintenance activities, could also result in impacts to Oregon vesper sparrows. Crushing nests and immobile juveniles by mowers and off-pavement vehicle driving is one of the most significant impacts on sparrows on airfields and during training events.

Conversion of habitat in the Plan Area would result in a reduction in grasses, seeds, and insects, which are all food sources during the breeding season. Loss of these food sources would displace foraging Oregon vesper sparrows by forcing them to abandon an area to avoid harm. This displacement would cause individuals to expend additional energy and could result in significant impairment or disruption of normal behavioral patterns if it becomes difficult for individuals to find new foraging habitat. The resulting effect could reduce productivity and survival.

This potential effect could be exacerbated by limitations on existing open landscapes that could support Oregon vesper sparrow. Noise, vibration, and human presence during construction-, operation-, and maintenance-related activities could disrupt or disturb normal behavior or flush Oregon vesper sparrow. Flushing events could decrease the overall fitness of the affected individuals, as energy is expended or foraging is interrupted to flee from the disturbance, which could cause Oregon vesper sparrows to temporarily abandon nests near the activity, resulting in egg, young, or fledgling injury or mortality (i.e., predation or lack of feeding).

Long-term effects could occur primarily in the form of urban edge effects, which are related to the physical and biological alterations associated with landscape fragment boundaries. An increase in fragmentation of the landscape could lead to an increase in the area where urban landscapes interface with Oregon vesper sparrow foraging and nesting habitats. An increase in nearby human activities such as noise, motion, and night lighting in adjacent developments; introduction of nonnative species; trash dumping and spills of hazardous materials; increased unplanned fire frequency; increased predation; vehicle- or aircraft-related collisions; and increased potential for invasive weed colonization could also have effects on the sparrow. The magnitude of potential

effects from new developments adjacent to airport grounds would depend on the proximity of individuals or populations to the activity and the type of activity, as well as the cumulative growth of the fragmentation-induced urban edge effects over time.

In addition, effects from expanded impervious surfaces (e.g., roads, parking lots) could result in increased petrochemical-laden runoff (e.g., oil, grease, engine fluids), debris, increased sediment deposition, and higher traffic volumes, which can create substantial noise and physical disturbances; all of these effects may be hazardous to wildlife, including Oregon vesper sparrow.

Permanent Effects on Habitat

There are approximately 2,696 acres of Oregon vesper sparrow habitat in the Plan Area and covered activities are projected to result in a permanent loss of up to 597 acres (24%) of habitat at the Airport and other locations in the Permit Area (Table 4-10, *Maximum Permanent Effects on Habitat for Oregon Vesper Sparrow*). Figure 4-3, *Projected Development in Oregon Vesper Sparrow Habitat*, shows potential development occurring at the Airport in Oregon vesper sparrow habitat during the permit term.

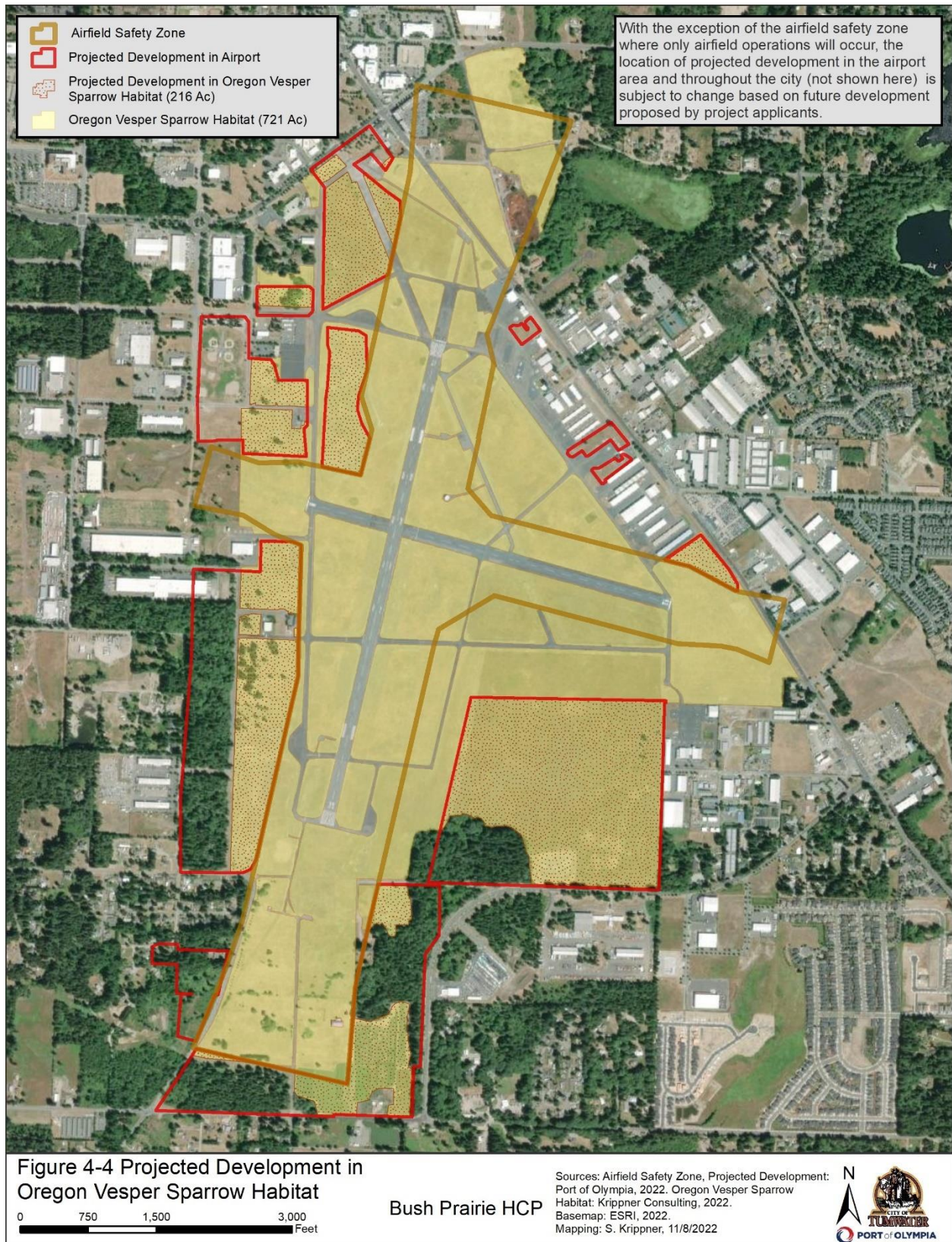


Table 4-10. Maximum Permanent Effects on Habitat for Oregon Vesper Sparrow

Modeled Habitat Type	Total Amount of Modeled Habitat in Plan Area (acres)	Maximum Amount of Modeled Habitat Lost in Permit Area (acres) ^a	Amount of Modeled Habitat Remaining Following Habitat Loss under HCP (acres)	Percent Lost During Permit Term
Oregon Vesper Sparrow Habitat	2,696	597	2,099	22

^a Impacts on modeled habitat will be counted toward acreage removed as determined through the HCP application process and verified by the City during the HCP application review process. Verification will either occur with GIS maps of modeled habitat or field verification, as described in Section 7.3.1, *HCP Application Package*.

Temporary Effects on Habitat

Temporary effects on Oregon vesper sparrow would be similar to those described in Section 4.4.3.1, *Effects*. These effects will vary considerably depending on the scope of the specific covered activity but could potentially result in take in the form of harm. Temporary effects are most likely to occur during construction from: (1) construction equipment damaging or degrading nests, nesting habitat, and forage vegetation outside the permanently affected area of a project site, and (2) construction staging areas temporarily degrading and occupying nesting and foraging habitat during construction. These activities will result in temporary loss of 45 acres of habitat and food sources that would not be restored until the area is revegetated to pre-project conditions (Table 4-11, *Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Vesper Sparrow Habitat*). If the habitat is not restored prior to the following nesting season then the impacts will be considered permanent.

Facility operations and maintenance activities related to vegetation management could also result in temporary effects on Oregon vesper sparrow. These activities may include natural resource management activities (e.g., mowing, prescribed burns), or other maintenance activities, which would result in temporary effects. However, these maintenance activities at the Airport are what create and maintain Oregon vesper sparrow habitat in the Plan Area.

Table 4-11. Impact Analysis for Port Operations and Maintenance Activities Resulting in Temporary Soil Disturbance in Oregon Vesper Sparrow Habitat

Activity	Estimated Frequency (times per year)	Typical Project Size (acres)	Total Acres of Temporary Effects Per Year	Total Temporary Impacts for the Permit Term
Utility facilities maintenance	10	0.1	1	30
Culvert and drainage ditch replacement and maintenance	5	0.1	0.5	15
Total			1.5	45

4.4.4.2 Effect Summary

The Permittees seek incidental take authorization for Oregon vesper sparrow from the covered activities. Take is likely to result from the permanent loss of 597 acres of currently Oregon vesper sparrow habitat in the Plan Area.

Mortality or injury of Oregon vesper sparrow could occur through ongoing activities, especially at the Airport, including the annual air show. Noise and activity disturbance associated with ongoing and recurring activities are unlikely to have a significant negative effect on Oregon vesper sparrow because these activities are not new and are not expected to change significantly during the Permit Term. The continued implementation of best practices to avoid and minimize impacts should also ensure that negative impacts to sparrows are minimized to the extent possible (see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*). Reoccurring operations and maintenance activities ultimately benefit Oregon vesper sparrow by maintaining suitable habitat conditions.

Effects from the annual air show would include construction of infrastructure and increased human activities during the month of June each year.

4.4.4.3 Implementation of the Conservation Strategy

Implementation of the conservation strategy includes activities that would occur on lands acquired as part of the Reserve System (Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*). Conservation strategy activities are expected to have a net benefit on the Oregon vesper sparrow. While some conservation actions could have temporary or short-term adverse effects and may result in limited take of the species, no adverse effects would occur prior to species establishment. Once Oregon vesper sparrows are nesting at a site, habitat maintenance activities would only occur outside of the nesting season thereby avoiding and/or minimizing the potential for any adverse effects to occur. Conservation actions that could be implemented for the Oregon vesper sparrow include enhancement, restoration, and creation of nesting and foraging habitat.

These actions will generally be disruptive only in the short term because they may involve soil disturbance, removal of undesirable vegetation, and in rare situations, limited grading. If individuals are present in the area during any of these activities, effects could range from mortality from construction equipment collisions although unlikely due to the species mobility, to displacement effects that could result in harm and substantial disturbance (see Section 4.2.6.1, *Effects Mechanisms*). Biologists also walk-through nesting habitat while conducting breeding surveys and could potentially crush a nest or eggs.

Surveys, by WDFW or other USFWS approved entity for covered species, will also be conducted on private land being considered for acquisition under the Plan. Although these surveys are not expected to require handling of specimens, take may still occur through increased human presence and disturbance or disruption of normal behavior patterns.

4.4.4.4 Impact on the Species

The Oregon vesper sparrow occupies grassland and savannah habitats in lowland valleys ranging from San Juan Island south to the northwestern corner of California. Up to 597 acres of habitat will be lost from activities covered under this Plan. The loss of habitat used by Oregon vesper sparrows will occur gradually over the 30-year permit term.

4.5 Cumulative Effects

The impacts of covered activities were assessed in the context of existing conditions in the Plan Area. Some activities and projects that are outside the scope of the Plan may nonetheless contribute to cumulative impacts on covered species. An analysis of cumulative effects is not required in an HCP. However, an analysis is included here to support the federal Biological Opinion that will conclude the USFWS ESA Section 7 internal consultation process (see Chapter 1, *Introduction*, for details).

The scope of the cumulative analysis in a biological opinion is limited to nonfederal actions because federal actions (i.e., any federal project, project with federal funding, or project that requires a federal permit) will be the subject of future ESA Section 7 consultations in which cumulative impacts can be considered more fully. To support this analysis, the cumulative projects evaluated in this section are limited to nonfederal projects that are not covered by the Plan. NEPA compliance for the HCP presents a thorough analysis of the cumulative effects of all projects, federal and nonfederal, when combined with the effects of the Plan.

Because this HCP is meant to be comprehensive, the list of nonfederal future projects not covered under the HCP will be relatively small. Only a small number of recent projects within the Plan Area were identified (Table 4-12, *Recent Projects in the City That Required Take Authorization from the USFWS*). In 2016, USFWS issued an ITP for *The Kaufman Habitat Conservation Plan for Taylor's Checkerspot Butterfly (Euphydryas editha taylori); Streaked Horned Lark (Eremophila alpestris strigata); and two subspecies of the Mazama Pocket Gopher (Thomomys mazama pugetensis and Thomomys mazama yelmensis); in Thurston County, Washington*, covering impacts on listed species incidental to development of several commercial sites, several of which are within the Plan Area (Krippner 2016).

In 2016, USFWS also issued an ITP for *The Meier Group LLC Mazama Pocket Gopher Habitat Conservation Plan*, for construction of a commercial development (Ramboll Environ US Corporation 2016). In 2017, USFWS issued ITPs for *The McLain Habitat Conservation Plan for the threatened Olympia subspecies of the Mazama pocket gopher (Thomomys mazama pugetensis) associated with construction of a Single-family Residence in Thurston County, Washington*, for development of one single-family home near the proposed project site (McLain 2017) and USFWS issued an ITP for the UCP Sagewood Preserve HCP in 2018.

Table 4-12. Recent Projects in the City That Required Take Authorization from USFWS

Project Name	Year Implemented	Habitat Affected (acres)			
		Olympia Pocket Gopher	Oregon Spotted Frog	Streaked Horned Lark	Oregon Vesper Sparrow
Tumwater East Distribution Center	2021	35	--	--	--
Capital Blvd	2019	0.8	--	--	--
UCP Sagewood	2018	37	--	--	--
McLain Development	2017	0.5	--	--	--
Meier Development	2016	2.7	--	--	--

Project Name	Year Implemented	Habitat Affected (acres)			
		Olympia Pocket Gopher	Oregon Spotted Frog	Streaked Horned Lark	Oregon Vesper Sparrow
Kaufman Properties	2016	40	--	--	--

Each of these recent projects have or are anticipated to result in impacts on the listed species proposed for coverage under the considered alternatives. There was inadequate information available to assess the potential cumulative effects of other projects deemed speculative or otherwise uncertain to occur.

While there have been ongoing impacts on the covered species from loss of occupied sites, this loss has been mitigated through individual HCPs. The cumulative effects of HCP implementation stop this fragmented backdrop of impacts and conservation by providing a better-coordinated program that offers assurances of strategic conservation for the species for impacts on modeled habitat, which includes all occupied and unsurveyed habitat for the species in the Permit Area.

4.6 Effects on Critical Habitat

Critical habitat is designated for three of the covered species (Olympia pocket gopher, Oregon spotted frog, and streaked horned lark) (Figures 2-9, *Olympia Pocket Gopher Modeled Habitat*, and 2-11, *Oregon Spotted Frog Modeled Habitat*). Maximum anticipated impacts in critical habitat for these three species are provided in Table 4-13, *Maximum Permanent Effects on Critical Habitat for Covered Species*. The impact analysis for critical habitat was conducted by intersecting the GIS overlay of covered activities with the critical habitat boundaries.

Table 4-13. Maximum Permanent Effects on Critical Habitat for Covered Species

Covered Species ^a	Total Amount of Critical Habitat in Plan Area (acres)	Estimated Maximum Amount of Critical Habitat Removed in the Permit Area (acres) ^b	Total Critical Habitat Remaining in Plan Area (acres) ^c	Percent Lost During Permit Term
Olympia pocket gopher: within critical habitat boundary	676	144	532	21
Oregon spotted frog: within critical habitat boundary only ^d	1,519	20 ^f	1,499	1
Streaked horned lark ^e	0	0	0	0

^a Oregon vesper sparrow is not listed, so there is no critical habitat designated for that species.

^b Only designated critical habitat, which is confirmed to have primary constituent elements during permit review, will be counted toward acreage removed.

^c This does not account for any habitat loss from activities that occur in the Plan Area that are authorized under other ITPs.

^d All designated critical habitat in the Plan Area is included in the Oregon spotted frog modeled habitat. Note that this is a worst case scenario, it is not likely that all impacts will occur in critical habitat.

^e No designated critical habitat in the Plan Area.

^f The value in this cell is less than the total amount of GIS-generated overlap (145 acres) between Oregon spotted frog modeled habitat and the covered activities effects footprint data layer. Because of the City's CAO, impacts are expected to be significantly lower than what would be predicted by GIS footprints alone. Therefore, a cap on Oregon spotted frog habitat loss under the HCP and permits is set at 20 acres. This estimate is based on historical development and permitting patterns within the City and the strength of local (CAO) and state wetlands policies.

4.6.1 Olympia Pocket Gopher

The Olympia Airport Unit contains the largest known area occupied by the Olympia pocket gopher in the state. Critical habitat was designated for the Olympia pocket gopher on April 9, 2014 (50 CFR Part 17, Vol 79, No 68). This unit is occupied by the Olympia pocket gopher and it contains the physical or biological features essential to the conservation of the subspecies. USFWS designated 676 acres on the Airport as critical habitat for the Olympia pocket gopher, 613 acres of which is modeled as occupied or suitable habitat by the habitat model developed for this HCP. Full implementation of Airport covered activities could result in the loss of up to 144 acres (21%) of Olympia pocket gopher critical habitat in the Plan Area (Figure 4-4, *Projected Development in Olympia Pocket Gopher Critical Habitat*).

The location of this habitat loss in the northwestern corner and southeastern corner of the Airport will leave the remaining critical habitat intact and continuous. The majority of the critical habitat that will remain, following implementation of covered activities, will largely be in the Airport's airfield safety area. That area will continue to be managed in a low grassland condition consistent with Airport regulations to ensure aircraft safety. The grassland condition will remain as long as the location is deemed as an Airport and is expected to continue to support Olympia pocket gophers, keeping the critical habitat unit functional.

Because the only location of critical habitat in the Plan Area is at the Airport, there can be no mitigation (i.e., areas set aside specifically for conservation) for the loss of critical habitat at the Airport. However, the Reserve System will contribute to the recovery of the species by conserving, restoring, and properly managing the quantity, quality, and connectivity of Olympia pocket gopher habitat to address the loss of critical habitat and ensure the long-term persistence and viability of the Olympia pocket gopher across its range. Acquisition of lands for the Reserve System will focus on recovery priority areas and other high-priority areas that will contribute to the recovery of the species.

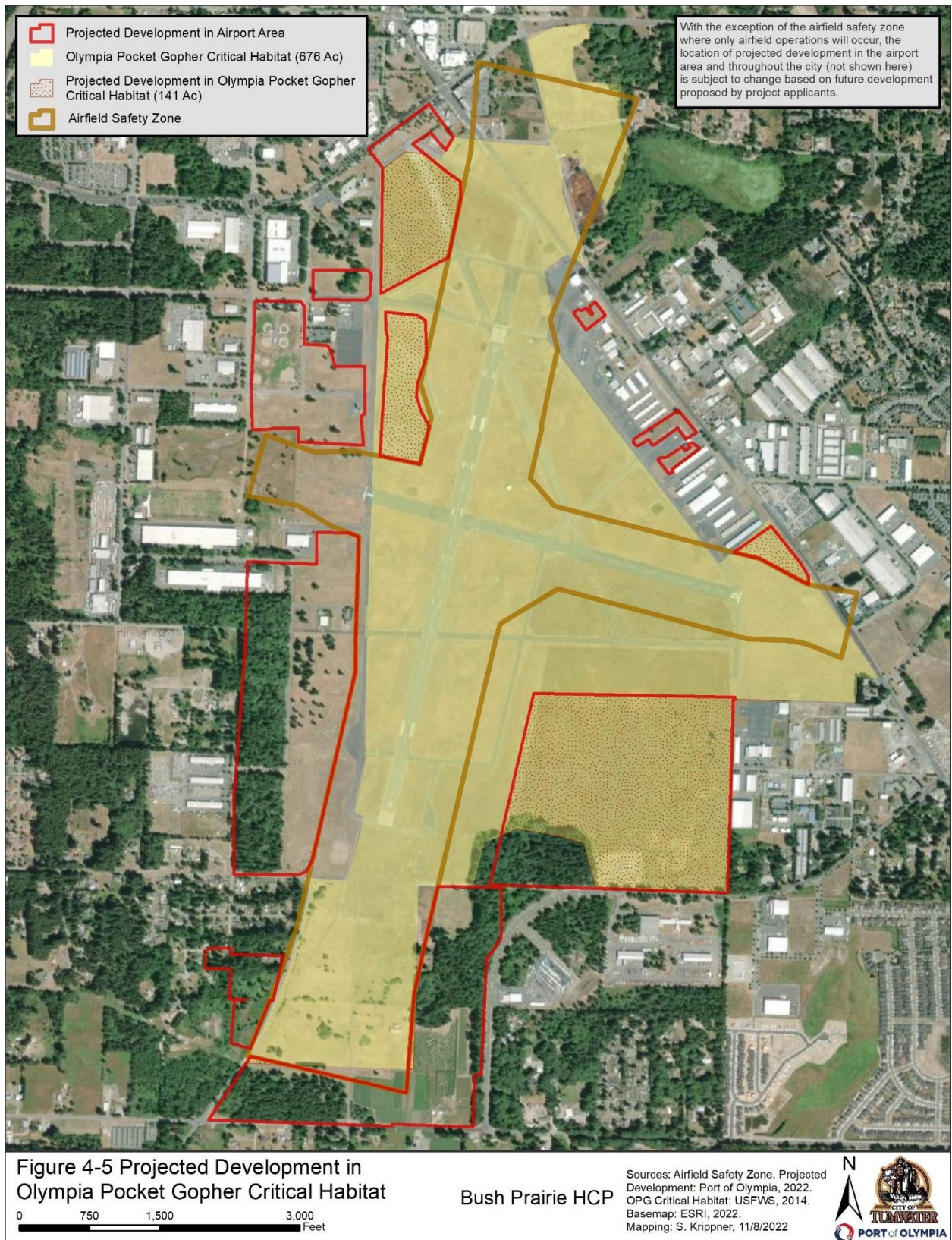
4.6.2 Oregon Spotted Frog

Critical habitat was designated for the Oregon spotted frog on May 11, 2016 (50 CFR Part 17, Vol 81, No 91). USFWS designated 4,880 acres in Unit 4: Black River in Thurston County, Washington as critical habitat for the Oregon spotted frog. Of the 4,880 acres of critical habitat, 1,519 acres are located in the Plan Area and 129 acres in the Permit Area. Full implementation of covered activities could result in the loss of 20 acres of Oregon spotted frog critical habitat in the Plan Area (1%). The loss of up to 20 acres of critical habitat within the 4,880-acre Unit 4: Black River unit is negligible. The areas that will be affected by covered activities are in or near the urban area. Of the 4,880 acres in Unit 4, the 129 acres in the Permit Area likely provide a lower function than those further from urban centers and in larger, more contiguous wetland and stream complexes. Because of the proximity to the urban area, the removal of up to 20 acres of this critical habitat unit is not expected to reduce the overall function of Critical Habitat Unit 4.

4.6.3 Streaked Horned Lark

Critical habitat was designated by USFWS for the streaked horned lark on October 3, 2013 (50 CFR Part 17, Vol 78, No 192). No critical habitat has been designated in the Plan Area. Therefore, the Plan will not adversely modify or destroy critical habitat for streaked horned lark. USFWS excluded the Olympia Airport from the critical habitat designation based on an expectation that partners would continue to plan for the protection and consideration of larks on the Olympia Airport as follows:

Excluding airports would allow USFWS to develop conservation partnerships with airport managers, and potentially result in the implementation of management plans at airports designed to benefit the conservation of the streaked horned lark. Exclusion of these lands from critical habitat will help foster partnerships we have developed with airport entities such as the Port of Olympia, which has developed an impressive management plan for the benefit of the streaked horned lark and other prairie species (78 FR 61551).



5.1 Introduction

The conservation strategy was designed to address the requirement in the federal ESA to minimize and mitigate the impacts of the taking on the covered species to the maximum extent practicable (16 USC 1539). The conservation strategy describes a mitigation program that will fully offset the impacts of the taking on each of the covered species that may result from covered activities. The conservation strategy mitigates the impacts described in Chapter 4, *Effects Analysis*, including direct, indirect, temporary, and permanent effects and is designed to work in concert with the City's CAO. The conservation strategy is based on the best scientific data available at the time of its preparation and it considers the limitations of the baseline data available for the Plan Area (see Chapter 2, *Physical Setting, Land Use, and Biological Resources*).

5.1.1 Conservation Strategy Overview

The conservation strategy is based on the biological goals and objectives developed for the covered species, as discussed in Section 5.4, *Biological Goals and Objectives*. Because loss of habitat is the primary factor affecting the covered species, preservation and management of land through the creation of a Reserve System is the primary conservation tool utilized in the HCP (see Section 5.5.2.3, *Value of Restoring Prairie Reserve System Lands*).

The general focus of the conservation strategy is to protect and manage lands within the Plan Area that either are already occupied by covered species or have a higher likelihood of becoming occupied following protection and active management or restoration to enhance suitable habitat. Some protection of lands that are not occupied will be necessary in order to provide habitat connectivity between occupied areas and to create newly occupied sites within the range of the subspecies, expanding the distribution of covered species in the Plan Area. Further, the intention is to manage all Reserve System lands in ways that will improve the quality of habitat for covered species. Details of the conservation actions are provided in Section 5.5, *Conservation Actions*.

The intentions of the conservation strategy are summarized as follows.

- Minimize effects of new urbanization and associated infrastructure on existing covered species habitat (see Section 5.5.3, *Conservation Action 3: Minimize Effects in Wetlands and Restore Oregon Spotted Frog Habitat*, and Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*, for details).
- Minimize effects through the retention of 350 acres of the Airport airfield safety area through ongoing maintenance and land management strategies consistent with FAA Grant Assurances.
- Permanently protect between 1,356 and 1,605 acres of prairie habitat (Table 5-3, Functional Acre Calculations for Habitat Removed by Covered Activities and Range of Potential Reserve Lands Acquired to Mitigate That Loss) for the benefit of prairie covered species in a Reserve System incrementally as impacts occur, with all land acquired and protected by Year 28 of the permit term (2 years before the end of the permit). This assumes that all covered activities are implemented and all effects described in Chapter 4, *Effects Analysis*, occur. If not, the size of the

Reserve System will be proportional to the actual level of impact from the covered activities. These lands will be acquired primarily for Olympia pocket gopher (*Thomomys mazama pugetensis*) but will also provide permanent habitat for the other covered species (see Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*, for details on this action).

- Manage all Reserve System lands toward a native or high-quality native prairie condition; actively manage the Reserve System to maintain populations of covered species; and monitor the Reserve System to ensure habitat conditions remain suitable for covered species (see Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*, for details on this action, and Chapter 6, *Monitoring and Adaptive Management*).
- Permanently protect up to 40 acres of Oregon spotted frog (*Rana pretiosa*) habitat by Year 28 (2 years before the end of the permit term). In some cases, Oregon spotted frog habitat could be on a parcel that also provides conservation for covered prairie species, but it is assumed that the acquisition and management of Oregon spotted frog habitat will be unique and separate from acquired prairie habitat (see Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*, for details on this action).
- Pursue protection of occupied habitat and high-quality habitat over lesser-quality habitat.³⁷ Where acquisition of occupied and high-quality habitat is not feasible, acquire lower quality habitat adjacent to occupied or higher quality habitat and enhance lower-quality habitat through improvements aimed at restoring degraded prairie to either native or high-quality prairie (see Section 5.5.2, *Conservation Action 2: Restore Prairie Habitat*, for details on this action).

All mitigation will be tied to actual project impacts as determined by the overlap of the project footprint with covered species modeled habitat (see Section 7.3.1, *HCP Application Package*, for full details on how project-specific impacts are determined). All impacts and mitigation will be monitored and tracked in an annual report to ensure compliance with the Plan (see Section 7.6, *Stay-Ahead Provision*; Section 7.9, *Tracking Compliance*; and Section 7.10, *Annual Reporting*).

5.1.2 Key Terms

Key elements of the conservation strategy are defined below.

Acquisition. The acquisition of land, through purchase of fee title or conservation easement, to either protect or restore covered species' habitat. Protection and restoration are defined below.

Biological goals. Guiding principles for conservation within the Plan Area based on the conservation needs of the covered species. The goals describe the vision for the covered species to be achieved through implementation of a successful conservation program. Biological goals are typically qualitative rather than quantitative (65 FR 106 35242–35257, June 1, 2000).

Biological objectives. Measurable targets that will be sought to achieve the biological goals. Biological objectives are typically quantitative or at least measurable (65 FR 106 35242–35257, June 1, 2000).

³⁷ All lands acquired will occur outside of the Airport airfield safety area.

Functional habitat. The concept of functional habitat is used in the conservation strategy to recognize the importance of sites being occupied by gophers in the reserve system. The use of functional acres is intended to help achieve an optimal reserve design that meets the mitigation needs of Olympia pocket gopher while accommodating the development goals of the City and the Port (Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*).

Habitat enhancement. Covered species' *habitat enhancement* is the improvement of an existing degraded covered species' habitat. Enhancement, for the purpose of the Plan, improves the *condition* of existing covered species' habitat and does not involve increasing the area of covered species' habitat.

Habitat management. Ongoing manipulation of the land supporting the covered species' habitat as needed to maintain the functions of these lands. Habitat management may include measures such as grazing, mowing, or burning in order to prevent invasive species from becoming established where they are largely absent.

Protection (or land preservation). Protection of species' habitat to prevent land disturbances and land uses that would harm or reduce its conservation and habitat values. This protection is accomplished by acquiring fee title or through conservation easement and managing it to protect covered species' habitat and prevent land disturbances and land uses that would harm conservation values. The conservation strategy uses the term *protection* in setting biological goals and objectives for adding land to the Reserve System.

Occupied habitat. An area of habitat a covered species is known to exist based on field observations of the animals or their sign by a qualified surveyor.

Reserve System. The Reserve System will be assembled during the permit term to provide for the conservation of covered species. The Reserve System will consist of properties that are legally protected to provide incidental take coverage for the covered species. The properties that are part of the Reserve System will be managed and restored, as needed, to provide habitat for the covered species in perpetuity.

Restoration or habitat restoration. Restoration of land cover types means returning a site to a habitat condition that was historically present or is required for covered species conservation. For example, degraded prairie may be restored to a high-quality native prairie to provide enhanced foraging habitat for the Olympia pocket gopher.

5.2 Data Sources

The primary sources of data for the conservation strategy were the ecological accounts of covered species, the species habitat distribution models, and the inventory of existing conditions, all of which are summarized in Chapter 2, *Physical Setting, Land Use, and Biological Resources*. Other sources consulted to develop the conservation strategy are cited throughout the chapter and fall into the following categories of sources listed below.

- Species listing decisions, critical habitat designations, and species recovery plans, if available.
- Peer-reviewed publications from research conducted on the covered species.

- Other similar ESA permitting documents for the covered species, including biological opinions and approved HCPs.
- Local species experts.

5.3 Conservation Strategy Framework

Land preservation and management, including prairie and wetland restoration, is the core component of the conservation strategy. The term *protection* or *land preservation* is intended broadly to include the acquisition of terrestrial and aquatic land cover types to mitigate habitat loss from covered activities. Land will be acquired in fee title, with a conservation easement, or through the purchase of permanent conservation easements from landowners that wish to retain ownership, to create what will collectively be known as the *Reserve System*.³⁸ When completed, the Reserve System will protect substantial areas of habitat for covered species and will provide extensive new opportunities for habitat enhancement and restoration. In addition to the protection offered through the placement of conservation easements, it is assumed that all lands in the Reserve System will be enhanced to improve habitat for covered species through the restoration of ecological function.

For the Oregon spotted frog, land preservation and management will occur in locations where the species is known to occur or in locations connected to locations that are occupied, where occupancy can be reasonably expected. These areas are shown in the Oregon spotted frog habitat model in Chapter 2, *Physical Setting, Land Use, and Biological Resources*. While Oregon spotted frog conservation is expected to include restoration, in order to enhance wetland function and improve habitat quality, the degree to which lands will be restored will depend on the condition the lands are in when they are acquired.

It is anticipated that nearly all lands protected as part of the Reserve System for prairie species, whether occupied by covered species or not, will be in a degraded prairie condition upon acquisition. The success of the conservation strategy is dependent on prairie restoration for that reason. As a result, it is assumed that all Reserve System land for prairie species will be restored to at least a native prairie condition.

5.4 Biological Goals and Objectives

Biological goals are broad, guiding principles based on the conservation needs of the covered species. Biological objectives are expressed as conservation targets or as desired conditions. Objectives are measurable and quantitative when possible. They clearly state a desired result and they will collectively achieve the biological goals. Biological goals for covered species are required by the USFWS' *HCP Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016).

³⁸ In accordance with FAA Grant Assurances (Amended in 79 FR 18755), no species habitat will be permanently protected in the Airport airfield safety area or on other Airport lands that are necessary to support Airport operations.

The conservation actions in this chapter contain detailed information on all aspects of conservation land acquisition and management. Collectively, they provide a strategy for achieving all of the biological goals and objectives. It is expected that some of the details of the conservation actions will be modified during HCP implementation through the monitoring and adaptive management program, while goals and objectives will remain static.

The Plan includes biological goals for each of the covered species. Each biological goal is supported by one or more biological objectives. All biological goals and objectives are given unique codes to enable easier tracking in implementation. Most of the biological goals and objectives are designed, at a minimum, to maintain current populations of covered species in conservation areas. In some cases, populations of covered species are expected to increase because of land preservation and improved habitat management.

The biological goals apply only to conservation areas unless stated otherwise. Most conservation actions will occur within the Reserve System. One conservation action is designed specifically for the Airport.

5.4.1 Olympia Pocket Gopher

Goal 1: Provide mitigation for permanent and temporary impacts on Olympia pocket gopher habitat that contributes to the recovery of the species.

Objective OPG1: Permanently protect and manage Olympia pocket gopher habitat within the Plan Area as needed to mitigate permanent and temporary impacts from covered activities (see methodology in Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*).

Objective OPG2: Maintain no less than 60% of the total acres in the Reserve System as occupied habitat at any given time. Any unoccupied Reserve System lands will be enhanced or restored to achieve occupancy by the end of the permit term, up to and including species translocation, once proven effective.

Objective OPG3: Minimize effects from operations and maintenance through BMPs for all covered activities.

5.4.2 Oregon Spotted Frog

Goal 2: Retain Oregon spotted frog habitat in the Plan Area.

Objective OSF1: Minimize effects of new urbanization and associated infrastructure on existing Oregon spotted frog habitat.

Objective OSF2: Permanently protect, enhance, and/or restore Oregon spotted frog habitat within the Plan Area as needed to mitigate permanent and temporary impacts from covered activities and consistent with the CAO, which includes the option to buy equivalent credits at an approved Oregon spotted frog mitigation bank with a service area that includes the Permit Area. The City will prioritize breeding locations and their connection to deep water (e.g., movement corridors to summer and winter habitat).

5.4.3 Streaked Horned Lark

Goal 3: Provide mitigation for permanent and temporary impacts on streaked horned lark habitat that contributes to the recovery of the species.

Objective STHL1: Maintain a baseline number of nesting pairs of larks at the Airport during the interim period as described in Appendix F, *Streaked Horned Lark Memorandum*.

Objective STHL2: Secure and maintain a mitigation site in the Permit Area for Streaked Horned Lark Only that is occupied by an average of 20 or more pairs of nesting larks for a period of 3 consecutive years.

5.4.4 Oregon Vesper Sparrow

Goal 4: Expand available Oregon vesper sparrow nesting habitat in the Plan Area.

Objective ORVS1: Permanently protect and manage an equal number of acres of Oregon vesper sparrow nesting habitat within the Plan Area as needed to mitigate permanent and temporary impacts from covered activities. Habitat protection will be focused on areas where Oregon vesper sparrow are most likely to occur, mainly prairie edge areas where prairies are at least 20 acres in size.

Objective ORVS2: Monitor Reserve Lands for the presence of Oregon vesper sparrows and coordinate with conservation partners including USFWS and WDFW on species recovery efforts to ensure that suitable habitat is available for this species in the Plan Area during the Permit Term.

5.5 Conservation Actions

Conservation actions are actions implemented in the Plan Area and during the permit term to accomplish the biological objectives collectively. Conservation actions include minimization measures and mitigation measures. Five conservation actions are described below.

- **Conservation Action 1:** Establish and Manage a Prairie and Wetland Reserve System
- **Conservation Action 2:** Restore Prairie Habitat
- **Conservation Action 3:** Minimize Effects in Wetlands and Restore Oregon Spotted Frog Habitat
- **Conservation Action 4:** Fund Covered Species Translocation Research
- **Conservation Action 5:** Best Practices to Avoid and Minimize Impacts

The benefits of the conservation actions are described for each species in Section 5.6, *Benefits to Covered Species and Net Outcomes*.

5.5.1 Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System

This conservation action will establish a Reserve System in the Plan Area, which will be protected and managed for the benefit of the covered species. All land in the Reserve System will be acquired, preserved, and managed permanently, to offset the permanent loss of covered species habitat. The

Reserve System within the Permit Area and the Permit Area for Conservation Only (Figure 1-2, *Plan and Permit Areas*) will largely be comprised of prairie habitat for the Olympia pocket gopher, some of which will also support Oregon vesper sparrow. It will also include acreage for Oregon spotted frog, as described in Section 5.6.2, *Oregon Spotted Frog*. The Reserve System within the Permit Area for Streaked Horned Lark Conservation Only, will be comprised of habitat that is suitable for streaked horned lark.

The Permittees will acquire land for the Reserve System either in fee title with permanent conservation easements or with permanent conservation easements on lands where the landowner retains ownership. The Permittees may also obtain credits at a USFWS-approved conservation bank (Section 5.5.1.3, *Assembling the Reserve System*).

When conservation easements are used, the details of each conservation easement may be tailored to each landowner and parcel. However, conservation easements must always be consistent with goals of the conservation strategy, including the general principles for conservation easements outlined in this Plan. The land and conservation easement acquisition process and the conditions under which the other conservation land assembly techniques may be used are discussed in detail in Chapter 7, *Implementation*.

To achieve the biological goals and objectives, it is important to focus land acquisition where it will have the greatest conservation benefit for covered species. The Reserve System lands that will be acquired will focus on providing habitat protection for prairie species. The Permittees will seek acquisition of lands that also contain Oregon spotted frog habitat. Lands that contain habitat for more than one covered species, if available, will be prioritized.

The Permittees will complete all necessary land acquisition for the Reserve System by Year 28 of the 30-year permit term. This deadline will allow at least 2 years before permit term expiration for land management and monitoring to occur on the final acquisitions. In all cases, the focus will be on acquiring lands occupied by the covered species where possible and then the focus will be on the highest-quality habitat and potential for restoration and future species occupancy. The goal is to first acquire occupied habitat and then habitat that is of higher quality than the habitat being lost due to covered activities, or to restore Reserve System lands to a habitat quality greater than habitat lost (see Section 5.5.1.2, *Selection Criteria for Reserve System Lands*).

For example, much of the potential habitat that is lost may not be occupied by covered species at the time the land is converted to another use. In contrast, most lands that are acquired for the Reserve System will either be occupied or have a higher likelihood of occupancy in the near future. Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*, shows the maximum land preservation requirements for each covered species if all impacts were to occur. If all impacts were to occur, the Permittees would acquire between 1,356 and 1,605 acres of Olympia pocket gopher habitat, 40 acres of Oregon spotted frog habitat, 150-300+ acres of streaked horned lark habitat, and 620 acres Oregon vesper sparrow habitat (see Section 5.5.1.4, *Function of Prairie Reserve System Lands*, for details on functional acres). The maximum size of the Reserve System would be less than the sum of these requirements because of the expected overlap in habitat of the covered species, mainly Oregon vesper sparrow and Olympia pocket gopher.

Table 5-1. Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts

Modeled Habitat	Total Maximum Permanent Impacts ^a	Estimated Protected Habitat for Permanent Impacts ^b	Total Maximum Temporary Impacts	Estimated Protected Habitat for Temporary Impacts ^b	Total Permanently Protected Habitat if Maximum Impacts Occur
Olympia pocket gopher	1,509	1,509	191	96	1,351–1,605 ^c
Oregon spotted frog	20 ^d	20	20 ^e	20	40 ^{e,f}
Streaked horned lark	222	222	45	23	150-300+ ^{g,h,i}
Oregon vesper sparrow	597	597	45	23	620 ^{g,h,i}

^a Total impacts on covered species habitat are estimated based on assumptions for urban growth as described in Chapter 4, *Effects Analysis*.

^b Temporary impacts are mitigated at a 0.5:1 ratio for all covered species except the Oregon spotted frog which is mitigated at a 1:1 ratio.

^c A range of 1,351 acres to 1,605 acres will be acquired for the Olympia pocket gopher. The amount of land acquired is based on assumptions of where habitat loss and habitat acquisition will occur and that all Reserve System lands will eventually be occupied. Using functional acres, if 100% of lands acquired are occupied, up to 1,351 acres of Olympia pocket gopher habitat would be acquired. See Section 5.5.1.4, *Function of Prairie Reserve System Lands*, for details on how this acquisition target was generated.

^d The value in this cell is less than the total amount of GIS-generated overlap (145 acres) between Oregon spotted frog modeled habitat and the covered activities effects footprint data layer. Because of the City's CAO, impacts are expected to be minimized significantly. Despite the distribution of Oregon spotted frog habitat relative to locations where covered activities are likely to occur the cap on Oregon spotted frog habitat loss under the HCP and permits is 20 acres. This estimate is based on historical development and permitting patterns within the City and the strength of local (CAO) and state wetlands policies.

^e Based on typical project size, temporary impacts to Oregon spotted frog are estimated to be 117 acres. However, because of the City's CAO, these impacts will be minimized significantly (See Section 4.3.3, *Oregon Spotted Frog Effects Assessment*, and Appendix E, *Tumwater Municipal Code 16 Environment*. Temporary impacts will be capped at 20 acres.

^f This assumes protection of 20 acres of occupied habitat and restoration of an additional 20 acres into suitable habitat, to fully offset the permanent loss of 20 acres of Oregon spotted frog habitat under the HCP and the temporary loss of 20 acres of Oregon spotted frog habitat. All protected wetlands will be incorporated into the Reserve System. See Section 5.5.3, *Conservation Action 3: Minimize Effects in Wetlands and Restore Oregon Spotted Frog Habitat*, for details.

^g No permanent protection of lands will occur at the Airport in the airfield safety area.

^h Habitat acquired will be located off Airport property and will be more sustainable for the long-term conservation of the covered species. Streaked horned lark in the South Puget Lowlands typically only breed on patches of grassland over 300 acres in size, but a mitigation site that is at least 150 acres and contiguous with other open landscapes may also be viable if an average of 20 nesting pairs of larks can be sustained there. Oregon vesper sparrows also prefer the edge habitats of large prairies, but may use patches as small as 20 acres.

ⁱ All acres acquired for the Oregon vesper sparrow (524 acres) will be included in the 1,250 acres of habitat acquired for the Olympia pocket gopher.

5.5.1.1 Reserve System Requirements

To be incorporated into the Reserve System and counted toward the Plan's land acquisition commitments, lands must meet all applicable criteria in this section and be included in a Reserve System-wide Management Plan as described below. Acquisitions may be counted toward meeting the land acquisition commitments of the Plan before the Reserve System-wide Management Plan has been completed if the City owns the land or if the property owner is bound by a conservation easement that requires preparation of a management plan consistent with the requirements of this conservation strategy.

To be incorporated into the Reserve System and counted toward land acquisition commitments, all lands must meet the following criteria.

- Be approved by the City.
- Contribute to meeting one or more of the biological objectives of the Plan as described in Section 5.4, *Biological Goals and Objectives*.
- Permanently protect the biological functions and values that contribute to the Plan. Permanent protection must be ensured by recording a conservation easement consistent with the requirements of Section 7.8, *Durability of Reserve System Lands*, recorded in favor of the City or a conservation organization designated by the City. For lands owned by the City, permanent protection must be ensured through a conservation easement recorded in favor of USFWS or an appropriate third-party easement holder approved by USFWS.
- Have no hazardous materials³⁹ or property encumbrances that conflict with the biological objectives of the Plan.
- Any utility easements of other rights-of-way on lands acquired that are maintained or used regularly cannot be counted toward land acquisition commitments if the disturbance that occurs within these areas has the potential to take the covered species. The City will ascertain the frequency and type of use in utility easements and other rights-of-way and, based on that information, determine whether the affected areas should be counted toward land acquisition commitments.
- Developed areas, trails, greenways, sports fields, etc., will not be included/acquired as part of the Reserve System.
- Must not have been used already to mitigate a project or activity that is not a covered activity, including projects and activities approved and permitted before this HCP was approved.

The Reserve System is intended to preserve and maintain populations of covered species first where the species already occurs. The Reserve System will also enhance habitat quality on those lands, which could allow for expansion of the population or colonization of the Reserve System lands in locations where a species does not yet occur. The ecological information used to determine the needs of covered species is summarized in the species accounts (Section 2.6, *Covered Species Accounts*).

5.5.1.2 Selection Criteria for Reserve System Lands

Reserve System lands will be selected and secured for the HCP's conservation program based on their ability to support populations of the covered species over the long term. The main function of reserve system lands, synonymous with conservation sites in this HCP, is to meet the mitigation requirements of the HCP. Incidentally, reserve system lands will also aid in the recovery of covered species by providing a network of conservation sites that increase the redundancy, representation, and resilience (the 3R's of species recovery) of habitat available for the covered species.

Adaptive site restoration and management needed for providing habitat for these long-term maintenance dependent covered species will be legally supported with conservation easements, and financially supported with secure, long-term endowments. Conservation sites managed and secured

³⁹ *Hazardous materials* as defined by City Ordinance No. 02019-001 are anything defined as a hazardous substance in Chapter 173-303 Washington Administrative Code (WAC) or as a hazardous material under the International Fire Code as adopted by TMC Chapter 15.16, *International Fire Code*. Hazardous materials are generally chemicals, substances, debris, and waste that are a physical or health hazard and exhibit one or more hazardous characteristics such as ignitability, corrosivity, reactivity, persistence, or toxicity.

in this manner should aid greatly in species recovery and provide resiliency for species populations to persist when faced with climate change and other changed and unforeseen circumstances.

General criteria to be used for all conservation sites include the following:

1. **Species Presence.** All covered species have space and habitat requirements that are not found on all sites that might be available for conservation. Where long-term maintenance of a population is possible, sites that are occupied by covered species will have higher priority for selection into the Reserve System than unoccupied sites. If a site in this situation is not already occupied, then it must have high potential for achieving occupancy based on location and habitat factors.
2. **Habitat Attributes.** Reserve System lands will have appropriate physical and biological features for supporting the covered species, including suitable soils, hydrology, topography, and vegetation structure once native prairie or wetland restoration activities are completed.
3. **Habitat Adjacency or Connectivity.** Reserve System lands will be positioned near other habitat areas that are conservation sites or that are projected to be conservation sites during the term of the HCP. They will not be positioned in areas that are isolated by dispersal barriers such as buildings and impervious surfaces with no connections, for example, in the case of the Oregon spotted frog via surface water or culverts to perennial surface water.
4. **Surrounding Land Use.** Reserve System lands will be positioned near compatible land uses that minimize risks to covered species such as high predation risk, pesticide drift, invasive species spread, or other disturbances.
5. **Site Size.** Large sites are preferred for inclusion in the Reserve System because they provide more space for covered species populations to be sustained and there is less risk of losing a population due to stochastic events, such as those caused by predation or disease. In addition, larger sites usually have a greater area to perimeter ratio, reducing impacts that can occur due to edge effects that vary based upon adjacent land uses. It is also more efficient to manage fewer, larger sites than more numerous, smaller sites. Where possible, Reserve System lands will be 20 acres or more in size for Olympia pocket gopher and Oregon vesper sparrow and 300 acres or more in size for streaked horned lark (sites may be smaller if occupied by at least 20 pairs of nesting larks for a period of at least 3 years). Smaller sites may be selected if they are connected to larger sites as determined by covered species movement abilities. For example, Oregon spotted frogs need surface water for movement and Olympia pocket gophers have a limited ability to move across the landscape if no suitable soil for burrowing is present.

The minimum site size for Olympia pocket gopher is smaller than is recommended for species recovery, but is the maximum practical size given the existing setting of urban and rural development and the size of parcels available for mitigation in the Plan Area. At least three Reserve Core or Reserve Complex areas with 250 to 500 acres of medium- and high-quality habitat are recommended for the recovery of the Olympia pocket gopher (U.S. Fish and Wildlife Service 2022). Reserve Complex areas can include functionally connected Reserve Satellites that have at least 10 acres of contiguous medium- or high-quality habitat. Conservation sites selected for Olympia pocket gopher mitigation will at least meet or contribute to areas that meet the USFWS definition of a Reserve Satellite site.

The minimum site size for Oregon vesper sparrow is based on the minimum habitat area known to be required for breeding. In the Willamette Valley, Oregon vesper sparrows have been recorded breeding in habitat areas that are approximately 20 acres in size. In Washington State

they are only known to occur on sites with at least 40 acres of grassland habitat (Altman et al. 2021).

6. **Management Feasibility.** Reserve System lands must have reasonable and reliable long-term and year-round access for habitat restoration equipment and staff. Location in a setting that would permit use of herbicides for habitat restoration and prescribed fire for vegetation management is preferred. Sites where access can be controlled are also preferred.
7. **Site Resiliency.** Reserve System lands should have attributes that allow them to be resilient to environmental variation, climate change, and extreme events. In general, larger sites with varied slopes and aspects that are restored to native prairie or native emergent wetlands are likely to be more resilient to annual variation in weather patterns and extreme events caused by climate change than smaller sites with less varied terrain and fewer species of native plants. Specific factors that might make a site resilient to change will be different for each of the covered species. For example, sites with wide, low-gradient slopes connected to permanent water increase a site's resiliency for supporting Oregon spotted frog during periods of extreme flooding or drought. Sites with a higher diversity of native plants due to varied slopes and aspects may have a greater capacity to retain areas with adequate forage for the Olympia pocket gopher, Oregon vesper sparrow, and streaked horned lark during periods of drought.

In addition to the general criteria described above, Reserve System lands for Olympia pocket gopher will have the following attributes:

1. **Species Presence.** Reserve System lands are occupied by Olympia pocket gophers or have a high likelihood of occupancy with conservation actions. Some sites may be part of the Reserve System because they provide an important connection between sites that are occupied, but these connection sites may not always be occupied.
2. **Habitat.** Conservation sites have suitable soils for gopher burrowing and they can be restored to native prairie with suitable forage plants, including native grasses and forbs. High-quality native prairie sites vegetated with a diversity of native grasses and forbs, that provide a wide variety of fleshy forage above and below ground including a variety of bulbs, rhizomes, corms, and tubers, are likely to support a higher density of gophers and increase the resiliency of those populations.
3. **Site Size.** Conservation sites are at least 20 acres in size or are adjacent to protected lands managed for Olympia pocket gopher where the combined contiguous habitat with the conservation site is at least 20 acres in size.

In addition to the general criteria described above, Reserve System lands for Oregon spotted frog will have the following attributes:

1. **Species Presence.** Reserve System lands are occupied by Oregon spotted frogs or have a high likelihood of occupancy with conservation actions due to their hydrologic connection and proximity to occupied sites and suitable habitat conditions for breeding.
2. **Habitat.** Reserve System lands have permanent or seasonal shallow water habitat that exists or can be restored and maintained for breeding and are connected to permanent surface water for adult and juvenile survival.

In addition to the general criteria described above, Reserve System lands for streaked horned lark will have the following attributes:

1. **Species Presence.** Reserve System lands selected are occupied by streaked horned lark or have a high likelihood of occupancy with conservation actions due to their proximity to an occupied site and suitable habitat conditions for nesting. Reserve System lands used for mitigation for impacts on streaked horned lark will be occupied by an average of up to 20 pairs of nesting larks for a period of 3 consecutive years. Once this goal has been met, all credits needed for development and activities at the Airport will remain in place regardless of variations in the number of nesting pairs each year. The site will continue to be adaptively managed and monitored to foster an increasing number of nesting pairs for the duration of the permit term and the site will be protected for lark conservation in perpetuity.
2. **Habitat.** Reserve System lands include wide, open landscapes with long sight lines and large areas of sparse, low-stature vegetation suitable for nesting.
3. **Site Size.** To the extent possible, Reserve System lands will be at least 300 acres in size, or adjacent to protected lands managed for streaked horned lark where the total contiguous habitat area is at least 300 acres in size. Alternatively, these lands may be at least 150 acres in size, or adjacent to protected lands managed for streaked horned lark where the total contiguous habitat area is at least 150 acres in size if they are positioned adjacent to open viewsheds such as water.

In addition to the general criteria described above, Reserve System lands for Oregon vesper sparrow will have the following attributes:

1. **Species Presence.** Reserve System lands are occupied by Oregon vesper sparrow or have a high likelihood of occupancy with conservation actions due to their suitable habitat conditions for nesting.
2. **Habitat.** Reserve System lands can be managed as grassland habitat with herbaceous vegetation (grasses and forbs) that varies structurally and compositionally (ideally more than 40% less than 1 foot tall, less than 40% 1–2 feet tall, and less than 20% more than 2 feet tall), areas of bare ground, and some scattered shrubs (Altman 2017).
3. **Site Size.** Reserve System lands are at least 20 acres in size or are adjacent to protected lands managed for Oregon vesper sparrow where the combined contiguous habitat with the conservation site is at least 20 acres in size.

5.5.1.3 Assembling the Reserve System

There is a variety of ways to build the Reserve System, as outlined in this section. The City will ensure that lands included in the Reserve System meet criteria established in Section 5.5.1.1, *Reserve System Requirements*, and will assemble the Reserve System in any of the following ways.

- Permanently downzone the land and/or place other permanent development restrictions or conservation easements on the land.
- Purchase of land in fee title and placement of a permanent conservation easement.⁴⁰
- Purchase of a permanent conservation easement.

⁴⁰ See Chapter 7, *Implementation*, for the required elements of conservation easements, including the prohibitions on uses that would degrade the conservation value of the easement land.

- Acceptance of land in fee title or conservation easement through dedications in lieu of a fee payment if the land contributes to Plan goals and objectives and is approved by the City (see Chapter 7, *Implementation*). Land dedications must still meet all required criteria (Section 5.5.1.1, *Reserve System Requirements*) for inclusion into the reserve system (Section 7.7.2, *Land Dedication by Project Proponents*).
- Purchase of credits sold by a private mitigation or conservation bank if the bank meets the applicable terms of this HCP (i.e., for the target covered species).
- Acceptance of land in fee title or conservation easement as a gift or charitable donation if that land meets the terms of this HCP.

5.5.1.4 Function of Prairie Reserve System Lands

The Reserve System was designed first to meet the mitigation needs of Olympia pocket gopher because its distribution and suitable habitat is far more extensive in the Plan Area than the other covered species. This approach also benefits the Oregon vesper sparrow because of the overlap in their habitat requirements. The conservation strategy is designed to address the needs of all covered species by supplementing the Reserve System as needed with additional wetland habitats that are suitable for Oregon spotted frog, to ensure the impact of any take that occurs to that species is mitigated. The Plan Area was expanded to include the Permit Area for Streaked Horned Lark Conservation Only (Section 1.2.3.4, *Permit Area for Streaked Horned Lark Only*) so that the reserve system could meet the habitat requirements for the streaked horned lark.

Reserve System lands provide three basic functions for Olympia pocket gopher—they are occupied by Olympia pocket gophers, they have the potential to be occupied by pocket gophers over time, or they provide connectivity for species movement between sites that are occupied. Habitat connectivity is important because otherwise small populations may become isolated by development and diminish in size to the point at which they are not sustainable any longer. Small, isolated populations are more vulnerable to extinction due to stochastic events, predation, or other stresses than larger populations that have options for dispersal to additional habitat areas. Occupied and connective sites are both important to the protection of a resilient population of Olympia pocket gopher in the Plan Area.

While the focus is on acquiring occupied habitat (see Table 6-4, *Monitoring/Survey Protocols for Determining Site Occupancy of Covered Prairie Species*), the conservation strategy is not limited to only known or currently occupied habitat. Surveys in the area are incomplete and gophers are likely to persist in areas not yet surveyed. If the strategy were limited to known occupied habitat only, the Plan may miss potential occupied sites that are important for the conservation of the species. In addition, some areas that are not currently occupied could become occupied in the future if gophers disperse from nearby areas or if translocation is used to establish new gopher populations at suitable sites in the Plan Area.

habitat types used to define functional habitat acres for mitigation calculations are the same as those used in Chapter 2 as follows.

- **Occupied and Higher Likelihood of Occupancy:** Habitat that is known to be occupied by Olympia pocket gopher from past survey efforts (“known occupancy”) or habitat that meets the criteria for “higher likelihood of occupancy”, as described and shown in the species habitat distribution model in (see Section 2.6.1.6, *Species Habitat Distribution Model*). It is assumed that if population increases can be achieved in occupied habitat that gophers will begin to disperse to

new areas or reoccupy areas nearby that are within the historical range of the subspecies, with appropriate soils and habitat conditions, turning higher likely habitat into occupied habitat.

- **Lower Likelihood of Occupancy:** Habitat that has suitable soils and grass-shrub cover but is more than 650 feet from known occupied sites and not contiguous with high likelihood of occupancy habitat. These areas are also modeled as areas with a lower likelihood of occupancy (see Section 2.6.1.6, *Species Habitat Distribution Model*).

Functional Habitat Acres

The concept of *functional habitat acres* is used here to recognize the importance of sites being occupied by gophers in the reserve system. This approach is intended to help achieve an optimal reserve design that meets the mitigation needs of the covered prairie species while accommodating the development goals of the City and the Port.

Functional habitat acres will be calculated for all impact sites and all potential mitigation sites. The approach considers species occupancy and potential occupancy, based on distance from occupied sites, as described in the species distribution model in Chapter 2, *Physical Setting, Land Use, and Biological Resources*. This effectively discounts sites with lower potential for occupancy because the locations are more than typical dispersal distance away from known occupied locations. Using functional acres, this discounting then occurs on both the impact and mitigation crediting, for a balancing between type of habitat (occupied or not) affected and type of habitat used for mitigation. This simple approach is used to ensure that the quality of habitat in the Reserve System will always be of equal or greater overall quality than the habitat lost to covered activities.

Olympia Pocket Gopher Functional Habitat Acres

To calculate functional habitat acres for Olympia pocket gopher three things are required.

1. Is the site occupied?
2. Is the site within 200 meters (650 feet) of an occupied location?
3. Does the site have Olympia pocket gopher soils and land cover, as described in the species habitat model in Chapter 2, *Physical Setting, Land Use, and Biological Resources*?

The assumption is the Reserve System lands will be occupied, if not when the property is acquired, following habitat management under the HCP, though as much as 40% of all sites acquired as part of the Reserve System can be unoccupied at any given time, as described in the biological objectives.

Calculating Olympia Pocket Gopher Functional Habitat Acres

Using functional acres as a metric allows a more direct determination that Reserve System lands, once acquired and managed, are offsetting the loss of species habitat from covered activities. Functional acres are determined by scores assigned to an individual parcel based on its occupancy and distance from occupied locations.

The total acres expected to be lost from covered activities are analyzed against the acres that will be acquired for conservation as described in the HCP. The assumptions about the type of habitat that will be lost and the type that will be protected, including the improvements to habitat quality expected from restoration activities, are discussed below. Table 5-2, *Scoring of Functional Acres Based on Occupancy and Location in Olympia Pocket Gopher Modeled Habitat*, shows how functional acres will be scored based on gopher occupancy status and location.

Table 5-2. Scoring of Functional Acres Based on Occupancy and Location in Olympia Pocket Gopher Modeled Habitat

Criteria	Habitat Function Multiplier
Habitat Model Category^a	
Occupied or high likelihood of occupancy	1.0
Low likelihood of occupancy	0.6

^a See Section 2.6.1, *Olympia Pocket Gopher*, for habitat model category definitions.

Calculating Olympia Pocket Gopher Mitigation

This section describes the approach used to estimate the size of the Reserve System needed to mitigate the effects on Olympia pocket gopher described in Chapter 4, *Effects Analysis*. Up to 1,509 acres of Olympia pocket gopher habitat could be permanently lost and an additional 191 acres temporarily lost from covered activities. While this is only an estimate based on growth projections described in Chapter 3, *Covered Activities*, it is also used as a limit for covered activities.

It is important to estimate a likely outcome of this approach to Reserve System land acquisition and restoration to estimate land acquisition and management costs, as described in Chapter 8, *Costs and Funding*. To estimate how many acres will need to be acquired as part of the Reserve System to offset these maximum habitat losses, the following assumptions were applied as a reasonable and likely scenario.

1. At no point will the number of occupied or high likelihood of occupancy acres removed by covered activities exceed the number of occupied or high likelihood of occupancy acres in the Reserve System.
2. At least 60% of the Reserve System lands will be occupied at all times.

Using these assumptions, to mitigate for the loss of up to 1,509 acres of habitat, the range of acres acquired would depend on the percent occupied and are shown in Table 5-3, *Functional Acre Calculations for Habitat Removed by Covered Activities and Range of Potential Reserve Lands Acquired to Mitigate That Loss*.⁴¹

⁴¹ The funding program (Section 8.3, *Funding*) assumes that the maximum amount of acres (1,605) will be acquired, to ensure the conservation strategy is fully funded.

Table 5-3. Functional Acre Calculations for Habitat Removed by Covered Activities and Range of Potential Reserve Lands Acquired to Mitigate That Loss

Olympia Pocket Gopher Habitat Type	Total Permanently Protected Habitat if Maximum Impacts Occur ^a	Habitat Quality Multiplier	Functional Acres	Range of Acres Acquired Depending on Percent Occupied	
				Acres Acquired with 60% Occupancy ^b	Acres Acquired with 100% Occupancy
Occupied and High Likelihood of Occupancy	970	1.0	970	970	1,351
Low Likelihood of Occupancy	635	0.6	381	635	0
Total	1,605		1,351	1,605	1,351

^a See Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*.

^b At least 60% of the Reserve System will either be occupied or high likelihood of occupancy at all times.

Oregon Spotted Frog Mitigation

Functional acres analysis was not used to determine acquisition targets for Oregon spotted frog. Rather Oregon spotted frog habitat will be acquired (Section 5.6.2, *Oregon Spotted Frog*) and restored consistent with the City's CAO for protecting wetlands and fish and wildlife habitat since frog habitat falls into one or both of these categories of protected habitat (see Appendix E, *Tumwater Municipal Code Environment* and Appendix G, *Oregon Spotted Frog Screen*). It is estimated that if fully implemented, the covered activities described in Chapter 3, *Covered Activities*, would result in a permanent loss of 20 acres and temporary loss of 20 acres of Oregon spotted frog habitat. Up to 40 acres of Oregon spotted frog habitat will be acquired, protected, and managed during the permit term to offset the impact of take from covered activities (Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*).

For parcels that are acquired and restored to count as Oregon spotted frog mitigation, they must be occupied by Oregon spotted frog by Year 5 following restoration. Remedial actions that could be taken if occupancy is not achieved during this time frame include the use of adaptive management if it appears that frogs are likely to occupy the area with additional restoration or other actions, or the acquisition of additional land that with restoration can or already meets this occupancy requirement. Monitoring to confirm occupancy will be done as described in Chapter 6, *Monitoring and Adaptive Management*.

Streaked Horned Lark Mitigation

Functional acres analysis was also not used to determine acquisition targets for streaked horned lark. Covered activities at the Airport will result in effects on the species that may be detrimental to the only occupied site in the Permit Area. Therefore, care must be taken early in the permit term to ensure that too much habitat is not removed before sufficient mitigation habitat can be acquired to mitigate any effects of habitat loss. It is estimated that if fully implemented, the covered activities described in Chapter 3, *Covered Activities*, would result in a permanent loss of up to 222 acres and temporary loss of 45 acres of streaked horned lark habitat. Approximately 150-300+ acres of streaked horned lark habitat within the Permit Area for Streaked Horned Lark Conservation Only (Section 1.2.3.4, *Permit Area for Streaked Horned Lark Conservation Only*) will be acquired,

protected, and managed during the permit term to offset the impact of take from covered activities (Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*).

Because the Airport is currently the only known location of streaked horned lark in the Permit Area, offsetting the impact of loss of habitat will need to be accomplished through the protection and management of mitigation lands that are large enough (up to 300 acres in size, but in some instances may be as small as 150 acres depending on the viewshed as detailed in the *Draft Recovery Plan for the Streaked Horned Lark (Eremophila alpestris strigata)* [U.S. Fish and Wildlife Service 2019]); there is no minimum size threshold if the site sustains an average of at least 20 nesting pairs for a period of 3 consecutive years. Unless a mitigation site already has nesting larks, it is assumed that attracting streaked horned lark to a new nesting area will take time. This will be challenging because habitat loss at the Airport will precede the ability to obtain mitigation credit. Receiving mitigation credit and subsequent increased operational flexibility will not be realized until a suitable site is protected, and performance standards are achieved.

To accommodate these challenges, the City and Port are allowed to accrue up to 100 acres of habitat loss in streaked horned lark habitat before having a suitable streaked horned lark mitigation site as part of the Reserve System. During this interim period, the Port will use a program of monitoring and BMPs to maintain a baseline number of nesting pairs at the Airport as described in Appendix F, *Streaked Horned Lark Memorandum*. If a streaked horned lark mitigation site is acquired, occupied (20 pairs for 3 consecutive years), and meeting performance standards (See Table 6-2, *Success Criteria Streaked Horned Lark*), the 100-acre cap on habitat loss will be lifted and the program to maintain the number of larks in the Airport population can be terminated. If the City and Port reach 100 acres of permanent habitat loss and a streaked horned lark mitigation site has not been acquired, then no more permanent streaked horned lark habitat loss will be permitted until an adequate mitigation site(s) has been acquired and the program to maintain the number of larks in the Airport population must be continued. If the end of the permit term occurs before an offsite mitigation site is secured and meeting performance standards, the Port would need to seek a new HCP and ITP (or amend the existing HCP and ITP) for any take to listed species from development at the Airport.

This is also described in the stay-ahead provision for this species in Section 7.6.1, *Special Stay-Ahead Provision for Streaked Horned Lark*.

Oregon Vesper Sparrow Mitigation

Functional acres analysis was not used to determine acquisition targets for Oregon vesper sparrow. It is estimated that if fully implemented, the covered activities described in Chapter 3, *Covered Activities*, would result in the permanent loss of 597 acres and temporary loss of 45 acres of Oregon vesper sparrow habitat. Approximately 620 acres of Oregon vesper sparrow habitat will be acquired, protected, and managed during the permit term to offset the impact of take from covered activities (Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*).

5.5.1.5 Reserve Management and Enhancement

Once Reserve System lands are acquired, they will be managed to maintain, or improve the quality of habitat and maintain that improved quality, for any covered species that occur or could occur on those lands. Managing the mitigation lands for habitat improvement, monitoring changes in habitat conditions and species responses to that condition, and adapting management based on monitoring

results should result in improved quality of habitat over time. To support this outcome, the adaptive management program is designed to ensure achievement of the biological goals, as described in Chapter 6, *Monitoring and Adaptive Management*.

The City will coordinate with managers of other protected areas to help form a cohesive network of protected land managers in the Plan Area. This network of land managers will coordinate activities to improve their effectiveness and efficiency. Management measures will include actions such as vegetation management, regular patrols, trash removal, fence/gate installation and repair, road maintenance, and other necessary activities to prevent unauthorized land uses.

This reserve management and enhancement section first describes the management planning process, then describes specific reserve management guidelines that will be applied to all Reserve System lands.

Reserve System-wide Management Plan

The specific location of individual Reserve System lands and condition of resources within these lands will not be known until Plan implementation; therefore, site-specific management and enhancement objectives, performance standards, and techniques will be developed to achieve the HCP's biological goals for each site when they are identified, surveyed, and acquired.

The City will complete a Reserve System-wide Management Plan for the entire Reserve System within a year of acquiring the first parcel for the Reserve System. The Reserve System-wide Management Plan would focus on elements of reserve management that are consistent and common among all Reserve System lands. The following elements are examples of those that could be addressed in this system-wide management plan.

- Site security protocols.
- Allowable and prohibited uses.
- Public access rules and regulations.
- Grazing management.
- Invasive plant and animal management.
- Native prairie restoration and management.
- Prescribed fire guidelines.
- Timber and woody vegetation management.
- Hydro-regime management.
- Existing disturbance regimes known to occur on Reserve System lands.
- For each of the topic areas the following items will be included in the Reserve System-wide Management Plan.
- Identify habitat targets and near-term management prescriptions, including timing thresholds for habitat performance thresholds,
- Descriptions of management actions and protocols (techniques, equipment used, frequency, and duration of action) that will occur on each Reserve System land (see management guidelines below in Section 5.5.1.6, *Reserve Management Guidelines*).

- Description of how management actions will achieve the relevant biological objectives.
- Performance metrics, if appropriate.
- Protocols and methods used to monitor habitat or species response to management actions in enough detail to demonstrate progress toward achieving biological objectives and an allowance for the program to be adaptively managed, consistent with Chapter 6, *Monitoring and Adaptive Management*.
- Description of how adaptive management may be applied to each management action, consistent with monitoring results and Chapter 6, *Monitoring and Adaptive Management*.
- Description of roles and responsibilities.
- Example annual work schedule.
- Grazing lease template (if applicable).

Reserve Management Plans will be modified periodically as appropriate pursuant to the Plan's adaptive management program (Chapter 6, *Monitoring and Adaptive Management*) to respond to new scientific information and changing conditions in the Reserve System. The City will coordinate with USFWS, WDFW, and other technical experts as needed during plan development.

Incorporating Newly Acquired Reserve System Lands

The Reserve System-wide Management Plan will have sufficient detail to address nearly all the management and monitoring needs on an individual Reserve System property. As new properties are brought into the Reserve System, the Reserve System-wide Management Plan will be amended to include the new parcel-specific information (Section 7.5.5, *Step 5: Reserve Management Plan*). The amendment will simply include information on existing conditions, infrastructure, and any specific management issues that are unique to the acquisition. A complete list of the information needed to enroll a property into the Reserve System and integrate it into the Reserve System-wide Management Plan is described below.

Amending the Reserve System-wide Management Plan

Amendments to the Reserve System-wide Management Plan will be completed by the City within 6 months of recording of the conservation easement or purchase for conservation of each new property. The amendment will include the following elements.

- Description and maps of lands including, extent of land cover types and covered species habitat, and infrastructure (e.g., roads, fences, gates) on at a scale necessary to inform site access and management actions.
- Description and map of all encumbrances, if not already included in the conservation easement (e.g., easements, access, rights-of-way) on the land.
- Descriptions of existing disturbance regimes unique to each individual parcel acquired as part of the Reserve System (if necessary).
- Brief summary of management actions and protocols from the Reserve System-wide Management Plan that will be applied to the new property. A work schedule for each site-specific property would be appended to the system-wide plan once the site is acquired and a site specific plan has been developed.

- Any unique management actions needed to address situations not covered by Reserve System-wide Management Plan.

5.5.1.6 Reserve Management Guidelines

Though the Reserve System is expected to have similar land cover types and management needs to achieve the HCP's biological goals, individual properties that are enrolled into the Reserve System will have unique management needs based on their existing condition, prior management, and ongoing management practices. The Reserve System-wide Management Plan will describe the framework within which planning for and implementing those needs would occur for each enrolled property.

The key elements that will need to be addressed on each enrolled property are described below. These are guidelines for how those elements should be addressed across the Reserve System but are not all-inclusive. As new issues and new methods for dealing with those issues emerge over the permit term, adjustments will be made in the Reserve System-wide Management Plan accordingly.

The City will be responsible for managing and enhancing land cover and covered species' habitat within the Reserve System as necessary to successfully achieve the biological goals and objectives of the Plan. The following are examples of management techniques or actions recommended to establish and maintain high-quality habitat for covered species. These techniques or actions may be adjusted during Plan implementation as new management approaches and tools become available (see Section 6.7, *Adaptive Management*).

It is assumed that mowing and livestock grazing will be the primary vegetation management tools used on the Reserve System. In most cases, particularly when Reserve System lands are large, livestock grazing is likely to be the most cost-effective method of vegetation management. In some cases, however, grazing may be infeasible if the site has poor access or is too small to utilize livestock effectively. Often vegetation management on the Reserve System will require a combination of management methods to accomplish vegetation management objectives; vegetation management may not be needed every year and the type of management will likely evolve as habitat conditions on each Reserve System parcel improve. The following is a brief summary of vegetation management methods that may be used on the Reserve System.

Mowing

Mowing will likely be the primary method for controlling invasive plants and keeping the site dominated by a variety of grasses and forbs. Mowing could occur any time of year, but to be most effective and practical, mowing should typically occur in the late summer to avoid nesting season for covered bird species. Additionally, during other times of the year, grasses may be dormant or already short. Wet weather in winter and spring also make mowing less desirable because heavy equipment on wet ground can degrade habitat conditions. Mowing can be timed to cut invasive plants before they set seed, aiding in a transition of the Reserve System to a condition with fewer invasive plants and more native plants over time.

Surveys of aboveground vegetation condition in spring and early summer will allow Reserve System managers to evaluate whether mowing or other vegetation management will be needed and when the timing of those actions will be most effective. Mowing may not be practical or cost effective on larger blocks of Reserve System lands or where shrubs have invaded a large portion of a site.

Herbicide Use

Targeted use of herbicides to control invasive plant species may be needed if mowing or grazing alone is not adequately controlling the establishment or spread of invasive plants. Invasive plants that could potentially need herbicide treatment include Scotch broom (*Cytisus scoparius*), Japanese knotweed, or rhizomatous grasses, including reed canarygrass. Prairie restoration practitioners in this region have successfully employed the use of grass-specific herbicides that kill nonnative grasses with minimal impacts on native forbs and grasses to open areas up for colonization of native species (Stanley et al. 2011). Selective herbicide application will occur rather than broadcast application treatments. Herbicide application⁴² will be completed by a licensed practitioner in accordance with the manufacturer's label.

Livestock Grazing

Grazing can be used effectively and cost efficiently to control the growth of nonnative rhizomatous grasses and increase coverage by native prairie plants. This management tool is also likely to be beneficial to Olympia pocket gopher because grazing reduces overall grass cover and promotes the growth of forbs, its preferred forage plants. Typically, short-duration, early-season grazing is most effective at reducing nonnative grass biomass, allowing native grasses to compete, but other methods may also prove successful. Grazing must be applied using species and stocking densities to avoid excessive soil compaction, and wetland/riparian impacts. Additionally, some grazing animals may be preferred over others. Cattle may be preferred to sheep or horses because the latter two species can result in soil compaction more rapidly. Grazing will be conducted under an approved Reserve Management Plan. Grazing methods and outcomes will be monitored relative to species habitat condition (see Section 6.4, *Effectiveness Monitoring*).

Prescribed Fire

Fire is known to stimulate the germination and growth of native prairie species and historically fire played a key role in establishing the prairie ecosystem. It is expected that, if used strategically, prescribed fire could improve habitat conditions for the covered species. Prescribed fire has been recommended by regional prairie restoration practitioners to prevent invasion of woody vegetation (Dunwiddie and Bakker 2011). However, prescribed fire would also stimulate the germination of Scotch broom (Dennehy et al. 2011), possibly creating the need for more intensive management of this species by targeted herbicide or additional mowing, and/or prescribed fire. Care must also be taken that areas made bare by fire are not colonized by Scotch broom or other invasive species. Follow-up seeding or planting of native plants would be required following fire if no native seed source were present in the general area or likely to be present in the seed bank. Prescribed burning will only be feasible on larger parcels where fires can be effectively contained to eliminate risk to surrounding non-Reserve-System parcels or structures and limited to a portion of the site in a given year to ensure refugia sites and avoid potential short-term effects on pocket gophers. Timing of prescribed burns can further reduce the potential short-term effects of prescribed fire on covered species.

More intensive management actions considered restoration (e.g., tree removal and active plantings) are described in Section 5.5.2, *Conservation Action 2: Restore Prairie Habitat*.

⁴² Prohibited take is not expected to result from herbicide application and take coverage is not requested for herbicide use.

Infrastructure Management

The Reserve System-wide Management Plan and any subsequent amendments will include a map showing the location of existing infrastructure, such as roads, fences, gates, pumps, wells, water control structures, ditches, canals, drains, power lines, and buildings. The Management Plan will include a schedule for inspecting infrastructure to determine the need for maintenance. Work needed to maintain infrastructure (e.g., fences) will be conducted as soon as practicable once needs have been identified.

The Management Plan will also identify periods during which maintenance activities should be conducted to avoid or minimize adverse effects on natural communities and covered species. Each Reserve Management Plan will include a hazardous materials management/spill prevention plan, which will identify procedures that must be followed if hazardous materials are encountered, or a spill occurs on the Reserve System.

5.5.2 Conservation Action 2: Restore Prairie Habitat

By the end of the permit term, it is anticipated that most of the Reserve System lands will be in either a native prairie condition or a high-quality native prairie condition (Table 6-1, *Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow*). This will be achieved by enhancing and restoring shrub-dominated prairie or degraded prairie to a higher-quality standard. Through these enhancement and restoration efforts the ecological processes and functions of native prairie will be reestablished and maintained. These efforts will result in Reserve System lands that are permanently maintained to fulfill the biological goals of the HCP for each covered species.

In some cases, land cover types will need to be restored on the Reserve System to improve landscape connectivity and to increase available habitat and habitat quality for certain covered species. Restoration of land cover types means returning a site to a condition that was historically present, such as restoring a native habitat condition from a highly modified state.

Restoration of prairie habitat will be necessary in locations where the prairie is degraded or absent due to extensive tree or shrub cover. Prairie restoration can be accomplished using a variety of methods, depending on site conditions and the feasibility of management options. Mowing, herbicide application, livestock grazing, or prescribed burning can be used to restore prairies. These techniques are described in detail in Section 5.5.1.5, *Reserve Management and Enhancement*. In addition, prairie restoration may include tree removal or revegetation, as described below.

5.5.2.1 Tree Removal

To restore the Reserve System back to more natural prairie conditions the City will remove trees on Reserve System lands in areas where soils are suitable for Olympia pocket gopher (see the species habitat model for suitable soil types). Depending on site conditions, some trees may be retained along the edges of the preserve to provide potential perches for Oregon vesper sparrow and a visual barrier or to limit vehicle access to a site. However, any trees retained on site will be monitored to prevent negative impacts on target vegetation resulting from excess tree density in areas counted as mitigation.

Trees will be removed using hand equipment, where practical, to minimize soil damage from heavy equipment. In cases where heavy equipment is needed to fell trees, the site will be accessed when conditions are dry to reduce soil compaction. Ground protections such as protective matting or low-

ground pressure equipment will be used to reduce effects on vegetation and soil and other sensitive areas. Felled trees will be removed from the site. Following tree removal, the areas will be monitored and treated for any resprouting of trees. Removal locations will be reseeded with native prairie vegetation. Depending on site-specific conditions, stump removal will occur only as necessary to support desired habitat function for covered species. Small and/or scattered stumps are less likely to require removal than larger stumps and denser areas.

5.5.2.2 Revegetation or Special Plantings

Revegetating a site will be necessary if there has been a planned or unplanned disturbance (e.g., prescribed fire, wildfire, tree removal). To combat the establishment of invasive plant species the City will seed areas of bare ground with native seeds (an annual cover crop for groundcover could be used during native seed establishment). Success thresholds will be established for each reserve parcel and they may vary between lands in the Reserve System based on site conditions. Whenever possible it is desirable for plantings to come from seed stock native to the Plan Area, Thurston County, or adjacent counties.

In some cases, special plantings may be warranted on the Reserve System to benefit the covered species specifically. For example, Oregon vesper sparrow prefers areas of taller grass and some scattered shrubs within prairies. Some native shrub plantings may be advantageous, particularly in areas where trees have been removed along the edges of reserve parcels where the property abuts an adjacent land use that could be buffered. The type and location of special plantings will be evaluated based on site conditions and adjacent land uses.

5.5.2.3 Value of Restoring Prairie Reserve System Lands

The focus of the conservation strategy is to protect occupied, likely occupied, and or sites with potential for future occupancy for Olympia pocket gopher and occupied and suitable habitat for the other covered species in the Plan Area. However, protection alone will not be enough because nearly all of the lands that are protected, occupied or not, will likely be in a degraded prairie condition. Therefore, it will be important to improve or restore those lands to provide additional ecological benefits to the covered species, make the Reserve System lands more ecologically durable and the habitat conditions more sustainable, and likely reduce the long-term cost of maintenance.

The ultimate goal of restoration on Reserve System lands is to create more resilient local populations with more and larger populations that are more resistant to stochastic events such as diseases or predation. Management of those lands will ensure consistency in habitat quality from year to year, providing stability to habitat quality that is often subject to uneven management or sometimes no management, making habitat quality highly variable. The combination of higher-quality habitat and consistency in habitat quality over time would allow all of the covered upland species populations to be stable and likely increase to a point where they would begin to disperse to other, nearby sites, because they begin to exceed the carrying capacity of the managed site. All of this results in increasing or stable populations in more places within the Plan Area.

5.5.2.4 Improving Prairie Conditions

By the end of the permit term, it is anticipated that most of the Reserve System lands will be in either a native prairie condition or a high-quality native prairie condition (see Table 6-1, *Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow*). This will be achieved by enhancing

and restoring shrub-dominated prairie or degraded prairie to a higher quality standard. Through these enhancement and restoration efforts the ecological processes and functions of native prairie will be reestablished and maintained. These efforts will result in Reserve System lands that are permanently maintained to fulfill the biological goals of the HCP for each covered species.

5.5.3 Conservation Action 3: Minimize Effects in Wetlands and Restore Oregon Spotted Frog Habitat

All covered activities that occur in wetland habitats will minimize disturbance to and loss of Oregon spotted frog habitat, including indirect effects in areas that drain to Oregon spotted frog habitat, through implementation of the City's CAO for wetlands (TMC Chapter 16.28, *Wetland Protection Standards*) and fish and wildlife habitat (TMC Chapter 16.32, *Fish and Wildlife Habitat Protection*) protection, and their requirements for stormwater management that are updated on a regular basis (<https://www.ci.tumwater.wa.us/departments/water-resources-sustainability/water-resources/stormwater/plans-program-guidance>). TMC Chapter 16.28, *Wetland Protection Standards*, requires site planning to avoid or minimize damage to wetlands where possible. TMC Chapter 16.32, *Fish and Wildlife Habitat Protection*, requires the protection of habitat for any state or federally listed species, including Oregon spotted frog. Compensatory mitigation is required for any impacts on wetlands or fish and wildlife habitat.

In most cases, habitat impacts are avoided and protective buffers with widths determined by the CAO and/or best available science are established, fenced, and usually enhanced with native vegetation, maintenance, and monitoring. If wetland or fish and wildlife habitat impacts cannot be avoided, then the CAO requires that at least that amount of habitat is restored, created, or enhanced onsite or offsite, in order to offset the impacts resulting from project development actions. Mitigation for alterations to protected habitat must achieve equivalent or greater biologic functions than the habitat that was affected. This is generally achieved by providing more total habitat area and/or higher-quality habitat overall with mitigation. However, replacement of Oregon spotted frog egg laying (breeding) locations is practically impossible. For this reason, development is usually not approved for breeding sites even with mitigation requirements for wetland replacement (onsite or offsite) but these sites may be approved for use as wetland enhancement areas to provide mitigation for temporary impacts.

In addition to protecting habitat, the City has stormwater regulations that are designed to protect and improve water quality and aquatic habitats, and the City encourages the use of low-impact development methods to further improve surface water conditions. These measures provide assurance that impacts on Oregon spotted frog habitat from stormwater runoff are minimal to none. Any covered activity with the potential to adversely affect Oregon spotted frog habitat (Appendix G, *Oregon Spotted Frog Habitat Screen*) will minimize those effects to the maximum extent practicable consistent with the TMC and this HCP (e.g., take limits of Oregon spotted frog modeled habitat are established in Table 4-4, *Projected Habitat Impacts by Zone Districts in Olympia Pocket Gopher Habitat*).

Projects that have unavoidable impacts on Oregon spotted frog habitat, either direct or indirect, must restore wetlands consistent with TMC requirements to ensure no net loss. If all impacts occur on Oregon spotted frog habitat as covered by the Plan, then up to 20 acres of wetlands suitable for Oregon spotted frog would be permanently lost and another 20 acres temporarily lost, and at least

20 acres of suitable habitat would need to be created or restored and protected under a permanent conservation easement (or equivalent instrument).

There may be opportunities to conduct wetland enhancement activities on the Reserve System acquired as described in Section 5.5.1.5, *Reserve Management and Enhancement*. All wetland enhancement, restoration, or creation must ensure no net loss of wetland habitat and should include the control of invasive reed canarygrass and cattails, the two invasive plants most threatening to Oregon spotted frog habitat.

5.5.4 Conservation Action 4: Fund Covered Species Translocation Research

An important goal of the conservation strategy is to create a Reserve System designed to facilitate movement of covered species into managed areas of suitable habitat. In many cases, the reserve design itself should be sufficient for protecting covered species where they currently reside, or promoting successful movement of covered species on their own because priority sites for reserve development are in or very near sites with known occupancy of the covered species. In some cases, natural colonization may not be possible even with habitat management for Olympia pocket gopher to remove shrubs and trees due to too much separation between suitable Reserve System lands or impassable barriers. For example, land in the south part of the Olympia pocket gopher range has suitable soils and opportunities for securing larger contiguous conservation areas, but gophers may not currently be present on or near these sites. Connecting Reserve System lands to these locations in the southern portion of the range could allow expansion of the population into these areas. For streaked horned lark and Oregon vesper sparrow colonization of new nesting locations may not occur because of the site fidelity of streaked horned larks at the Airport.

The conservation strategy will focus first on acquiring occupied land, managing this land, and in some cases restoring this land to facilitate expansion of the covered species onto sites that are currently unoccupied. However, translocation of covered species⁴³ onto Reserve System lands could play an important role in increasing the resilience of the covered species by increasing the number of occupied sites at different locations within their geographic range. In order to facilitate successful translocation to aid in the recovery of the species, a portion of the HCP mitigation funding will be used to fund research into the feasibility and techniques of translocation among Reserve System parcels within the Plan Area, if covered species are not readily colonizing Reserve System lands on their own.

Within the first 10 years of HCP implementation, an experimental translocation project will be underway for each species if needed to meet the mitigation requirements of this HCP. The City and Port will coordinate efforts with USFWS and WDFW along with species experts, research organizations, and land managers as needed, to design the Request for Proposals and select suitable researchers who apply for this funding. Whenever possible, research funding provided by the HCP should be leveraged with state or federal grants to maximize total research funds. Investment in translocation research does not mean that translocating species will become a major part of the conservation strategy, but it will ensure that if it is necessary later in the permit term, it can be conducted using proven techniques and with scientific rigor.

⁴³ Take coverage for translocation activities conducted as part of HCP implementation will be done by qualified biologists under a 10a1A Recovery Permit.

5.5.5 Conservation Action 5: Best Practices to Avoid and Minimize Impacts

This conservation action is designed to avoid and minimize impacts on covered species that may result from covered activities. These requirements pertain to all covered activities that occur in covered species habitat, including both City and Port recurring activities, routine maintenance activities, and public utility work that may only occur over a short duration. These requirements should be followed as closely as possible in areas that will only be temporarily disturbed where soils are suitable for covered species, particularly gopher burrowing, and where forage plants such as grasses and forbs (non-woody, non-grass, and herbaceous plants such as dandelions) are also present.

1. Minimize work and areas of disturbance in areas with obvious gopher mounding activity.
2. Avoid soil-disturbing activities more than one foot deep between the dates of March 1 and July 15 because this coincides with the breeding season and mothers with young will not be able to move out of the way of danger.
3. Reroute path of utility installation, where possible, to avoid intersection with the greatest number of mounds possible.
4. Work slowly when disturbing soil to allow more time for animals to move away from the construction area.
5. Treat all soils surrounding a known occupied area as potentially occupied.
6. Stop work temporarily if a gopher is exposed to allow the animal time to escape by burrowing or running away across the ground surface.
7. If mortality occurs, the body should be collected, placed in a sealed plastic bag, and placed on ice or in a freezer with the following information recorded in pencil or permanent marker and placed in the bag with the animal: the date, location, and name and contact information of the person recording the information. Any mortality should be reported immediately to the City and USFWS.
8. To minimize soil compaction:
 - a. Park construction vehicles on existing pavement or already graded and compacted areas.
 - b. Use low ground pressure (e.g., tracked excavator) and low compaction equipment.
 - c. Use equipment and machinery with rubber tires inflated to a low pressure.
 - d. Make the fewest passes over an action area as possible.
 - e. Use the smallest machinery for the job possible.
9. Minimize the amount of time soil is removed from an area and backfill trenches with the excavated soils as soon as possible following utility or other work. Screen out large rocks, if necessary and possible to restore suitable burrowing soils.
10. Seed or plant disturbed areas with an herbaceous mix (grasses and/or forbs) that complements vegetation adjacent to the affected area, or a native prairie mix whenever possible. Native plants include, but are not limited to, yarrow (*Achillea millefolium*), nodding onion (*Allium cernuum*), camas (*Camassia* spp.), field chickweed (*Cerastium arvense*), California oatgrass

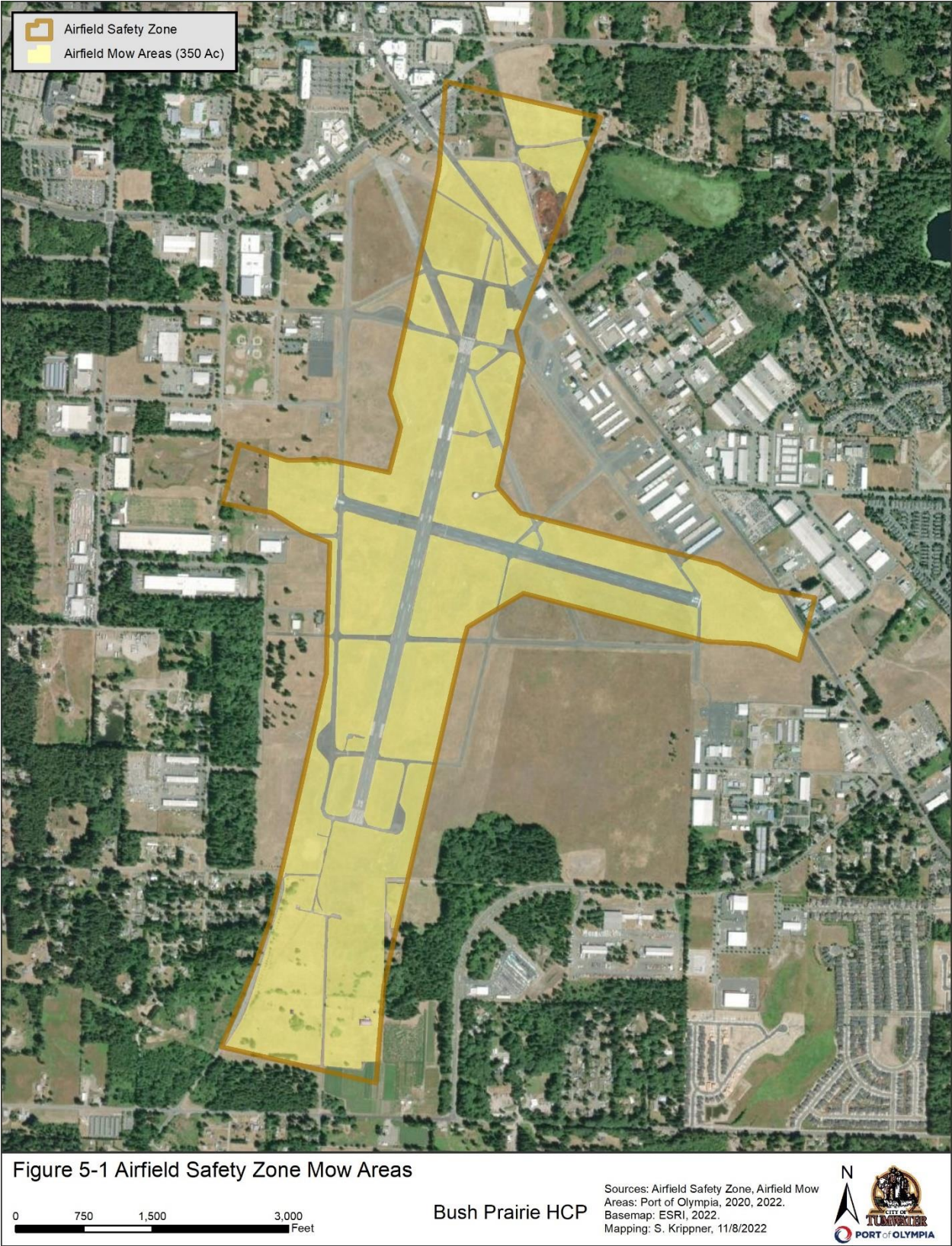
(*Danthonia californica*), blue wildrye (*Elymus glaucus*), showy fleabane (*Erigeron speciosus*), Roemer's fescue (*Festuca roemerii*), strawberry (*Fragaria* spp.), prairie junegrass (*Koeleria macrantha*), and lupine (*Lupinus* spp.). Use "weed-free" protocols to avoid spreading invasive plant species.

11. Remove encroaching trees and shrubs. Aggressively control and remove nonnative Scotch broom, tall oatgrass (*Arrhenatherum elatius*), laurel spurge (*Daphne laureola*), leafy spurge (*Euphorbia esula*), and tansy ragwort (*Senecio jacobaea*).
12. Avoid the use of herbicides and pesticides whenever possible. Use more Earth-friendly or natural products instead. When these options are limited, use herbicides to control noxious weeds and invasive/nonnative/nuisance vegetation in a manner that avoids non-target plants, such as spot spraying/selective application of herbicide instead of broadcast spraying. Take is not expected to result from the use of herbicide and ITP coverage is not being requested for its use in the HCP.
13. Maintain short grassland condition on the Airport and maintain a streaked horned lark population. The Port currently manages 1,572 acres of Airport lands. Management of these lands must comply with FAA Grant Assurances (amended in 79 FR 18755) to maintain the airfield safety area and meet other operational needs of a regional general aviation airport. Of these 1,572 acres, approximately 350 acres are undeveloped and managed by the Port to maintain aircraft safety, which results in a short grassland condition⁴⁴ allowing consistent visibility in the active airport operational areas and minimizes hazards to aircraft safety (Figure 5-1, *Airport Safety Zone Mow Areas*). These grasslands are also managed to prevent ponding water so as not to attract concentrations of waterfowl or shorebirds, which could increase risks of bird strikes.
14. The Airport's grassland management regime has however, maintained conditions within the vegetated portion of the airfield safety area that are highly suitable for and support ground-nesting species including streaked horned lark. As long as the Airport remains active, the Port is expected to maintain this level and type of management within the vegetated portion of the airfield safety area, which is likely to continue to support nesting streaked horned larks depending on airfield BMPs. As part of the conservation strategy associated with this HCP, the Port, with the authorization from the FAA, commits to continue to maintain a low grassland condition in the airfield safety area (350 acres) and maintain the number of larks in the Airport population until such time that mitigation is achieved elsewhere.
15. Removal of beaver dams will take place outside of breeding season for the Oregon spotted frog which occurs in February or March in the Permit Area.
16. Trenching will be conducted with extra caution during the months of July–October, as juveniles are anecdotally less likely to be motivated to evade construction equipment. This may mean conducting the excavation at an even slower than normal rate to allow immature animals the opportunity to escape from the path of the equipment. Anecdotal reports indicate that some juveniles may attempt to harbor in place when exposed. If an animal is exposed or observed during the project, work should be stopped until the qualified biologist has determined that the animal has moved out of the path of danger. By conducting any excavation or trenching slowly, it may be possible to allow individual gophers to escape to deeper portions of their burrows.

⁴⁴ Mowing typically occurs May through October due to limited accessibility from wet conditions during the rest of the year to align with the growing season for vegetation.

17. There may be times when trenching or excavation for the placement of utilities exposes a burrow where an individual has taken refuge. If the animal has not been injured or killed, work should be temporarily stopped. It is not possible to know in advance whether an individual will be able to move out of the path of heavy equipment. It is likely that the animal will attempt to burrow in order to escape, but it is possible that it will continue in the direction of the planned excavation.
18. Avoidance and minimization measures for the Olympia Airshow as required in the 2015 Biological Opinion (U.S. Fish and Wildlife Service 2015).
 - a. Spectators and aircraft will be kept off grassed areas by fencing (installed prior to the start of the nesting season) except for some parking, vendor use and aircraft display areas.
 - b. Any vegetated areas impacted by airshow activities will be surveyed first for nests and avoided (i.e., vehicles parked at end of runways for aerial markers and access routes to these areas).
 - c. Dogs will not be allowed on the Airport during the airshow (except service animals).
 - d. Garbage will be managed to minimize attracting predatory birds and mammals.
19. The following measures will be implemented at the Airport to minimize impacts on streaked horned lark:
 - a. Avoid personnel and vehicle activities in known lark nesting areas from March 15 to August 31 annually.
 - b. Coordinate approved dissuasion activity/procedures in advance of any anticipated project activity planned from March 15 to August 31 annually. Examples include vertical visual obstructions (orange snow fence, construction barriers, increased grass height) or grading/ground clearing to eliminate vegetation.
 - c. Avoid hard structures within 328 feet (100 meters) of known nesting habitat. Examples include temporary buildings, walls, tree lines, large machinery, or other tall structures that block direct line of sight.
 - d. Provide post-project "prairie-seed mix" for revegetating areas after the completion of a project to restore habitat. This procedure has historically been followed for Airport projects. Standard "prairie-seed mix" designation is made during the planning and approval phase of projects.
 - e. Evaluate future equipment procurement that maximizes mowing span and minimizes tire width. Maximize pavement surfaces for transit to and from mowing areas. Avoid mowing known nesting areas from March 15 to August 31 annually. Continue to mow Airport grass areas consistent with FAA operational safety requirements.
 - f. Rodent and insect control are not currently practiced on open airfield surfaces. Any future rodent or insect control will be in accordance with the Port of Olympia Integrated Pest Management Program and EPA guidelines.
 - g. All weed or grass control around runway and taxiway lighting and signage will be in accordance with the Port of Olympia Integrated Pest Management Program and EPA guidelines and will be conducted on foot or with vehicles on paved surfaces to the maximum extent possible.

- h. Apparatus-fired noise makers/flares are used to relocate flocks of birds and geese from critical operations areas and to herd coyotes and deer away from runway and taxiways. To the maximum extent possible, vehicle transits associated with these activities will utilize paved surfaces. No chemicals will be used for this purpose.



5.6 Benefits to Covered Species and Net Outcomes

This section describes the expected benefits of implementing the conservation strategy to each of the four covered species. Each discussion concludes by describing the expected net outcomes for each of the covered species. The net outcomes consider all of the adverse impacts described in Chapter 4, *Effects Analysis*, together with the beneficial effects of the conservation strategy described in this chapter.

5.6.1 Olympia Pocket Gopher

The Olympia pocket gopher is a regionally endemic subspecies of the *Mazama* pocket gopher found only in Thurston County, Washington, primarily in the City and areas of the county south of the City. The largest known population of the Olympia pocket gopher is found at the Airport and surrounding areas within the Permit Area. The Olympia pocket gopher has been in decline as the region has become more developed and the prairies, grasslands, and meadows in the Plan Area, which provide habitat, have been lost.

Preserving and restoring historic and existing Olympia pocket gopher habitat is essential for the conservation of the species. Due to the close association that Olympia pocket gophers have with specific kinds of soils and vegetation, it is very important to preserve and restore as much habitat as possible where it currently exists. The HCP's conservation strategy is an approach for ensuring habitat is preserved and appropriately mitigated permanently. This aligns with, and helps to achieve, the recovery goals and objectives set forth in the *Final Recovery Plan for Four Subspecies of Mazama Pocket Gopher* (U.S. Fish and Wildlife Service 2022) of conserving and properly managing Olympia pocket gopher habitat and maintaining self-sustaining local populations distributed across the subspecies' range.

Table 4-1, *Summary of Impact Mechanisms*, shows the maximum allowable effects on Olympia pocket gopher habitat. If all impacts occur, approximately 1,509 acres of habitat would be lost, leaving approximately 5,495 acres remaining in the Plan Area. Of the 1,509 acres lost to covered activities, approximately 50% or 757 acres will occur inside recovery priority areas. As previously discussed in Section 4.2, *Effects Mechanisms*, for projects that will occur on parcels of 1.0 acre or less, any habitat loss will be considered a total loss and would therefore be mitigated for the entire 1.0 acre, because any habitat remaining on that parcel is assumed to be functionally lost for the covered species. For parcels that are larger than 1.0 acre, habitat loss from the project would be the total acres of covered species habitat lost (compensatory mitigation would equal total impacts) from the covered activity, with a minimum of 1.0 acre. With full implementation of the conservation strategy, between 1,351 and 1,605 acres of Olympia pocket gopher habitat would be protected and managed by the end of the permit term. Acquisition would be focused first on occupied habitat and interconnected lands with the goal of establishing as large of reserve areas as possible.

With full implementation of the conservation strategy, between 1,351 and 1,605 acres of Olympia pocket gopher habitat would be protected and managed by the end of the ITP term. Acquisition would be required to occur ahead of impacts or fall no greater than 10% behind impacts starting with the [to be completed] annual report (Chapter 7 *Implementation*, Section 7.6, *Stay Ahead Provisions*), with the total acquisition requirement to be fulfilled upon Plan completion. Temporal loss associated with the delays between impacts and acquisitions are not expected to exceed [to be completed]. [USFWS and the City and Port are engaged in parallel discussions at the same time review of the first public draft of the HCP is occurring to address how the necessary mitigation fees will be

collected and mitigation lands acquired during the first two to three years of the HCP] acres prior to the [to be completed] reporting period, or five acres during any given non-consecutive reporting period after the [to be completed] reporting period.⁴⁵ The temporal loss of five acres would occur during up to 12.5 out of the 30 years of plan implementation after year [to be completed]. The Plan's conservation measures would offset these temporal losses because the mitigation applies a conservative approach in assuming any habitat remaining on impacted parcels would not be functional. Acquisition would be focused first on occupied habitat and interconnected lands with the goal of establishing as large of reserve areas as possible.

Olympia pocket gopher habitat is fragmented by urban development as connections to other habitat areas are increasingly disrupted by roads, industrial, and residential developments. A large fraction of the habitat expected to be affected by covered activities was determined to have a low probability of being occupied by Olympia pocket gophers due to their distance from occupied habitat. Those sites are still counted as habitat loss and the conservation strategy has been designed to offset all impacts on Olympia pocket gophers, regardless of occupancy status, based on the suitability of habitat in locations where covered activities are expected to occur. Further, remaining habitat in the fragmented landscape may decline over time without dedicated management efforts to control encroaching invasive and nonnative vegetation. Protection of core and movement areas and long-term management of the Reserve System provide for the long-term conservation of the species.

Once lands are acquired, long-term management and enhancement will begin, including potential introduction of vegetation control tools such as mowing, grazing, or prescribed fire as an ecological restoration tool. All of these approaches will provide long-term conservation value and benefit the species. Ongoing site vegetation management, control of invasive species and woody vegetation, including trees, may result in short-term harm to individual Olympia pocket gophers and habitat changes that may not initially benefit the species.⁴⁶ However, the long-term conservation value and benefit from Reserve System management ultimately benefits Olympia pocket gophers by reducing woody vegetation and maintaining grassland conditions.

In addition to land preservation and Reserve System management, of 532 acres of habitat remaining at the Airport, approximately 350 acres, which is not counted toward mitigation required in this HCP, would continue to be managed in a way that provides benefits to the species. The Airport currently contains the largest contiguous area occupied by Olympia pocket gopher and the only designated critical habitat for the species. The Port maintains vegetation at the Airport in order to maintain safety areas as required by the FAA, which results in a low grassland condition. Because of this vegetation management, the Airport provides and will continue to provide high-quality habitat for the Olympia pocket gopher.

Between 1,351 acres (functional habitat) and 1,605 acres of habitat will be acquired to mitigate the loss of 1,509 acres of Olympia pocket gopher habitat from covered activities (see Section 5.5.1.4, *Function of Prairie Reserve System Lands*). Therefore, the net conservation benefit expected to result from protection, management, and enhancement of habitat proposed in this HCP are anticipated to

⁴⁵ For a reserve system of approximately 1,500 acres, approximately 50 acres would need to be acquired annually over the 30-year permit term. With the 10% annual deviation allowance for the stay-ahead provision, this would allow temporal loss of 5 acres (10% of 50 acres is 5 acres). Deviation from the stay ahead provision during initial HCP implementation, prior to the [to be completed] annual report is likely to be higher than 10%, therefore the estimated maximum temporal loss for this period is estimated at [to be completed].

⁴⁶ These actions are consistent with habitat management methods allowed under 4(d) for Olympia pocket gopher. The 4(d) special rule explains the basis for long-term gains outweighing short-term impacts.

exceed and fully offset any adverse effects on Olympia pocket gopher resulting from covered activities.

The *Final Recovery Plan for Four Subspecies of Mazama Pocket Gopher* (U.S. Fish and Wildlife Service 2022) describes the following three common criteria for recovery of Mazama pocket gophers, including the Olympia pocket gopher subspecies:

1. Establishment of protected reserves managed over the long term for pocket gophers.
2. Self-sustaining population of at least 1,000 individuals in each reserve.
3. Approximately 250–500 acres of medium- or high-quality habitat in each reserve.

As described above, the HCP will result in the establishment of protected reserves (with permanent conservation easements) that will be managed in perpetuity for Olympia pocket gophers. The extent of preservation is dependent on the extent of impacts, but up to 1,351–1,605 acres of Olympia pocket gopher habitat will be protected (Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*). As described in Section 5.5.1.2, *Selection Criteria for Reserve System Lands*, land protection will be focused on higher-quality habitats while establishing reserve connectivity, maximizing reserve size, and minimizing reserve edge. The specific size and number of Olympia pocket gophers in each reserve cannot be determined yet, because reserves will be designed and established during HCP implementation. However, by following the criteria established for reserve design, HCP implementation will substantially promote Olympia pocket gopher recovery as described by the above three criteria.

The *Final Recovery Plan for Four Subspecies of Mazama Pocket Gopher* (U.S. Fish and Wildlife Service 2022) also describes the following recovery criterion specific to the Olympia pocket gopher:

1. There are a minimum of three reserves, with at least one on each side of I-5. The third may be on either side of I-5.

During HCP implementation, reserves may be established on either side (or both sides) of I-5. This will be dependent on where reserves can be established, based on willing land sellers and other practical considerations, including conservation criteria such as establishing connections to other reserve areas. Regardless, establishment of reserve(s) on either side of I-5 will promote this Olympia pocket gopher recovery criteria.

5.6.1.1 Critical Habitat

A maximum of 144 acres of critical habitat will be affected by covered activities at the Airport. This constitutes a loss of approximately 21% of all critical habitat in the Plan Area. The remaining 532 acres of critical habitat at the Airport will be maintained in a low grassland condition for as long as the Airport is in operation. Though not in critical habitat, the expected expansion of occupied Olympia pocket gopher habitat in the Plan Area and the concentration of habitat mitigation lands in Olympia pocket gopher recovery priority areas, will contribute to long-term viability of the species and are expected to offset any potential adverse effects in critical habitat.

5.6.2 Oregon Spotted Frog

At full implementation of the Plan's conservation strategy, approximately 40 acres of Oregon spotted frog habitat will be permanently preserved (Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*). Acquiring and ensuring permanent

management of the Reserve System is expected to fully offset the impacts of the incidental taking and provide net conservation benefits resulting from the reduction of threats and enhancement of habitat.

Active management is required to manage or control invasive plant species like reed canarygrass and cattail, and protecting Oregon spotted frog populations through maintaining healthy aquatic habitats will continue to be the key objective for conservation of the species. Ongoing site management, including mowing and invasive species (e.g., reed canarygrass) management during the dry season, will improve habitat conditions for Oregon spotted frogs, including breeding Oregon spotted frogs because low emergent vegetation in shallow water is required for successful breeding, in contrast to tall, invasive grasses or woody vegetation that eliminate or degrade breeding habitat.

The preservation of 40 acres of habitat, including 20 acres of occupied habitat and 20 acres of habitat that will be restored, will offset the permanent loss of 20 acres and temporary loss of 20 acres of Oregon spotted frog habitat from covered activities. The net conservation benefit expected to result from protection, management, and enhancement of habitat proposed in this HCP are anticipated to exceed any adverse effects on Oregon spotted frogs resulting from implementation of covered activities.

5.6.2.1 Critical Habitat

Implementation of covered activities will result in loss of up to 20 acres of Oregon spotted frog critical habitat. As discussed in Section 4.6.2, *Oregon Spotted Frog*, the loss of up to 20 acres of critical habitat occurs within the 4,880-acre Unit 4: Black River unit. The areas that will be affected by covered activities are in or near the urban area and likely provide a lower function than those further from urban centers and in larger, contiguous wetland and stream complexes. Removal of up to 20 acres of this critical habitat unit will not reduce the overall function of Critical Habitat Unit 4. In addition, all loss of critical habitat will be mitigated in the same critical habitat unit, under the City's CAO.

5.6.3 Streaked Horned Lark

The streaked horned lark has been extirpated throughout much of its range. In the south Puget lowlands, the streaked horned lark is currently known to occur at seven sites and the only known nesting population of the species in the Plan Area is located at the Airport. Surveys suggest that populations at most Washington sites are relatively stable. In the Puget Sound region, the female lark population is continuing to decline; however, the male lark population is stable to slightly increasing (Keren and Pearson 2019).

The Port has worked at preserving this remnant population of streaked horned lark while maintaining Airport functionality and safety. Under this HCP, the Port commits to continuing to manage 350 acres of land in a low grassland condition that benefits the streaked horned lark at the Airport.

Conservation efforts for the streaked horned lark focus on improving habitat quality and minimizing activities that could reduce nesting success. Vegetation management to maintain open habitats with low-stature vegetation and minimizing disruptive management activities during the breeding season are important for the conservation of the species (see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*). This could include mowing of the airfield safety area, which benefits streaked horned larks by keeping the vegetation short.

As described in Chapter 4, *Effects Analysis*, and in Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*, a maximum of 222 acres of habitat for streaked horned lark could be permanently lost and an additional 45 acres of habitat would be temporarily lost to covered activities during the 30-year permit term. Such losses could accrue gradually over the permit term as small projects are built on Port lands that support species' habitat. However, if all impacts were to occur, approximately 150-300+ acres of streaked horned habitat within the Permit Area for Streaked Horned Lark Conservation Only (Section 1.2.3.4, *Permit Area for Streaked Horned Lark Conservation Only*) would be protected and improved and managed to support a breeding group of streaked horned larks.

In addition to the protection of up to 150-300+ acres of streaked horned lark habitat within the streaked horned lark conservation area, impacts will be minimized through maintaining 350 acres of contiguous habitat would remain at the Airport. This area would be maintained at low grassland conditions per FAA Grant Assurances.

- The streaked horned lark recovery strategy is based on concepts outlined in the *Draft Recovery Plan for the Streaked Horned Lark (Eremophila alpestris strigata)* (U.S. Fish and Wildlife Service 2019). This includes goals to:
 - Reduce or eliminate the systemic threats to the species.
 - Reduce risk from random, chance events (demographic, environmental, and genetic stochasticity) and natural catastrophes by:
 - Ensuring that regional populations are at or above minimum population targets; and
 - Protecting multiple potentially interacting local populations distributed across the species current range.
 - Conserve genetic variability within the species to provide both short-term fitness and evolutionary potential for the species to adapt to changing conditions by maintaining regional populations of sufficient size distributed across the range of habitat types used by the species.
 - Provide for long-term survival of the species by:
 - Protecting and managing habitat sufficient to support target population sizes and maintain connectivity among regional populations;
 - Restoring and maintaining suitable habitat on sites distributed across the range; and
 - Monitoring to ensure that regional and range wide population trends are generally stable or increasing and to provide feedback for adaptive management.

By acquiring, protecting, and managing 150-300+ acres within the South Puget Lowlands Core Recovery Area (Permit Area for Streaked Horned Lark Conservation Only), as well as maintain 350 acres at the Airport, the Permittees are contributing toward achieving the goals outlined in the *Draft Recovery Plan for the Streaked Horned Lark (Eremophila alpestris strigata)* and recovery of the species. The net conservation benefits from full implementation of the conservation strategy proposed in this HCP are anticipated to exceed any adverse effects on streaked horned lark resulting from covered activities.

5.6.4 Oregon Vesper Sparrow

Conservation of the Oregon vesper sparrow is centered on the protection, restoration, and management of habitat through activities such as prescribed fire and vegetation management. Under this HCP, the Port commits to continuing to manage 350 acres of land in a low grassland condition that benefits the Oregon vesper sparrow at the Airport.

Conservation efforts for the species focus on improving habitat quality and minimizing activities that could reduce nesting success. Vegetation management to maintain open habitats with low-stature vegetation and avoiding disruptive management activities during the breeding season are important for the conservation of the species.

As described in Chapter 4, *Effects Analysis*, and in Table 5-1, *Land Acquisition Goals for Each Covered Species (acres), Assuming Maximum Impacts*, a maximum of 597 acres of habitat for Oregon vesper sparrow could be permanently lost and an additional 45 acres would be temporarily lost to covered activities during the 30-year permit term. Such losses could accrue gradually over the permit term as projects are built on land where potential sparrow habitat is present. At this time, it is not known whether any of this habitat is occupied during the breeding season. If all impacts were to occur, approximately 620 acres of Oregon vesper sparrow habitat would be protected, improved and managed to provide habitat for Oregon vesper sparrows. While there is no requirement that this habitat become occupied by sparrows during the Permit Term, having this habitat available will be important if recovery efforts for this species are successful and birds spread to these habitat areas. Coordination with conservation partners such as USFWS, WDFW, and Thurston County may be done to relocate birds to these areas if this makes sense for species recovery. The net conservation benefits expected to result from protection, management, and enhancement of habitat proposed in this HCP are anticipated to exceed any adverse effects on Oregon vesper sparrow resulting from covered activities.

Chapter 6

Monitoring and Adaptive Management

6.1 Introduction

This chapter describes the monitoring and adaptive management framework for the HCP and includes guidelines and specific recommendations that will help the City and Port develop a detailed program during the initial years of implementation. The purposes of this framework and the monitoring program are to ensure compliance with the Plan, to assess the status of covered species habitat within the Reserve System, and to evaluate the effects of management actions on species as the conservation strategy is implemented over time.

Adaptive management and monitoring are integrated processes in this Plan, and monitoring will inform changes to management actions to improve outcomes continually for covered species (Figure 6-1, *Monitoring and Adaptive Management*). An overview of the monitoring and management actions is provided below.

The goal of this chapter is to provide sufficient guidance to ensure that the program designed during implementation will meet federal ESA regulatory standards discussed in Section 6.1.1, *Regulatory Context*, and provide enough detail so that the cost of the monitoring program can be accounted for properly. As detailed in Chapter 5, *Conservation Strategy*, the scale of the HCP biological goals and objectives depends on the actual impacts that occur and the varying mitigation approaches taken. Given the programmatic approach, final approaches will evolve over time.

6.1.1 Regulatory Context

An HCP must establish a monitoring program that generates information necessary to assess compliance and verify progress toward achieving the biological goals and objectives of the Plan (50 CFR 17.22(b)(2)(A–F), 50 CFR 17.32(b)(2)(i–iii), and 50 CFR 222.307(b)(5)). Adaptive management programs are generally recommended for large, programmatic plans and those with data gaps and scientific uncertainty that could affect how species are managed and monitored in the future. The *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016) describes adaptive management as a method for addressing uncertainty in natural resource management and states that management must be linked to measurable biological goals and monitoring. Conservation actions proposed in Chapter 5, *Conservation Strategy*, could be modified in response to new information within an adaptive management framework.

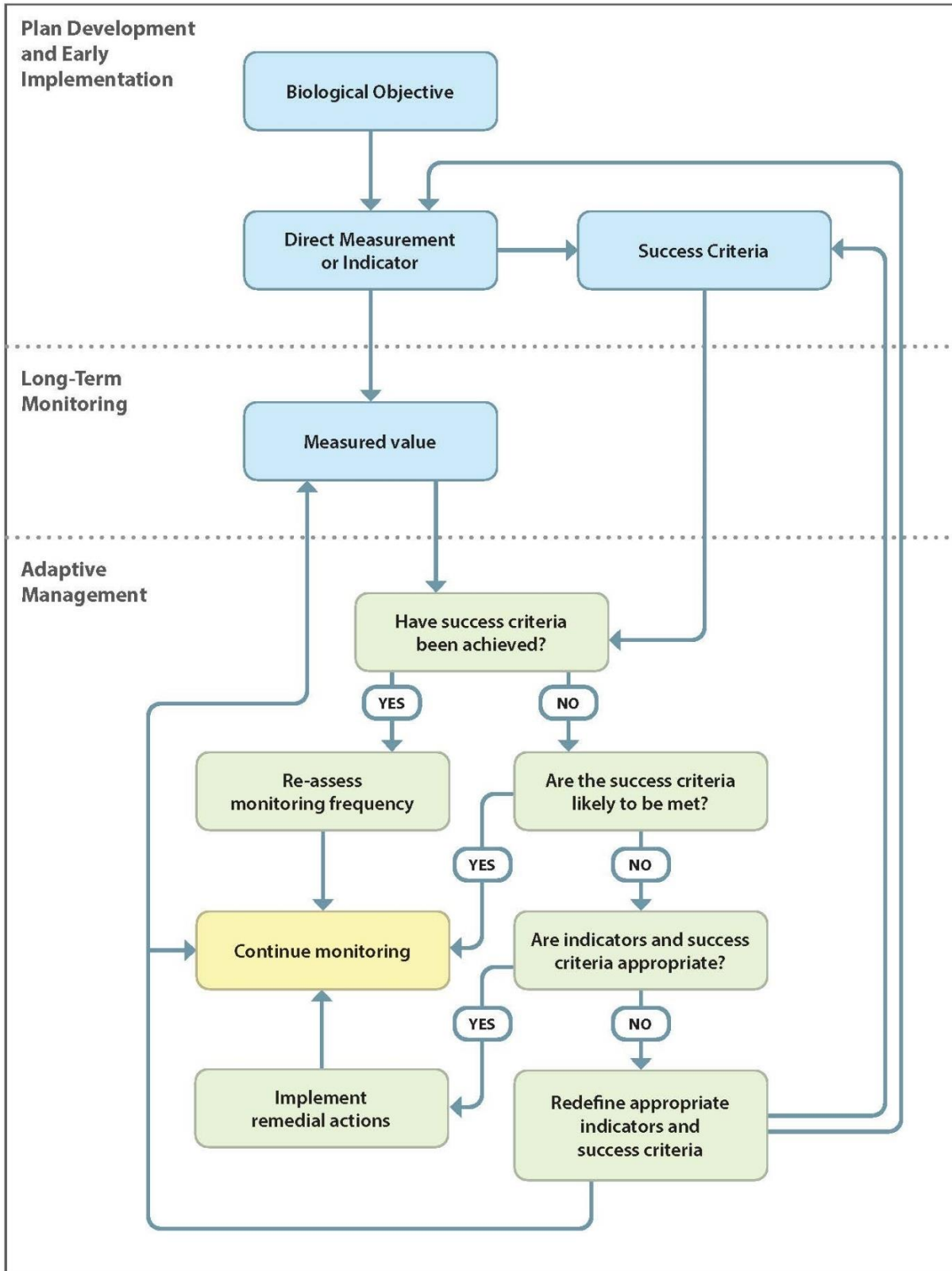


Figure 6-1. Monitoring and Adaptive Management

6.2 Purpose of Monitoring Program

Guidance for regional conservation planning defines monitoring as the “systematic and usually repetitive collection of information typically used to track the status of a variable or system” (Atkinson et al. 2004). The monitoring program will provide the information necessary to assess Plan compliance and project effects, verify progress toward achieving the biological goals and objectives, and provide the scientific data necessary to evaluate the success of the Plan’s conservation program. The City and Port will conduct two main types of monitoring: compliance monitoring and effectiveness monitoring. The Plan also includes an adaptive management program and directed studies aimed at guiding adaptive management, if needed as contingency. A description of each of these elements is provided below.

6.3 Compliance Monitoring

Compliance monitoring (also known as implementation monitoring) tracks the status of Plan implementation and documents that the requirements of the Plan are being met. Compliance monitoring verifies that the City and Port are carrying out the terms of the HCP and ITP. The City and Port will track compliance monitoring to ensure the Plan is being implemented as required by the HCP and ITP and will provide monitoring results in the form of annual reports to USFWS. As defined by the Plan, compliance monitoring will track the following components.

- Location, frequency, and size of all covered activities, as described in Chapter 3, *Covered Activities*, except for operations and maintenance activities, which are described below.
- Location, frequency, size, and type of operations and maintenance activities that disturb soil (Section 3.4.4, *Public Facility Operations and Maintenance*, and Section 3.5.2.2, *Facility Operations and Maintenance*) will be tracked and recorded annually for the first 5 years of HCP implementation. After the initial 5-year monitoring period, tracking and recording of soil-disturbing operations and maintenance activities will be done every 5 years starting in year 10 and continuing in years 15, 20, and 25. During these 5-year audits, the City and Port will verify that the location, frequency, size and type of soil-disturbing activities is consistent with earlier periods and that temporary take limits are not exceeded. If temporary impacts are higher than what is anticipated in the Plan, the City and Port will reallocate permanent take authorization to cover the exceeded amount (see Section 6.7, *Adaptive Management*).
- Location, size, and timing of loss of covered species habitat (as defined in Section 2.6, *Covered Species Accounts*) to ensure the proposed maximum extent of take is not exceeded and to ensure compliance with the Stay-Ahead requirements (see Section 7.6, *Stay-Ahead Provision*).
- Location and size of any reserve parcels acquired during the reporting year, and cumulative total of Reserve System size and locations (see Section 7.6, *Stay-Ahead Provision*).
- Acres of habitat management, enhancement, and restoration.
- Implementation of avoidance and minimization requirements (see Section 5.5.5, *Conservation Action 5: Best Practices to Avoid and Minimize Impacts*).
- Reporting of management actions (e.g., proportion of reserves fenced) and monitoring activities (e.g., what monitoring activities were implemented and resulting reports produced as well as any adaptive management or directed studies implemented) (Atkinson et al. 2004).

- Annual easement monitoring will occur on each acquired parcel to confirm adherence to easement terms, applicable HCP requirements, and ITP terms.

6.4 Effectiveness Monitoring

Effectiveness monitoring evaluates whether the effects of implementing the conservation strategy described in Chapter 5, *Conservation Strategy*, are consistent with the assumptions and predictions made during development of the conservation strategy (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016). Effectiveness monitoring is used to assess whether implementation of the conservation strategy is achieving the Plan's biological goals and objectives. Effectiveness monitoring measures the effects of management actions on targeted covered species (e.g., status of Oregon spotted frog [*Rana pretiosa*] on the Reserve System), status and trends in resources (e.g., percent cover of land cover types protected), and status and trends of stressors to the biological resources (e.g., distribution of invasive plant species) (Atkinson et al. 2004).

In this Plan, effectiveness monitoring is focused on the status of covered species and the quality of covered species habitat within the Reserve System and the results of conservation actions, which will be implemented within the Reserve System. Understanding the effects of management actions is a critical component of the monitoring and adaptive management program. The purpose of this monitoring is to ascertain the success of management in achieving desired outcomes, to provide information and mechanisms for altering management if necessary, and to evaluate whether the conservation strategy described in Chapter 5, *Conservation Strategy*, was successful.

6.4.1 Success Criteria

Success criteria are the habitat conditions necessary to earn and release mitigation credits from new lands acquired as part of the Reserve System. Success criteria are tied to site-specific targets in habitat quality and function within the configuration of different habitat types, habitat qualities, and soil types; this relationship and specific performance standards will be documented and identified in the Reserve System-wide Management Plan developed for all biological goals and objectives based on the covered species and their habitats present on the Reserve System lands, and the existing conditions of those habitats (see *Reserve System-wide Management Plan* in Section 5.5.1.5, *Reserve Management and Enhancement*). Examples of variables included in the success criteria are unique to each covered species and are shown in Tables 6-1, *Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow*, Table 6-2, *Success Criteria for Streaked Horned Lark*, and Table 6-3, *Success Criteria for Oregon Spotted Frog*.

The success criteria identified in this section are intended to be defaults. It is possible that site-specific criteria may be integrated within specific Reserve Management Plans, then reviewed and approved by the Permittees.

The biological goals and objectives and BAS will determine the content of the success criteria. The success criteria developed for the Reserve System-wide Management Plan will be subject to review and approval by USFWS.

The success criteria developed to meet the biological goals and objectives of the Plan may be adjusted if they are determined to be inappropriate indicators of success (too high or too low, based on biological information), if more cost-efficient or more biologically effective measures are

developed and agreed upon with USFWS. Success criteria will not be changed frequently and will be changed only in collaboration with USFWS. It is expected that they will rarely need to be changed.

6.4.2 Success Criteria for Prairie Species

The success criteria for prairie covered species include criteria that the best available science indicates are primary determinants of prairie habitat quality and function and species use.

Table 6-1. Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow

	Olympia Pocket Gopher		Oregon Vesper Sparrow		
	Shrub/Tree Cover ^{b,c,d}	Native Herbaceous Cover ^b	Shrub/Tree Cover ^b	Native Herbaceous Cover ^b	Cover of Veg. between ~ 6–20 inches in Height during May
Shrub Dominated ^a	Shrub cover >25%; Tree cover <5%	--	Shrub cover >50%; Tree cover <5%	--	<50%
Degraded Grassland ^a	Shrub cover <25%; Tree cover <5%	<10%	Shrub cover >30%; Tree cover <5% or 15–25%	<10%	<50%
Native Prairie ^a	Shrub cover <10%; Tree cover <5%	10–30%	Shrub cover <30%; Tree cover <5% or 15–25%	10–30%	50–75%
High-Quality Native Prairie ^a	Shrub cover <10%; Tree cover <5%	>30%	Shrub cover <15%; Tree cover <5%	>30%	>75%

^a The success criteria define four categories of overall prairie habitat quality.

^b Percent cover metrics are assessed using a grid of 25m x 25m sample cells; or a conditionally approved alternative sample cell/unit configuration.

^c Trees may not exceed 5% cover, unless native oak savanna (less than 25% cover of oaks, *Quercus garryana*).

^d Woody shrubs; excludes native oak and kinnikinnick (*Arctostaphylos uva-ursi*).

Table 6-2. Success Criteria for Streaked Horned Lark

Metric	Success Criteria
% Cover of bare ground, moss, lichens, and/or grassland <12 inches high	> 60% across the site and > 80% in nesting areas
% Cover of plant species on the state or county noxious weed list	<5%
% Cover of woody vegetation	<5% tree canopy and <10% shrub cover across the site

6.4.3 Success Criteria for Oregon Spotted Frog

Key determinants of wetland quality for the Oregon spotted frog include (1) stable patterns of hydrology that coincide with the stages of Oregon spotted frog life history; (2) minimal cover of woody vegetation, except wintering habitat where scrub-shrub habitat may be allowed to a greater extent than breeding habitat; and (3) appropriate vegetative structure of emergent and submergent

plants. Preferred vegetation composition and structure in Oregon spotted frog habitat varies from site to site. The species is the most aquatic of northwest frogs and relies on year-round areas of still or slow-moving water and seasonally flooded areas that can be expansive or immediately adjacent to permanent water. Generally, habitat must consist of large continuous areas of herbaceous emergent or submergent wetland vegetation connecting the upper end of seasonally flooded areas with permanent water areas, clumped or widely spaced wetland shrubs, and few if any deciduous late-leafing trees. Oregon spotted frog habitat consists of four, often spatially and temporally overlapping habitat types: nonbreeding, breeding, rearing, and overwintering. These habitat types include the following features that are important to the different life stages of the Oregon spotted frog:

- Ephemeral habitat areas hydrologically connected by surface water to a permanent waterbody.
- Breeding/oviposition habitat inundated for a minimum of 4 months per year (on average beginning as early as February) that connects through habitat to deeper persistent water.
- Less than 15% tree and shrub cover (scattered or small clumps spaced more than 50 feet apart).
- Vegetation structure in breeding habitat should include short-stature emergent vegetation and vegetation no greater than 12 inches above water surface when inundated during the breeding season.
- Gradual topographic gradient (less than 3% slope) from shallow water toward deeper, permanent water.
- Shallow water areas in winter months have high solar exposure (approximately >75%).

The proportion of each habitat type that is enhanced, restored, or created at each site will vary based on existing site conditions, but all conservation sites will use the success criteria provided in Table 6-3, *Success Criteria for Oregon Spotted Frog* for achieving performance standards and for determining credits. These success criteria are based on the habitat requirements of the Oregon spotted frog as described above in the bulleted list.

Table 6-3. Success Criteria for Oregon Spotted Frog

Success Criteria	Year 3 ^a	Year 5 ^a	Year 7 ^a	Year 10 ^a
Native Emergent and Submergent Vegetation	20% native emergent and submergent vegetation cover	30% native emergent and submergent vegetation cover	50% native emergent and submergent vegetation cover	65% native emergent and submergent vegetation cover
Native Shrub Cover to Provide Wintering Habitat	--	5–10% cover of native shrub widely spaced/clumped (>50 feet)	5–10% cover of native shrub widely spaced/clumped (>50 feet)	5–10% cover of native shrub widely spaced/clumped (>50 feet)
Emergent Vegetation to Provide Breeding Habitat	20% cover of emergent vegetation no more than 12 inches above surface in breeding habitat	50% cover of emergent vegetation no more than 12 inches above surface in breeding habitat	50% cover of emergent vegetation no more than 12 inches above surface in breeding habitat	80% cover of emergent vegetation no more than 12 inches above surface in breeding habitat
Open Water Depth	Open water with a maximum seasonal depth <12 inches or water of this depth over vegetation in deeper water during breeding season	Open water with a maximum seasonal depth <12 inches or water of this depth over vegetation in deeper water during breeding season	Open water with a maximum seasonal depth <12 inches or water of this depth over vegetation in deeper water during breeding season	10% open water cover with a maximum seasonal depth <12 inches or water of this depth over vegetation in deeper water during breeding season

^a Number of years post acquisition.

6.5 Baseline Monitoring

Baseline monitoring of habitat conditions occurs on new parcels as they are acquired and added to the Reserve System. This information will build largely on the data collected during pre-acquisition assessments and it will be supplemented by post-acquisition monitoring.

Baseline conditions within the Reserve System need to be documented to inform management planning and to serve as a comparison point for all future monitoring results. Accordingly, resources of interest that occur on a site need to be documented and mapped. The City and Port or their designees will inventory and assess covered species habitat and status (e.g., presence/absence) of species, as appropriate, within the Reserve System. Some baseline information may come from past surveys conducted by the City and Port or other entities (e.g., WDFW, USFWS), provided site conditions have not changed since those surveys were completed. For newly acquired Reserve System land parcels, baseline condition surveys will be done to reflect site conditions before the end of the first full year following land acquisition.

Information gathered during the baseline monitoring data collection will be used to set a starting point for future assessments of biological resources on individual parcels. The term *baseline* within a monitoring context refers to conditions when the parcel is acquired for the Reserve System and/or when initial surveys begin.

While the conservation strategy was developed based on BAS and knowledge, for some covered species, there is little available information on their distribution, abundance, habitats, and the threats to their populations in parts of the Plan Area. During HCP development, habitat suitability models were relied on to fill those data gaps, but during HCP implementation surveys will be conducted to document initial habitat conditions and, in some cases, species presence, on Reserve System land parcels. As such, during the baseline monitoring the City and Port will focus monitoring efforts to document baseline conditions on the presence, distribution, and in some cases, abundance (or relative abundance) of covered species, their habitats, and the threats to their persistence on the reserve land parcel in question.

6.5.1 Covered Prairie Species

The baseline monitoring for prairie species habitat will include the collection of data on Reserve System lands prior to or immediately following acquisition that allows the City and Port to do the following.

- Determine percent of parcel that is wooded.
- Determine quality of prairie (i.e., high-quality native, native, and degraded) based on definitions included in the Reserve Management Plan. Examples of parameters that could be measured include, but are not limited to the following.
 - Percent noxious weed cover (e.g., Scotch broom and Himalayan blackberries).
 - Percent native prairie cover.
 - Native prairie species richness.
 - Percent open ground (e.g., ground covered with mosses, lichens, and low grassland levels).
 - Percent native shrubs.

- Percent tree density.
- Percent soils by soil type.
- Percent soil compaction.
- Percent of parcel flooded annually (Oregon spotted frog only).
- Create baseline map of prairie conditions.
- Document presence of covered species (Table 6-4, *Monitoring/Survey Protocols for Determining Site Occupancy of Covered Prairie Species*, or per qualified professional recommendations).
- Document risks to covered species, including but not limited to the following.
 - Invasive species.
 - On-site land uses.
 - Adjacent land uses.
 - Site security.
- Conduct assessments based on GIS and remote sensing data as needed, to obtain information about prairie habitat, including relative tree cover and any historical land use conditions that may influence the current condition of the parcel (e.g., past farming practices).

Table 6-4. Monitoring/Survey Protocols for Determining Site Occupancy of Covered Prairie Species

Covered Prairie Species	Monitoring Protocol	Determining Site Occupancy
Olympia pocket gopher	Each Reserve System acquisition will be monitored using 25 meter X 25 meter grid cells.	Based on monitoring, if there are mounds present on 50% of the grid cells surveyed, the site is considered occupied.
Streaked horned lark and Oregon vesper sparrow	Bird surveys will be conducted using a point count method, transect method, or area search method at least once during the breeding season (April through July). Bird survey points or transects should be located in areas most likely to be used by nesting birds and should provide survey coverage for at least 50% of the site.	An average of 20 breeding pairs sustained for at least 3 consecutive years located on the site.

6.5.2 Oregon Spotted Frog

The baseline monitoring for Oregon spotted frog will include the collection of data on Reserve System lands prior to or immediately following acquisition that allow the City and Port to do the following.

- Survey surface water area and elevation during the breeding season to identify suitable breeding habitat and map vegetation cover types.
- Survey wetland vegetation cover with the use of data plots or transects that sample at least 50% of the breeding habitat and 10% of the site.

- Determine percent cover of native emergent and submergent vegetation.
- Determine percent cover of emergent vegetation cover that is no more than 12 inches above the water surface.
- Determine percent cover of native shrubs.
- Determine percent cover of invasive/noxious weeds.
- Create a detailed baseline map with clear depiction of aquatic vegetation present.
- Document any sightings of Oregon spotted frog.
- Conduct egg mass surveys following the WDFW Oregon Spotted Frog Egg Mass Survey Protocol to determine whether Oregon spotted frogs are present and breeding at the site.
- Document any risks to Oregon spotted frog, including but not limited to the following.
 - Presence of invasive plant or animal species.
 - Documentation of on-site land uses
 - Documentation of adjacent land uses.
 - Documentation of site security risks and any near-term needs to address security.
- As needed to fill identified data gaps, conduct assessments based on GIS and remote sensing data to obtain information about watershed conditions and the distribution and abundance of wetland types in the watershed. Note relative tree cover and any historical land use conditions that may influence the current condition of the parcel (e.g., farming or changes in drainage patterns that could influence wetlands).

6.6 Long-Term Monitoring

Long-term monitoring and adaptive management begin after baseline monitoring. Long-term monitoring will be conducted annually following baseline surveys, for up to 10 years annually and every 3 years thereafter in perpetuity, to identify and evaluate the status of covered species habitat (e.g., prairie condition), covered species presence, and the effectiveness of the management actions in achieving the biological goals and objectives of the Plan.

Long-term monitoring includes the following tasks.

- Monitor the response of covered species habitat to management actions by conducting surveys and mapping changes in prairie condition (i.e., degraded, native, or high-quality native).
- Document covered species using methods similar to those used during baseline surveys to allow for comparisons. Methods can be changed over time if information gathered during long-term monitoring or directed studies result in better monitoring methods.
- Monitor restoration sites and assess effectiveness of restoration with respect to site-specific success criteria (see Tables 6-1, *Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow*, Table 6-2, *Success Criteria for Streak Horned Lark*, and Table 6-3, *Success Criteria for Oregon Spotted Frog*); remediate sites if initial success criteria are not being met. The Reserve System-wide Management Plan will identify triggers for remediation, if necessary.

- Work with other individuals and organizations (e.g., local conservation-based non-governmental organizations, regional universities) to facilitate directed studies on the Reserve System that will improve management.

6.6.1 Covered Prairie Species

The monitoring protocol is designed to measure whether the biological goals and objectives established in the Plan are being achieved and performance standards are being met. Performance standards will be established during Plan implementation during development of a detailed Reserve System-wide Management Plan, and subsequent plans for each acquisition. Results of all monitoring will be detailed in annual reports.

Prairie species monitoring will include the collection of the following information, annually for up to ten years following acquisition and baseline surveys, and then every 3 years in perpetuity following the initial 10-year survey period.

- Survey of vegetation cover in enough detail that the City and Port can characterize the quality of prairie conditions (i.e., high-quality native, native, or degraded) to ensure that prairie habitat conditions are improving over time and that mitigation credit is assigned appropriately.
- Covered bird species surveys will be conducted using a point count method, transect method, or area search method at least once during the breeding season (April through July). Survey points or transects should be located in areas most likely to be used by nesting birds and should provide survey coverage for at least 50% of the site.
- Gopher mound surveys will be used to detect presence of gophers onsite (Table 6-4, *Monitoring/Survey Protocols for Determining Site Occupancy of Covered Prairie Species*) and may be conducted opportunistically in conjunction with vegetation cover and bird surveys. Gopher mound surveys will cover all suitable habitat on the parcel and relative distribution throughout of gopher mounds will be documented. While not foolproof, this method (or as qualified professionals recommend) will be used to track relative changes in the gopher population from the established baseline (Table 6-1, *Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow*), over time on each site.

6.6.2 Oregon Spotted Frog

The monitoring protocol is designed to measure whether the biological goals and objectives established in the Plan are being achieved and success criteria are being met (Table 6-4, *Monitoring/Survey Protocols for Determining Site Occupancy of Covered Prairie Species*). Results of all monitoring will be detailed in annual reports.

Oregon spotted frog monitoring will include the collection of the following information, every 3 years following land acquisition and baseline surveys on a given parcel.

- A survey of water elevation during the breeding season to identify suitable breeding habitat and map vegetation cover types to document changes from baseline conditions.
- A survey of wetland vegetation cover with the use of data plots or transects that sample at least 50% of the breeding habitat and 10% of the site to document changes from baseline conditions.
- Surveys for egg masses will be conducted during the breeding season following the WDFW Oregon Spotted Frog egg mass survey protocol, which can vary each year based on weather

conditions and water temperatures. The breeding season is typically in February or March and can vary each year based on weather conditions and water temperatures. Egg mass surveys will be conducted in all areas that have suitable water levels for breeding frogs.

- Monitoring will also record general site conditions; make observations of American bullfrog, nonnative fish predators, or water quality problems; and advise onsite management that year accordingly.

6.7 Adaptive Management

For the purposes of this Plan, adaptive management is a decision-making process used to examine alternative strategies (e.g., conservation actions) to meet the biological goals and objectives, and, if necessary, adjust future management actions based on new information (U.S. Fish and Wildlife Service 2016). Adaptive management is based on a flexible approach whereby actions can be adjusted as uncertainties become better understood or as conditions change (Figure 6-1, *Monitoring and Adaptive Management*). Monitoring the outcomes of management actions is the foundation of an adaptive approach, and thoughtful monitoring can guide how management actions are modified iteratively (Williams et al. 2007).

Integrating adaptive management and monitoring is critical to the successful implementation of the conservation strategy. Monitoring is the foundation of an adaptive approach, and adaptive management actions are developed, in part, from the results of monitoring. In this Plan, the two components are integrated into a single program.

The City and Port will administer the adaptive management process. The City and Port will also coordinate and share the results of monitoring and targeted studies, as appropriate, with other HCP implementation teams, USFWS, WDFW, and regional conservation and restoration program implementation teams. A well-coordinated and scalable monitoring program will enable the City, the Port, and others to measure and evaluate changes in resources and threats in individual reserves, across the entire Plan Area. Such coordination requires standardization of protocols, sampling design, and training of personnel, as well as integrative data analysis.

The monitoring and adaptive management program will inform reserve managers and other decision makers of the status of covered species and their habitat, and essential ecological processes such that management actions can be revised when necessary to meet the biological goals and objectives of the Plan (Table 6-1, *Success Criteria for Olympia Pocket Gopher and Oregon Vesper Sparrow*, Table 6-2, *Success Criteria for Streak Horned Lark*, Table 6-3, *Success Criteria for Oregon Spotted Frog*, and Table 6-5, *Adaptive Management Matrix*). The City and Port will evaluate effectiveness of conservation efforts following the model outlined in Figure 6-1, *Monitoring and Adaptive Management*. This figure illustrates how the City and Port will develop indicators and success criteria during habitat management plan development following land acquisition and how the City and Port will use monitoring to ensure the effectiveness of the Plan.

Adaptive management actions will likely take place at the following junctures.

- Annually during the Bush Prairie HCP stakeholder meeting.
- In response to downward trends in the status of covered species or key habitat types.

- When new information from the literature or other relevant research indicates that a feasible and superior alternative method for achieving the biological goals and objectives exists.
- When monitoring indicates that the expected or desired result of a management action did not take place.
- Proactively when the City and Port identify threats to Reserve System lands that require a new or unique response.
- When the results of directed studies indicate that new methods of restoration or management would be beneficial to the covered species.

Adaptive management tasks are listed below.

- If management actions are not resulting in the desired effect, identify alternative management actions (such as through a targeted study or other additional research).
- If monitoring protocols are not providing definitive results, evaluate efficacy of monitoring protocols using appropriate targeted studies methods, such as conducting pilot projects before making large-scale or long-term changes.
- Incorporate best available science from recent literature into management. Periodic reviews of literature will ensure that new understanding of the species or monitoring approaches is incorporated into the monitoring and adaptive management program.
- Update components of success criteria as new information becomes available.

Table 6-5. Adaptive Management Matrix

Key Uncertainty	Monitoring Attribute	Trigger per Monitoring Period	Actions Considered and Implemented
Habitat restoration and management of high-quality status	Changes in prairie condition (i.e., degraded, native, or high-quality native) or wetland condition.	Native prairie or wetland vegetation cover decreases by >10% or woody cover increases by >10%	Evaluate and adjust site management to increase habitat quality to meet performance standards.
Species population maintenance and growth	Occupied area estimates for Olympia pocket gopher; egg mass count for Oregon spotted frog; population estimates and/or nest # for streaked horned lark and Oregon vesper sparrow	Occupied area for Olympia pocket gopher decreases by >25%; egg mass count for Oregon spotted frog decreases by >25%; population estimates or nest # for streaked horned lark and Oregon vesper sparrow decline by >25%	Evaluate trends at sites and consider revision to habitat management prescriptions within site management plan(s) based on BAS.
Control and management of new or existing invasive plant or animal infestations	Invasive plant species cover or animal population estimate	New invasive species population discovered, or >10% increase in abundance of existing population of invasive species	Eradication efforts may be required with treatment results monitored in subsequent months and years.
Effectiveness of grazing as a prairie management tool	Assessment of grazed lands and prairie condition, including soil compaction and vegetation characteristics	Native prairie or wetland vegetation cover decreases by >10% or woody cover increases by >10%, level and or extent of soil compaction from grazing	Evaluate grazing plan with site manager, change timing, frequency, and intensity of grazing operations.
Natural disturbances	Tracking the timing, extent, and type of natural disturbances	Obvious degradation of habitat due to unplanned fire, drought, windfall, erosion or change in hydrology	Evaluate timing and severity of disturbance; allow natural regeneration or conduct remedial site management actions such as replanting; determine if changes to site management plan are needed.
Unauthorized human use or disturbance	Tracking of site conditions and human-caused disturbances (e.g., trespassing)	Any signs of unauthorized use, including new trails, camping, or other trespass	Evaluate management of public use, and revise outreach (including interpretive signs), increase monitoring and management of access points as needed.
Gopher translocation	Occurrence and status of gophers at translocation sites	Gophers do not persist at translocation sites	Evaluate translocation methods and adjust methods as necessary to improve likelihood of

Key Uncertainty	Monitoring Attribute	Trigger per Monitoring Period	Actions Considered and Implemented
			success and maintaining gophers at new translocation sites.
Pace of operations and maintenance activities that disturb soil in first 5 years of HCP	Sample amount and type of operation and maintenance activities that disturb soil in order to estimate average annual habitat loss	Average annual habitat loss of operations and maintenance activities that disturb soil exceeds expected average defined in effects analysis	Evaluate pace of operations and maintenance activities that disturb soil. If future pace of same activities is likely to continue at the same rate, reduce available permanent impacts to accommodate more temporary operations and maintenance impacts at ratio of 1:0.6.

6.7.1 Directed Studies

Because natural systems are extremely complex and dynamic, varying degrees of uncertainty are associated with conserving and managing these systems. Typically, management proceeds absent a full understanding of the components that affect a covered species. The outcomes of these management actions are carefully monitored and refined in acknowledgement of the high level of uncertainty. Directed studies may be used through adaptive management to better inform the management program and will be used to reduce the levels of uncertainty related to achieving biological goals and objectives. Research into translocation of Olympia pocket gopher or streaked horned lark would be an example of a directed study. These uncertainties are generally related to the factors listed below.

- The ecological requirements of covered species.
- The likely response of covered species to conservation actions within the Reserve System.

Directed studies will be carried out to gain insights into key questions identified in the conservation strategy and during Plan implementation in collaboration with regional partners, including USFWS and WDFW.

7.1 Overview

This chapter describes how the HCP will be implemented, including a description of the City and the Port's roles and responsibilities as HCP Permittees, the covered activity application process, the process for assembling the Reserve System and other mitigation options, and annual compliance and reporting. The City will be the primary responsible party for HCP implementation, with the Port as a close partner. In this chapter, any identification of the City or Port with respect to roles and responsibilities is purposeful to clearly delineate responsibilities. In cases of true joint responsibility, the term *HCP Permittees* is used here instead of the City or the Port. This chapter also outlines the regulatory assurances sought by the HCP Permittees and the changed and unforeseen circumstances that define those assurances.

The Plan addresses covered activities estimated to occur during the permit term. The Plan takes into account a number of uncertainties regarding covered activities such as the total amount of development that will ultimately occur, frequency of operations and maintenance activities, amount of onsite mitigation, and location within the City.

Another uncertainty is the number of project proponents who elect to seek federal ESA coverage through the HCP. The HCP assumes that project proponents for all covered activities in modeled covered species habitat will seek coverage under the HCP rather than obtaining their own ESA permits. However, based on site-specific circumstances, there may be project proponents who work directly with USFWS (the HCP does not preclude project proponents electing to seek ESA compliance on their own). Due to these uncertainties, the HCP Permittees will address Plan obligations as specific development projects come under the Plan and trigger implementation responsibilities by the HCP Permittees. See Section 7.6, *Stay-Ahead Provision*, for more on how the HCP Permittees will ensure the conservation strategy remains in step with the actual level and type of covered activities that occur.

7.2 Implementation Roles and Responsibilities

7.2.1 Summary of HCP Permittee Responsibilities

The City has the primary responsibility in HCP implementation. The permits issued by the City are the legal tool that will be used to enforce HCP compliance. Project proponents covered by the HCP can have ITP coverage extended to their project by the City. The trigger for when that occurs will be the City's permits. The City's permits will reference the ITP as a method by which the project can comply with the ESA. Additionally, the City is responsible for HCP compliance for all City activities. The Port is responsible for the implementation of all activities on Port lands within the City consistent with this HCP.

The HCP Permittees are also responsible for execution of the Plan's conservation actions (Section 5.5, *Conservation Actions*) and the monitoring and adaptive management program (Chapter 6,

Monitoring and Adaptive Management). All HCP compliance activities, including execution of conservation actions on lands that are under City land use authority, will be tracked and reported by the City (see Section 7.9, *Tracking Compliance*, and Section 7.10, *Annual Reporting*).

7.2.1.1 HCP Administration

HCP administration will be the responsibility of the City. The City's administrative responsibilities during HCP implementation will include the following.

- Developing and maintaining annual budgets and work plans for HCP implementation.
- Collecting Plan fees from project proponents seeking ESA coverage under the HCP, as described in Chapter 8, *Costs and Funding*.
- Considering requests from project proponents for alternatives to Plan fees, including providing mitigation land in lieu of fees or purchasing mitigation credits at approved conservation banks, as described in Chapter 8, *Costs and Funding*.
- Receiving, managing, tracking, reporting, and expending funds, including fee revenues collected to implement the Plan.
- Reviewing and processing HCP application packages under the Plan (Section 7.3, *Covered Activity Application Process*).
- Providing and maintaining tools to support the HCP application package review process.
- Conducting periodic training for City staff to properly review and process HCP application packages.
- Creating and maintaining a system to track impacts of covered activities and progress toward the biological goals and objectives (see Section 7.10, *Annual Reporting*).
- Ensuring that conservation actions are being implemented proportional in time and amount to the impacts on covered species habitat authorized under the Plan (see Section 7.6, *Stay-Ahead Provision*), including land acquisition to comply with the Stay-Ahead provision (see Section 7.2.1.2, *Real Estate Activities*, and Section 7.5, *Process for Acquiring Reserve System Lands*).
- Responding to and processing requests for coverage under the HCP by local entities other than the HCP Permittees (see Section 7.4, *Participating Special Entity*).
- Performing the periodic fee assessments described in Chapter 8, *Costs and Funding*, and making and distributing these adjustments.
- Preparing and submitting the HCP annual report to USFWS (see Section 7.10, *Annual Reporting*).

7.2.1.2 Real Estate Activities

The City will take the following actions regarding real estate transactions for the HCP.

- Either directly or indirectly through a third-party agent, find and purchase Reserve System lands that support the biological goals and objectives and meet the criteria outlined in Chapter 5, *Conservation Strategy*. Identification and purchase of Reserve System lands may be coordinated with local partners, including but not limited to, Thurston County, WDFW, USFWS, local land trusts, or mitigation banking interests.

- Review agreements or contracts of the City, which are designed to meet third-party (i.e., individual landowners seeking permit coverage under the City's HCP and ITP) mitigation obligations.
- Review their own proposals to bank land for mitigation purposes for City and Port projects and for third-party mitigation requirements.
- Review mitigation land proposals by third-party landowners seeking coverage under the HCP and ITP with the intention of donating mitigation land to the City instead of paying the habitat conversion fee.

7.2.1.3 Implementing Authority

Once the HCP is approved and the ITP is issued the City will update its permitting process to implement the HCP. These updates may include revisions to the CAO.

The City will adopt the Plan by ordinance or other appropriate binding legal mechanism necessary. The City will also review and adapt other local regulations, as appropriate, to implement the HCP and ensure alignment between the HCP and other local land use policies and regulations.

7.2.1.4 Land Management Activities

The City is responsible for the implementation of all land management activities on Reserve System lands. This includes activities described in Section 5.5, *Conservation Actions*. The activities may also be contracted out or completed by a third party (e.g., non-profit organization), and compatible uses may be allowed by the City as defined in conservation easements or other land use agreements. In all cases, the City will have ultimate oversight of the completion of management activities.

7.2.1.5 Monitoring and Reporting Activities

The City is responsible for the development and implementation of a monitoring program, as described in Section 6.2, *Purpose of Monitoring Program*; Section 6.3, *Compliance Monitoring*; and Section 6.4, *Effectiveness Monitoring*. The monitoring program will track *compliance* and the *effectiveness* of the conservation actions at achieving the biological goals and objectives. The results of the monitoring program will be summarized at least annually, as described in Section 7.10, *Annual Reporting*. The Port will provide information to the City regarding the implementation of covered activities on Port lands and compliance of those covered activities with the HCP and ITP, including implementation of conservation actions described in Chapter 5, *Conservation Strategy*, once each covered activity is complete. This will allow real-time tracking of the Stay-Ahead provision. The City will create and submit an annual report to USFWS on a calendar year basis (see Section 7.10, *Annual Reporting*).

7.2.2 U.S. Fish and Wildlife Service

USFWS will oversee the HCP Permittees' implementation of the HCP and accompanying ITP. Specifically, the City and Port may request USFWS to do the following.

- Provide technical assistance on land acquisition and management activities on Reserve System lands if assistance is sought by HCP Permittees.

- Receive and review annual reports or other compliance or effectiveness reporting to verify that the HCP Permittees are properly implementing the Plan.
- Confirm that purchase of mitigation bank credits or land in lieu of habitat conversion fee arrangements is consistent with the ITP (see Section 7.7, *Alternative Means of Mitigation*).
- Respond to requests for Plan changes, consistent with the process described in Section 7.12, *Modifications to the Plan*, and consistent with permit regulations in place at the time of the request.

7.2.3 Federal Aviation Administration

The FAA is expected to continue to provide funding for some covered activities at the Airport. Any project with a federal lead agency or federal involvement (e.g., a federal permit, federal funding, or a project on federal land) must obtain their take authorization through a federal consultation under ESA Section 7 (Section 1.3.1.4, *Endangered Species Act Section 7*). Therefore, FAA will still have an obligation to consult with USFWS on a subset of covered activities at the Airport.

When practicable, the FAA may adopt the HCP as a biological assessment, if the federal activity is to be implemented consistent with the HCP, and USFWS may expedite consultation by adopting the biological opinion on HCP permit issuance, when appropriate. The process for that regulatory interaction is described in Section 1.3.1, *Federal Endangered Species Act*. To the extent allowable under ESA Section 7 regulations, the biological opinions issued by USFWS to authorize incidental take for those covered activities will be consistent with the conservation strategy of this HCP. The Port and the FAA work in partnership to implement and support Airport operations, so whenever the FAA is engaged in HCP-related work, the Port will have a role in managing their responsibilities with FAA under ESA Section 7 and other FAA authorities, concurrent with their responsibilities to the ITP under ESA Section 10.

7.3 Covered Activity Application Process

Project proponents seeking coverage under the Plan for their projects will apply by submitting an HCP application package to the City.⁴⁷ Covered activities implemented by the Port inside the Airport air safety zone are not subject to the HCP application process. In those locations, the Port will be solely responsible for compliance with the HCP and ITP and will report compliance to the City once covered activities are complete, for inclusion in the annual reports. The City and Port will also coordinate on upcoming estimates of covered activities, on a quarterly and annual basis, in order to be prepared for future mitigation needs.

A checklist for evaluating applications will be developed by the City prior to ITP issuance. Projects that are covered by the Plan will be required to comply with all relevant terms and conditions of the Plan as summarized by the following.

- Compliance with all relevant avoidance, minimization, survey, monitoring, and mitigation measures.

⁴⁷ While participation under the HCP is strongly encouraged, private entities may pursue their own ITP with USFWS.

- Allowances for the City to monitor the project proponent's compliance with all applicable conditions of the Plan.
- Allowances for USFWS to monitor the project proponent's compliance with all applicable conditions of the Plan, if USFWS chooses to do so.

Before take authorization is granted, the City will prepare a written determination of the project's consistency with the Plan, including any additional conditions of approval that have been imposed. See Chapter 8, *Costs and Funding*, for required fees, payment schedule, and the potential for project proponents to use credits from mitigation banks or land dedication in lieu of habitat conversion fee payment.

For projects that propose a land dedication in lieu of a habitat conversion fee payment, it is necessary to comply with Section 7.7.2, *Land Dedication by Project Proponents*, including City approval of a land dedication agreement between the proponent and the City. The determination to accept a land dedication in lieu of a habitat conversion fee payment is made by the City.

7.3.1 HCP Application Package

This section describes the minimum requirements of the HCP application package that will be submitted to the City. Additional details of the HCP application package will be determined during the early stages of HCP implementation. The City will provide, within the first 6 months of implementation, a template HCP application package for project proponents to follow. The template will be available in the same locations other City permit templates or forms are available.

The HCP participation package must contain the following items.

- **Item 1: Project Application Form.** This form provides basic contact information for property owner, project proponent, and agent, including, but not limited to, zone district, Comprehensive Plan land use designation(s), existing land uses, existing and proposed infrastructure, and project location information; a project description; and other pertinent information for coverage under the Plan.
- **Item 2: Project Description and Site Plan.** This is a comprehensive project description and project site plan to scale, with the surveyed locations of permanent and temporary effects shown on the project site plan. A vicinity map to scale will also be provided.
- **Item 3: Determination of Covered Species Habitat.** The mapped project location will need to be assessed for habitat modification. The acres and type of covered species habitat within the project parcel will be disclosed in the application based on the covered species modeled habitat at the time of application submittal. This will be done with an GIS overlay (using a web-based tool/geo-browser) of the project footprint on modeled covered species habitat. The habitat conversion fee will be calculated based on the acres of covered species habitat impacted within the parcel, up to but not exceeding, the total size of the parcel. This will be done in two ways:
 - *GIS Habitat Models.* The HCP GIS data, which utilizes the habitat suitability models (Section 2.6, *Covered Species Accounts*), shows where covered species habitat occurs, can be used to determine the extent of covered species habitat on the parcel(s).
 - *Field Verification.* A field verification completed by a qualified biologist, in accordance with the City's CAO for surveys of the land cover and soil types present on a project site, to verify the presence and extent of covered species habitat. The City will review the field survey

information provided by the project proponent and determine if that survey information is sufficient.

- **Item 4. Calculation of Habitat Conservation Fee.** Once the extent of covered species habitat on the parcel is established, the City will calculate the habitat conservation fee by determining the overlap between the project footprint and covered species habitat, and then multiplying the total acres of impact by the habitat conversion fee (see Chapter 8, *Costs and Funding*). Fees only apply to the amount of modeled habitat on-site, not the entire parcel size, regardless of habitat changes that may have occurred since the model was developed. Depending on the development type, habitat(s) present, size of the parcel and where the project will be located within that parcel, there are four potential scenarios.
 - *Construction of Additions or Accessory Structures.*⁴⁸ For construction of additions to existing structures or the construction of accessory structures, the habitat conservation fee will be multiplied by the actual footprint of covered species habitat lost or disturbed, regardless of parcel size. For example, construction of an accessory structure that results in the loss of 0.2 acre of covered species habitat is multiplied by the per acre habitat conservation fee.
 - *New Development on Parcels 1.0 Acre or Less.* For projects on parcels of 1.0 acre or less, any habitat loss will be considered a total loss, because any habitat remaining on that parcel is assumed to be functionally lost for the covered species. In those instances the habitat conversion fee will multiplied by the total amount of covered species habitat in the parcel regardless of the proportion of the parcel that is comprised of habitat. For example, if a project occurs on a 0.6-acre parcel with 0.6 acre of covered species habitat, but the project will only convert 0.3 acre of covered species habitat, the habitat conversion fee will be calculated on the full 0.6 acre, because the remaining 0.3 acre of the parcel covered species habitat is assumed to be functionally lost to the covered species.
 - *New Development on Parcels Larger than 1.0 Acre.* For parcels that are larger than 1.0 acre, the habitat conversion fee will be applied to the total acres of covered species habitat lost from the covered activity, with a minimum of 1.0 acre used to calculate the habitat conversion fee. For example, if there are 1.4 acres of habitat loss calculated on a 2.0-acre parcel, the habitat conversion fee will be applied to 1.4 acres. However, if there is only 0.6 acre of habitat loss on the 2.0-acre parcel, the habitat conversion fee will be applied to 1.0 acre, as a minimum requirement. The area of impact includes the entire project footprint, which includes, but is not limited to, all areas of ground disturbance, construction, access roads, utilities, staging areas, parking, and areas of landscape.
 - For parcels that have no habitat, or where the covered activity avoids species habitat, no habitat conversion fee will be required.
- **Item 5: Mitigation Approach.** Documentation of the mitigation approach taken by the project proponent. Options include paying the habitat conversion fee or other mitigation alternatives as described in Section 7.7, *Alternative Means of Mitigation*.

⁴⁸ TMC 18.03 defines “Accessory building, structure, use” as the use of land, a subordinate building or structure, or a portion of a principal building or structure, as being secondary or incidental to a permitted use, building, or structure.

7.3.2 Oregon Spotted Frog Permit Review

The Oregon spotted frog (*Rana pretiosa*) habitat screen encompasses all areas used by Oregon spotted frog in the Plan Area. However, the screen does include non-habitat areas in addition to a mix of known and potential habitat for the species. During implementation, prior to any covered activity that occurs within the Oregon spotted frog habitat screen, an on-the-ground Oregon spotted frog habitat verification will be completed (see Appendix G, *Oregon Spotted Frog Habitat Screen*, for review process).

Permit applications and City maintenance activities that overlap the Oregon spotted frog screen will be processed as follows.

1. When a permit application is submitted or City maintenance activity is conducted, the City will identify projects that lie within the Oregon spotted frog habitat screen using desktop GIS analysis as well as aerial imagery.
2. Using application materials, aerial imagery, and GIS, the City will determine whether the project may be in modeled habitat. If so, it will require an on-site Oregon spotted frog habitat screening.
3. If a project cannot be excluded from modeled habitat by desktop analysis, a field evaluation will be conducted by a qualified professional and verified by the City.
4. If Oregon spotted frog habitat is present, a habitat protection plan will be submitted in accordance with TMC 16.32.090. The habitat protection plan will contain the following information as a minimum as required by TMC 16.32.090 and will be subsequently used as part of the environmental review process and is a condition of approval for discretionary permit(s) and/or construction permits.
5. A description of the nature, density and intensity of the proposed development in sufficient detail to allow analysis of such land use change upon Oregon spotted frog habitat.
6. The applicant's analysis of the effect of the proposed development on Oregon spotted frog.
7. A plan by the applicant which will explain how they will mitigate any adverse impacts created by the proposed development.
8. Proposed building locations and arrangement.
9. A site plan that includes:
 - a. A complete and accurate legal description as prescribed by the development application form. The description shall include the total acreage of the parcel;
 - b. Title, scale and north arrows; and
 - c. Date, including revision dates if applicable.
10. Existing structures and landscape features including the name and location of all watercourses, ponds and other bodies of water.
11. Possible mitigation measures may include, but are not limited to:
 - a. Establishment of buffer zones;
 - b. Enhancement that may include invasive plant management and establishment of native plants to benefit frogs in aquatic habitat and buffer areas;

- c. Preservation of critically important plants and trees;
- d. Limitation of access to habitat area; and
- e. Seasonal restriction of construction activities.

7.4 Participating Special Entity

A participating special entity (PSE) is an individual or entity that does not require a permit or approval from the City, but who voluntarily requests take coverage under the HCP and associated ITP. PSE projects will be the same in type, scope, and scale as other covered activities that are described in Chapter 3, *Covered Activities*, and covered by the HCP and permits. The City has discretion whether to allow a PSE to utilize the HCP and ITP for take coverage. The PSE's proposed approach must also be consistent with the Plan.

An example of a potential PSE is the LOTT Clean Water Alliance, which owns property within the Permit Area. For their capital projects, LOTT would go through the City permitting process just as any developer would for activities that fall under the Urban Development covered activity category (Section 3.4.2, *Urban Development Projects*). However, operations and maintenance activities conducted by LOTT, which are the same as those described in Section 3.4.4.2, *Public Services, Infrastructure, and Utilities*, would not require a permit from the City and would thus not fall under City control. In order to receive take coverage under the HCP, LOTT would request coverage as a PSE.

To obtain project or activity coverage under the Plan as a PSE, the PSE applicant must submit a complete HCP application package (see Section 7.3.1, *HCP Application Package*) for the proposed activity directly to the City. The HCP application process is otherwise no different from any other project. The City will create a contractual agreement with the PSE to ensure the terms and conditions of the HCP and ITP are implemented properly.⁴⁹ The City will include a list of any PSE agreements in the annual report and include any authorized habitat loss and mitigation with the summary for the year in which the effects occur.

7.5 Process for Acquiring Reserve System Lands

The process for acquiring lands for the Reserve System, whether in fee title or through conservation easements, will follow the steps listed below. These steps are also illustrated in Figure 7-1, *Land Acquisition Process*. The City or their designees/partners will pursue land acquisition either independently or jointly generally following these steps.

The City will have the role of acquiring most Reserve System lands because most of the covered activities are under the City's jurisdiction. When the Port conducts covered activities on Port lands, the Port may opt to simply submit an HCP application package for the project and pay the habitat conversion fee for the loss of covered species habitat affected by the project (see Chapter 8, *Costs and Funding*, for details on the habitat conversion fee).

⁴⁹ Typically this is done using a Certificate of Inclusion as described in the HCP Handbook (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016).

The Port may on other occasions opt instead to buy mitigation lands to offset habitat loss from projects on Port properties or require developers on Port properties to provide mitigation in an alternate way, as described in Section 7.7, *Alternative Means of Mitigation*. The most likely scenario where this may occur is when Port projects affect habitat for streaked horned lark. At present, no City covered activities conducted outside of Port-owned properties are likely to affect habitat for the lark, so the City and its partners may not have acquired Reserve System lands suitable for this species. For the Port to affect habitat for larks enough mitigation land to fully offset those impacts would be secured prior (see Section 7.6.1, *Stay-Ahead Provision for Streaked Horned Lark*, for details on the development of an initial 100 acres at the Airport for the exception to this) to the projects being developed, or provide funding to the City to support Reserve System land acquisitions that include habitat for those species, so Port projects are not delayed waiting for the City to find suitable mitigation land.

7.5.1 Step 1: Site Identification

The City and, when necessary, the Port or third-party contractors will identify sites that have the potential to meet acquisition requirements to support suitable and occupied habitat for covered species. They will use the guidelines in Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*, and covered species habitat model in Chapter 2, *Physical Setting, Land Use, and Biological Resources*, to inform the land acquisition and the Reserve System assembly process. Land acquisition can occur throughout the Plan Area, though most acquisition activities will be concentrated where occupied habitat or habitat with a high potential for occupancy for the covered species exists.

7.5.2 Step 2: Pre-Acquisition Assessment

The City and, when necessary, the Port or third-party partner will approach property owners to explain the potential interest in acquiring land through conservation easement or fee title. With the property owner's permission, the City, Port, or third-party partner will conduct a pre-acquisition assessment of the site to evaluate whether the site is likely to meet Plan requirements. Types of information collected during these assessments will include an evaluation of location, quantity, quality, and presence of covered species and their habitat, as well as other site conditions or infrastructure that would benefit or conflict with the Plan's biological goals and objectives. The site's restoration and enhancement potential will also be assessed. The same pre-acquisition assessment will be conducted for land dedications (fee title or conservation easement) proposed by a property owner in lieu of a habitat conversion fee payment (see Section 7.7.2, *Land Dedication by Project Proponents*), or as a gift or charitable contribution. The City will develop standard protocols and report template for pre-acquisition assessments to streamline the assessment process.

7.5.3 Step 3: Site Prioritization

The City, and when necessary, the Port or third-party contractors, will determine if the site meets the criteria for Reserve System lands and will rank the site compared to other available sites based on cost, contribution to meeting Plan acquisition commitments, helping to achieve the biological goals and objectives, and consistency with the Reserve System design principles (Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*).

The biological suitability of the site for the Reserve System will be determined based on the following information.

- The results of past biological surveys (if available), updated land-cover mapping, assessments of habitat suitability for covered species, air photograph interpretation, and the biological resources present or expected on the site.
- An evaluation of the site's enhancement and restoration potential.
- An evaluation of the site's existing and potential biological value in the context of the remaining unmet biological goals and objectives and land acquisition requirements.
- The presence of covered species habitat as needed to meet protection commitments specified in Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*.
- Proximity of the site to current or future Reserve System lands.

7.5.4 Step 4: Acquire Land

The City or a third-party partner will acquire land in fee title or conservation easement that satisfies the requirements described in Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*. Before making an offer on the property, the City will conduct an independent appraisal of the property to determine fair market value and any additional assessment(s) requested for legal purposes or as requested by potential third-party easement holders (e.g., Phase I and II Site Assessments).

7.5.5 Step 5: Reserve Management Plan

The City will prepare a Reserve Management Plan approved by USFWS for the site that is based on site conditions and is consistent with the Plan's conservation strategy and the framework for adaptive management (see Section 5.5.1.5, *Reserve Management and Enhancement*). Since most Reserve System lands will have similar management objectives this will likely be an amendment to the Reserve System-wide Management Plan described in Section 5.5.1.5, *Reserve Management and Enhancement*. The Reserve System-wide Management Plan and the specific amendment incorporating the individual Reserve System property will be referenced in the conservation easement, linking the Reserve System-wide Management Plan to the conservation easement in the event that the property changes ownership.

If a Reserve Management Plan that applies to the site has already been prepared according to Section 5.5.1.5, *Reserve Management and Enhancement*, the City will reference the Reserve Management Plan in the conservation easement and will record simultaneously with the conservation easement a Memorandum of Unrecorded Reserve Management Plan, indicating where that Reserve Management Plan may be found. Such a title record ensures that the Reserve Management Plan will be tied to the conservation easement in the event property ownership changes. This would only occur in situations where continuous lands are acquired but conservation easements are executed in stages over time.

Warmer annual average temperatures and large year-to-year and decade-to-decade variations in precipitation, trending towards wetter winters and drier summers, are expected to continue during the permit term due to climate change (Mauer et al. 2015). These temperature and precipitation variations can make it challenging to maintain habitat conditions that are suitable for the covered

species on conservation lands. Management plans will need to be flexible to allow changes in restoration and management techniques based on new climate and monitoring data. For example, a prairie restoration seed mix may need to be adjusted to include more drought-tolerant plants, or water levels in a wetland that supports Oregon spotted frogs may need to be maintained by grading lower site contours or using adjustable weirs.

Management plans will include site-specific performance criteria, a schedule for achieving habitat targets, monitoring plans, the amount of functional acres currently and potentially available on the site, and adaptive management provisions. The management plans will also identify roles and responsibilities for permanent site management.

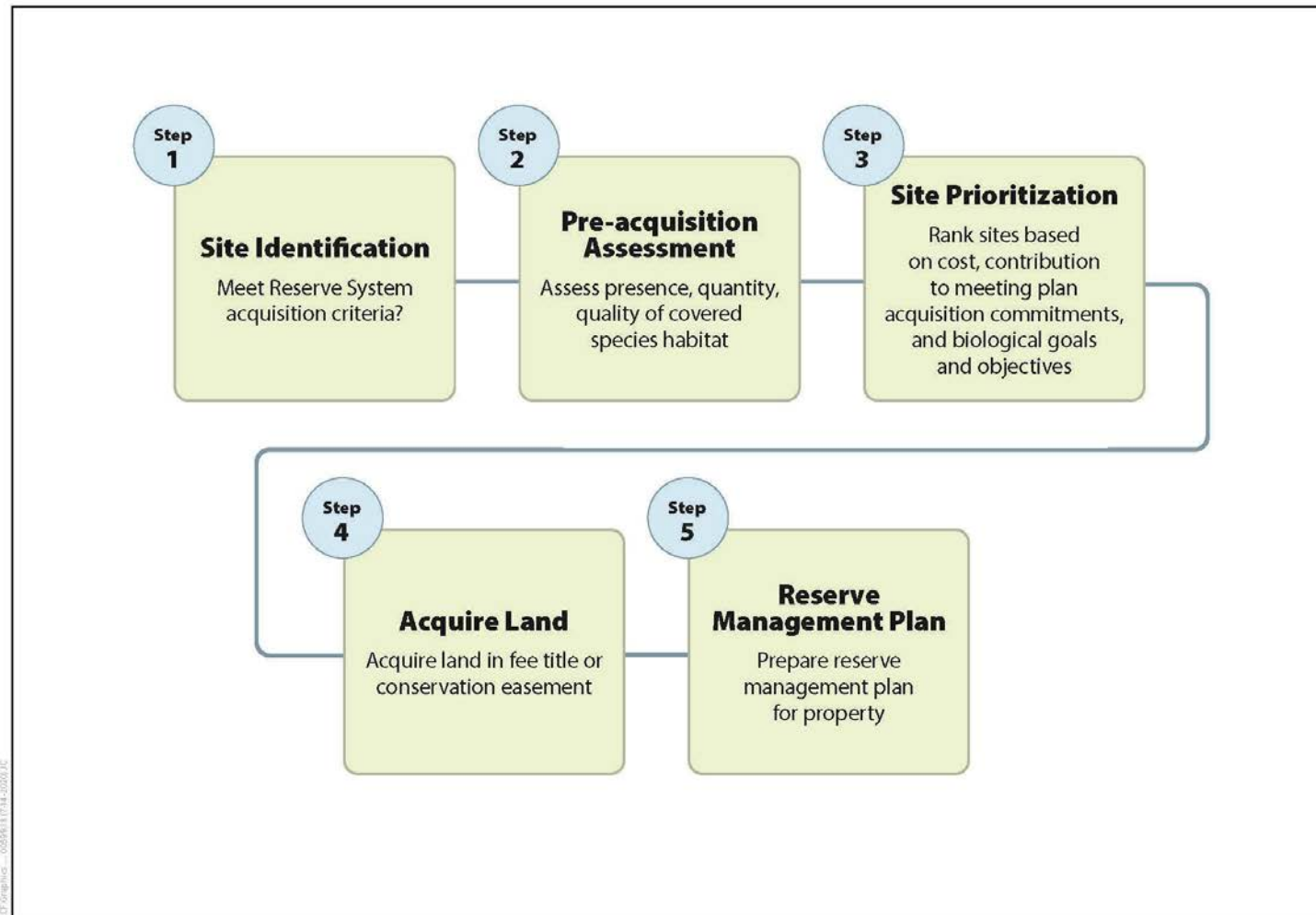


Figure 7-1
Land Acquisition Process

7.6 Stay-Ahead Provision

The ESA requires that HCPs minimize and mitigate the impacts of taking to the maximum extent practicable (ESA Section 10(a)(2)(B)(ii)). In order to conclude that the proposed impacts are mitigated to the maximum extent practicable, USFWS will consider temporal losses (if any) resulting from the time of impact relative to the time of mitigation. Temporal losses are losses of habitat function and value that may occur if there is a delay between impacts and mitigation. These potential temporal losses and effects on the covered species are described in Chapter 5, *Conservation Strategy*, Section 5.6, *Benefits to Covered Species and Net Outcomes*. The Stay-Ahead provision is designed to balance the practical limitations of land acquisition under this program and the need to ensure that mitigation occurs at roughly the same time as the impacts to the covered species.

The City will acquire Reserve System lands primarily from fee revenue collected from project proponents. The City will make every attempt to acquire Reserve System lands in advance or at the same time as impacts. However, in some cases, the land acquisition process may lag behind impacts due to the complexity and unpredictability of land transactions and the need to collect the HCP fee revenue prior to closing a transaction. This will be particularly true for large land transactions, which will need fee revenue from multiple projects that occur at different times. Applying the Stay-Ahead provision as described below, the Permittees will minimize the temporal losses associated with the impacts from covered activities and ensure that the Reserve System is assembled in a timely manner relative to impacts.

Metrics used for calculating and balancing impacts and mitigation for each of the covered species to meet the goals and objectives of the HCP are described in Chapter 5, *Conservation Strategy*. The City will acquire the Reserve System lands through purchase of land in fee title or permanent conservation easement (see Section 7.5, *Process for Acquiring Reserve System Lands*, for details) or through purchase of mitigation credits (see Section 7.7.1, *Purchasing Credits from Species Mitigation Banks*). The Stay Ahead provision requires land acquisition or accrual of mitigation credits to occur prior to or at the same time as the impact except as noted below or where Section 7.6.1, *Special Stay-Ahead Provision for Streaked Horned Lark* applies.

When Plan implementation begins, the Permittees will be establishing its structure, collecting implementation fees, and pursuing land acquisitions. To allow time for these start-up tasks to occur, the Stay Ahead provision will not apply during the *[to be completed]*. *[USFWS and the City and Port are engaged in parallel discussions at the same time review of the first public draft of the HCP is occurring to address how the necessary mitigation fees will be collected and mitigation lands acquired during the first two to three years of the HCP]*. After this time, the Permittees will ensure compliance with the Stay Ahead requirement by showing that at the end of each calendar year the amount of each covered species habitat protected, restored, or created by the Permittees as a proportion of the total requirement for each covered species habitat is equal to or greater than the take impacts on that community and constituent habitat as a proportion of the total take impacts authorized for all covered activities.

The Stay-Ahead provision will be tracked by the City on a continual basis but will be reported to USFWS annually in the annual report. The compliance point for the Stay-Ahead provision will be at each annual report deadline, described in Section 7.10, *Annual Reporting*.

The one exception to this rule is the beginning of the ITP term. It will take time for the City to acquire the first properties of the Reserve System because the City will need time to accumulate funds from HCP fees, negotiate with landowners to acquire land, and ensure that the land purchased is improved to provide the necessary level of conservation value. To allow time for these start-up tasks to occur, the Stay Ahead provision will not apply *[to be completed]*. Therefore, compliance with the Stay-Ahead provision will first be measured and reported for compliance at the *[to be completed]* annual report, which will follow the *[to be completed]* full calendar year of HCP implementation. This will allow the City the necessary time to accumulate funds from HCP fees during early plan implementation, acquire the first properties for the Reserve System, and ensure that those properties provide the necessary conservation value for the covered species.

The City expects land transactions to proceed more slowly in the first year or two of the Plan as local landowners learn about the opportunity and as the City refines its land acquisition process. The first several land transactions by the City are likely to facilitate and motivate additional transactions, which are expected to proceed more quickly over time.

To provide flexibility during implementation, under the Stay Ahead provision, the Permittees may fall behind its Reserve System assembly requirement for covered species by a maximum of ten percent for limited periods and remain in compliance with the Stay Ahead provision. The allowance for up to a ten percent deficit from the Stay Ahead requirement for limited periods accounts for the likely pattern of relatively infrequent land acquisition of parcels that provide mitigation for more than one Covered Activity. The Permittees will most likely accumulate fee revenues from several Covered Activities, as well as other funding, and, in some cases, will temporarily fall behind its land acquisition commitments for purposes of meeting the Stay Ahead requirement. It will also very likely jump ahead of the Stay Ahead requirement once such acquisitions are completed.

The Permittees will not fall behind in protection, restoration, or creation by more than ten percent for each covered species or allow any deficit to continue for a prolonged period. To ensure that there is not a prolonged deficit from the Stay Ahead requirement; the Permittees will not allow a deficit to last for two consecutive years. Specifically, the Permittees will not allow a deficit of any size in any land acquisition or restoration commitment needed to meet the Stay Ahead requirement to exist for any two consecutive years after the initial *[to be completed]*.

Once the ITP ends (i.e., through expiration, suspension, revocation), the Permittees will be held responsible for any outstanding requirements in the ITP and the Plan. In other words, if the Permittees falls behind the Stay Ahead requirement, the Permittees must “catch up” if the ITP expires or is suspended or revoked.

This 10% deviation does not apply in the last five years of Plan implementation in order to ensure that all necessary land acquisition is accomplished before the end of the ITP term.

The Permittees will monitor the status of the Stay Ahead provision throughout Plan implementation and will report the status of the Stay Ahead provision in each annual report, beginning with the *[to be completed]* annual report. USFWS will evaluate compliance with the Stay Ahead requirement annually. If USFWS determines the requirements of the Stay Ahead provision have not been fulfilled, USFWS will so notify the Permittees in writing, and the Permittees and USFWS will meet to develop a mutually agreeable plan of action that will fulfill such requirements, in accordance with the Implementing Agreement.

The mutually agreeable plan of action may include a range of potential solutions, including the following:

- Wait for key pending land acquisition negotiations to close that will bring the Plan into compliance with the Stay Ahead provision.
- Seek to speed delivery of funding sources or partnerships that will enable more land acquisition to bring the Plan into compliance with the Stay Ahead provision.
- Purchase appropriate credits from an approved conservation/mitigation bank.
- Further pursue interest from key landowners who may be willing to sell and/or dedicate land to the Permittees that would enable compliance with the Stay Ahead provision.
- Change the manner in which the Plan is implemented to increase direct acquisition of land by the Permittees rather than relying on partnerships, or shifting the Permittees' budget allocations to place a higher priority on land acquisition.
- Accelerate the process for being able to count land already acquired against Stay Ahead requirements by, for example, recording conservation easements more quickly.
- Encourage project proponents to provide land in lieu of implementation fees.
- Require developers to provide their own mitigation land(s) when submitting request for take coverage under the HCP.
- Find other sources of funding for the HCP to purchase additional Reserve System lands so that the Plan can get back into compliance or even provide advance mitigation.

Stop issuing take authorization until the Stay-Ahead provision is again met. If a project developer determines take authorization is required, the developer would work directly with USFWS, as the HCP option would not be available. This Stay-Ahead provision will ensure that assembly of the Reserve System stays generally consistent with the timing of impacts, and that the City is making steady progress toward completing the Reserve System in proportion to impacts. In order to plan for future mitigation needs, the Permittees will use annual estimates of covered activities and effects on covered species habitat to forecast Reserve System lands needed to comply with this provision.

7.6.1 Special Stay-Ahead Provision for Streaked Horned Lark

Covered activities at the Airport will result in effects on streaked horned lark that may be detrimental to the only occupied site in the Thurston County. Therefore, care must be taken early in the permit term to ensure that too much habitat is not removed before sufficient mitigation habitat can be acquired to mitigate any effects of habitat loss. Because the Airport is currently the only known location of streaked horned lark in the Permit Area, offsetting the impact from loss of habitat will need to be accomplished through the protection and management of mitigation lands large enough (up to 300 acres in size, but in some instances may be as small as 150 acres in size, depending on the viewshed of the potential acquisition parcels, as detailed in the *Draft Recovery Plan for the Streaked Horned Lark* (*Eremophila alpestris strigata*) [U.S. Fish and Wildlife Service 2019]); there is no minimum size threshold if the site can be shown to sustain an average of 20 nesting pairs for a period of 3 consecutive years. Further, for mitigation land to count for streaked horned lark, it must also be occupied by the species due to the rarity of occupied nesting habitat in the Plan Area.

It is assumed that attracting streaked horned lark to a new nesting area will take time. This will be challenging because habitat loss at the Airport will precede the ability to obtain mitigation credit.

Receiving mitigation credit and subsequent increased operational flexibility will not be realized until a suitable site is protected and performance standards are achieved.

Because of the unique circumstances of having only one known population of streaked horned larks in the Plan Area, a special provision is provided to the City and Port in the HCP allowing ample time to collect HCP fees on streaked horned lark habitat. These funds can then be used to acquire Reserve System lands suitable for streaked horned lark mitigation.

In order to collect these funds, some impacts will need to occur prior to having a mitigation site that is large enough to meet the species habitat criteria and is occupied. To accommodate these challenges the City and Port are allowed to accrue up to 100 acres of habitat loss in streaked horned lark habitat before having a suitable streaked horned lark mitigation site as part of the Reserve System (Appendix F, *Streaked Horned Lark Memorandum*). During this interim period, the Airport will use a program of monitoring and BMPs to maintain a baseline of nesting larks in the Airport population (see Chapter 6, *Monitoring and Adaptive Management*).

If a streaked horned lark mitigation site is acquired, occupied, and meeting performance standards, the 100-acre cap on habitat loss will be lifted and the program to maintain the number of larks in the Airport population can be terminated. If the City and Port reach 100 acres of permanent habitat loss and a streaked horned lark mitigation site has not been acquired, then no more permanent streaked horned lark habitat loss will be permitted until an adequate mitigation site(s) has been acquired and the program to maintain the number of larks in the Airport population must be also be continued.

7.7 Alternative Means of Mitigation

If project proponents seeking HCP and ITP coverage can provide alternate mitigation to demonstrate compliance with the HCP, they can either provide proof that they have purchased credits at a USFWS-approved mitigation bank or provide or set aside land in lieu of a habitat conversion fee that the City deems appropriate to mitigate the impacts the proposed project will have on covered species. Under all scenarios for project applicants seeking HCP coverage, the HCP defines the minimum standards for mitigation and the approach to quantifying mitigation to offset individual covered activities. Alternative means of mitigation will not be used to negotiate lower mitigation ratios, or non-permanent mitigation options. Land dedicated in lieu of habitat conversion fees must be occupied by the species at the time of dedication; protected under a conservation easement; have permanent monitoring, management, and adaptive management funding through the measures described in Chapter 8, *Costs and Funding*; and be a new conservation commitment as opposed to existing City, county, state, federal, or private land-use commitments. However, the HCP is not to be read to require a project applicant to provide mitigation disproportionate to project impacts.

7.7.1 Purchasing Credits from Species Mitigation Banks

Any mitigation bank⁵⁰ that is intended for use to mitigate effects on federally listed species must be reviewed and approved by USFWS, and sometimes other state or federal agencies. A mitigation bank performs the functions listed below.

1. Provides certainty of pre-approved compensation lands.
2. Provides for long-term protection and management of habitat.

Credits sold by mitigation banks for the covered species⁵¹ with service areas that overlap the Plan Area can be utilized by the HCP Permittees to meet the mitigation needs outlined in the HCP if they are generally consistent with the conservation, monitoring, adaptive management, and other relevant provisions of the Plan.

For the mitigation bank to be eligible to sell credits to project proponents with activities covered by the Plan, the bank must meet all relevant standards of habitat management, adaptive management, and monitoring that are outlined in Chapter 5, *Conservation Strategy*, and the individual project must be an HCP covered activity in the Permit Area and in the bank's service area.

Mitigation bankers wishing to establish a bank that can be utilized by the HCP Permittees must notify USFWS to allow consideration of such provisions during bank development and agency review. Bankers must also coordinate closely with the HCP Permittees to help ensure the bank's consistency with the Plan. It is plausible that the HCP Permittees would develop a mitigation bank, but more likely that a third-party entity would develop the bank and the HCP Permittees would utilize the bank credits.

7.7.2 Land Dedication by Project Proponents

Some project proponents who wish to develop properties in the Plan Area may own properties in the Plan Area that can help meet the biological goals and objectives of the Plan. Dedicating or placing a conservation easement on these lands may be used to address a project's incidental take potential. Project proponents that own land within the Plan Area may wish to transfer or place a conservation easement on all or a portion of their property to address development elsewhere, or to address development on the remaining portion of their property. In other cases, project proponents may prefer to acquire their own mitigation lands within the Plan Area and dedicate these lands to the HCP Permittees in lieu of a portion of habitat conversion fees.

7.7.2.1 Criteria for Project Proponents Providing Land

Land may be provided to address a project's incidental take potential, if it meets the conditions listed below.

⁵⁰ A *mitigation bank* is privately or publicly owned land that is managed for its natural resource values. Mitigation banks may sell species credits, wetland credits, or both. The bank sells credits to private or public project proponents to offset their impacts, and the money is used to improve and maintain the resources. In exchange for permanently protecting the land, the bank operator is allowed by USFWS to sell species credits to project proponents who need to satisfy legal requirements for compensating for the impacts of projects that affect listed species or their habitat.

⁵¹ Mitigation banks for listed species are often called *conservation banks*.

1. The land meets the criteria for Reserve System lands in Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*.
2. Adding the lands to the Reserve System will contribute to achieving the biological goals and objectives of the Plan.
3. Dedicated lands must have a minimum of 20 contiguous acres or be adjacent to other Reserve System parcels that collectively total at least 20 acres in size, unless the City and USFWS approve a land dedication of less than 20 acres. Exceptions to the 20-acre minimum will only occur in instances where the dedicated land has one or more of the following characteristics.
 - a. Includes occupied Olympia pocket gopher habitat
 - b. Is adjacent to a parcel that is already part of the Reserve System
 - c. Is deemed otherwise valuable to the Reserve System by the City and USFWS.
4. The City approves the transaction.
5. The City and the project proponent enter into a land dedication agreement.

7.7.2.2 Land Proposals by Project Proponents

Project proponents will be required to provide the following information in proposals to dedicate land.

1. Baseline data on the property proposed for dedication that documents their biological value to the Plan, and a description of any existing land-use agreements. This documentation will include an assessment of the City's GIS data or a field verification of habitat conditions during a pre-acquisition assessment.
2. A description of how the land mitigates impacts on covered species, including the habitat type and quality on the affected site and the proposed mitigation site.
3. An explanation of how the site contributes to land acquisition requirements and biological goals and objectives of the Plan.

In addition, the property owner must provide access to the proposed site to allow the City or its designees to verify the pre-acquisition assessment. As part of the pre-acquisition assessment, the City will assess whether and how the proposed site meets the criteria for the Reserve System in Section 5.5.1, *Conservation Action 1: Establish and Manage a Prairie and Wetland Reserve System*. The City will also consult local land managers when evaluating land in lieu proposals to help determine long-term management and monitoring issues, feasibility, and costs. The project proponents may be required to pay the cost of, or complete other due diligence as needed for acquisition such as Phase 1 or 2 environmental assessments, appraisal, and title report, or may be required to complete this work themselves.

7.7.2.3 Land Dedication Agreement

All land dedications in lieu of payment of a portion of the habitat conversion fee will require a land dedication agreement between the City and project proponent. The land dedication agreement must be executed, and the lands must be dedicated (i.e., transferred to the City or other land acquisition partner) in accordance with the agreement, before habitat conversion fees are due for the proponent's covered activity. If the project proponent wants to retain ownership of the Reserve

System lands or own the easement, the City must be a third-party beneficiary of the easement in case the project proponent fails to meet the terms of the HCP's conservation strategy. If the project proponent retains ownership of the land and easement, they will also be responsible for management of the property consistent with the terms of the HCP and will need to complete monitoring on the property as described in Chapter 6, *Monitoring and Adaptive Management*.

The land dedication agreement will specify the following.

1. The lands proposed for dedication, including a map of the properties in relation to other components of the Reserve System, or other properties subject to other permanent protections for conservation purposes, including lands acquired through other conservation programs (e.g., land trust acquisitions).
2. A legal description of the land proposed for dedication.
3. The amount of land proposed for dedication.
4. The land's conservation values, as identified in a GIS analysis or pre-acquisition assessment (which may include an on-the-ground assessment), and how the land contributes to assembling the Reserve System.
5. The proposed covered activity subject to the habitat conversion fee for which the credit will be provided.
6. How the land's conservation values contribute to the biological goals and objectives of the HCP.
7. The amount of credit toward the habitat conversion fee that will be provided.
8. Demonstration of funding available to implement management and monitoring responsibilities consistent with the HCP.

7.8 Durability of Reserve System Lands

It will be necessary for the HCP Permittees to demonstrate that the Reserve System lands that are acquired as mitigation under the HCP have durable protection. The most common way of providing that durability is the placement of a conservation easement. Other mechanisms that ensure durability of protection may also be used (e.g., deed restriction). This section focuses on conservation easements because that tool will likely be the most common instrument used.

Conservation easements will be an important tool for the conservation strategy in three ways.

1. Conservation easements will be placed on all land acquired in fee title by the City to secure credit under the Plan. In some cases, after the conservation easement is recorded, the land may be sold to a third party, subject to the terms and conditions of the conservation easement.
2. Conservation easements will be purchased from a property owner and placed on some lands still owned by the property owner (i.e., as an alternative to fee title acquisition).
3. Conservation easements may be placed on some lands in public ownership at the time of ITP issuance (i.e., lands not protected already or not managed for the covered species).

Conservation easements on land may be accepted from private landowners for land in lieu of habitat conversion fees provided they meet the requirements described in Section 7.7.2, *Land Dedication by Project Proponents*. As explained in Section 5.5.1, *Conservation Action 1: Establish and Manage a*

Prairie and Wetland Reserve System, all lands must be permanently protected to be incorporated into the Reserve System and counted toward Plan land acquisition commitment. Permanent protection must be ensured by a conservation easement consistent with the requirements of this section, granted to the City, or by fee title dedication of land with a conservation easement to the Reserve System. For lands owned by the City or Port, permanent protection must be ensured through a conservation easement granted to an appropriate third-party conservation easement holder reviewed by USFWS.

Conservation easements may also be appropriate where a property owner wishes to use the property for a compatible use and the Plan's conservation goals can be met with a conservation easement. All conservation easements and other mechanisms acquired to meet Plan land acquisition commitments will adhere to all of the guidelines below.

1. Be permanent.
2. Be voluntarily offered by the fee title owner of the underlying property.
3. For conservation easements to be effective, participating property owners must abide by the terms of conservation easements. The terms of each conservation easement will address specific site conditions, property owner preferences and operations, and species and habitat needs. Some property owners may wish to reserve a portion of their property for uses that are incompatible with the Plan, such as a home site or a recreational facility with intensive use. In these cases, the conservation easement will either exclude the incompatible site or define the portion of the site in which the incompatible uses are allowed. Where reasonably practicable, the site of the incompatible activity will be excluded from the conservation easement. Only the portion of the site that is compatible with Plan goals and objectives will be counted toward Plan land acquisition commitments.
4. Ordinarily be transferred by the landowner (grantor) to/owned by the City or designee(s) (grantee). Easements would also identify a third-party beneficiary, typically a nonprofit conservation organization. Ownership of conservation easements by one party will contribute to consistency in enforcement, monitoring, and maintenance and will allow a systematic and efficient approach for required conservation and monitoring actions. The City may allow dedication of conservation easements to another conservation organization if the City, USFWS, and property owner approved the organization, and a binding agreement exists between the City and the conservation easement holder to ensure compliance with the Plan and the terms of this section. Conservation easements on land owned by the City or Port must be held by a third-party organization.
5. Include a legal description of the property and map. If the conservation easement boundaries are different from the property boundaries, a legal description and plat map specifically of the boundaries of the conservation easement will be required. A licensed surveyor will prepare the legal description and plat map.
6. Include a description of the specific conservation values that will be protected in terms of covered species and their habitat.
7. Ensure that the property will be kept in habitat condition for covered species, as described in the HCP and subsequent Reserve Management Plan.
8. Will protect existing, enhanced, or restored conservation values on the property consistent with the conservation strategy.

9. Will include or incorporate by reference the means by which the property will be managed and monitored to determine whether biological goals and objectives are being met. An adaptive management plan will also be included or incorporated by reference to define when and how potential changes to management and monitoring may occur in the future.
10. Ensure that the conservation easement cannot be amended without the prior written consent of the City, USFWS, and any other third-party beneficiary.
11. Confine the allowable uses of the property to activities that do not interfere with the preservation or enhancement of the property's conservation values. A list of the allowable uses will be included in the conservation easement.
12. Contain provisions for enforcement and available remedies for the City (and USFWS or third-party beneficiaries to the conservation easement) or appropriate other party if the property owner or third party violates the terms of the conservation easement.
13. Provide for access by the City or their designee(s) (and USFWS or third-party beneficiaries to the conservation easement or its designee) to monitor compliance with the terms of the conservation easement and carry out all applicable management and monitoring requirements described in Chapter 6, *Monitoring and Adaptive Management*.
14. Restrict public access and recreation on the site as necessary to those activities consistent with managing the site as a mitigation property for the covered species. Activities would need to be consistent with the conservation easement and Reserve Management Plan.

7.9 Tracking Compliance

The City will develop a system to track ITP compliance and all other aspects of Plan implementation for which reporting is required. The information will be stored and archived electronically whenever possible. Typical information that will be stored and ultimately provided or summarized in the annual reports to USFWS includes the following.

- Participation packages submitted for covered activities.
- Reports and other documentation related to the screening, selection, and acquisition of Reserve System lands.
- GIS data on all Reserve System lands.
- Extent of loss and protection of covered species habitat.
- The number of times any operations and maintenance activity that results in soil disturbance in covered species habitat (Section 4.4, *Effects on Covered Species*) is implemented. These activities include:
 - Operations and maintenance activities larger than 0.5 acre⁵² (see Section 4.3, *Effects Assessment Methodology*) include the following.
 - City operations and maintenance activities.
 - Maintenance of flood control structures.

⁵² It is assumed that 0.5 acre per year (15 acres for the permit term) of modeled gopher habitat would be lost due to potential permanent habitat loss from facility operations and maintenance activities

- Stormwater system maintenance.
- Bridge and culvert repair activities.
- Port operations and maintenance activities.
 - Erosion and vegetation control.
 - Maintenance of stormwater systems.
 - Maintenance of stormwater conveyance system.
- Monitoring events, including habitat and species monitoring, conservation easement compliance checks, and infrastructure surveys.
- Monitoring schedule for the upcoming calendar year.

7.10 Annual Reporting

The City will prepare an annual report over the permit term that documents HCP implementation, including but not limited to ITP compliance, conservation actions, management measures, restoration measures, and monitoring results. Proper data management, analysis, and reporting are critical to the success of the monitoring and adaptive management program. Data on monitoring methods, results, and analysis must be managed, stored, and made available to the project proponents, decision makers, USFWS, other interested government agencies, and other appropriate parties. A clear reporting procedure is also required for ITP compliance.

The annual reports will summarize the previous calendar year's implementation activities and they will be completed by March 15 following the reporting year. The first annual report will be due on March 15 after first full calendar year of the permit term. Annual reports will require reporting on land acquisition, habitat conversion fee collection, program budget status, including endowments, and habitat management and restoration. An annual report due date of March 15 will allow time for the data from the previous calendar year to be assembled, analyzed, and presented in a clear and concise format.

Annual reports will be submitted to USFWS. The annual report has the following goals.

- Provide the information and data necessary to document Plan implementation, in compliance with all requirements of the HCP, and as anticipated.
- Disclose any problems with Plan implementation so they can be addressed in partnership with USFWS.
- Identify changes to the Plan through adaptive management required to increase the success of conservation actions.

At a minimum, annual reports will include the following information for the reporting year. Some of the data noted in the list will also be presented cumulatively for the ITP term up to that reporting year.

- A list of all covered activities implemented during the reporting period categorized by major activity type (per Chapter 3, *Covered Activities*) and acreage.

- A summary of amount of covered species habitat lost to covered activities during the reporting period and cumulatively.
- A description of protection, management, and restoration measures implemented during the reporting period.
- A reporting period and cumulative summary of the extent of covered species habitat protected, enhanced, and restored.
- An assessment of compliance with the Stay-Ahead provision (Section 7.6, *Stay-Ahead Provision*) and a forecast of expected take and land acquisition needs for the next 2 years based on trends in development over the previous several years.
- An accounting of all revenues received, by type (e.g., HCP habitat conversion fees, grants). Funding from local, state, and federal sources, if any, must be tracked separately. Any habitat conversion fee adjustments must also be reported. Include status of HCP program budget, including size and growth of endowments.
- A summary of Plan costs and expenditures for the reporting period and cumulatively, including contributions to the long-term endowment.
- A summary of management and enhancement measures undertaken in the Reserve System during the reporting period and a discussion of any management issues facing the HCP Permittees.
- A description of monitoring actions undertaken during the reporting period and a summary of monitoring results.
- A description of the adaptive management process utilized during the reporting period, if any.
- A description of any actions regarding changed circumstances, including remedial actions, taken during the reporting year, or expected to be taken in the coming years.
- A description of any unforeseen circumstances that arose and any voluntary responses taken.
- A summary of any administrative changes, minor modifications, or major amendments proposed or approved during the reporting year.

The City is not required to include management and monitoring information from mitigation banks in the annual report. USFWS receives those reports separately as part of the bank's own compliance. The City will need to disclose which covered activities were mitigated for with mitigation bank credits, the number of credits, and proof of credits purchased.

7.11 Assurances

7.11.1 Regulatory Assurances

The HCP Permittees have prepared the Plan and submitted applications for an ITP, in part, to obtain the following assurances from USFWS.

7.11.1.1 Federal No Surprises

The Secretary of the Interior established the federal No Surprises Regulation in 1998. It provides assurances to ESA Section 10 ITP holders that no additional money, commitments, or restrictions of land or water will be required should unforeseen circumstances arise once the ITP is in place. The No Surprises Regulation states that if a Permittee is properly implementing an HCP that has been approved by USFWS, no additional commitment of resources beyond that already specified in the Plan will be required, even if an unforeseen circumstance occurs.

The HCP Permittees request regulatory assurances (No Surprises Assurances) for all covered species in the Plan. In accordance with No Surprises Assurances, the changed circumstances are described in this chapter. The HCP Permittees will not be obligated to address unforeseen circumstances as defined in the HCP but will work with USFWS to address changed circumstances within the funding and other constraints of the Plan should they occur.

The HCP Permittees understand that No Surprises Assurances are contingent on the proper implementation of the Plan and ITP. The HCP Permittees also understand that USFWS may suspend or revoke the federal ITP, in whole or in part, in accordance with federal regulations (ESA Sections 13.27 and 13.28 and other applicable laws and regulations).

Changed and Unforeseen Circumstances

Federal No Surprises Assurances (codified at 50 CFR 17.3, 17.22(b)(5), 17.32(b)(5); 50 CFR 222.307(g)) provide assurances to ESA Section 10 permit holders that, as long as the permittee is properly implementing the HCP and the ITP, no additional commitment of land, water, or financial compensation will be required with respect to covered species, and no restrictions on the use of land, water, or other natural resources will be imposed beyond those specified in the HCP without the consent of the permittee. The No Surprises Regulation has two major components: changed circumstances and unforeseen circumstances. Changed and unforeseen circumstances must be considered and described in HCPs.

Changed circumstances are defined in the No Surprises Regulation as “changes in circumstances affecting a species or geographic area covered by [an HCP] that can reasonably be anticipated by [Plan] developers and the Services and that can be planned for (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to such events)” (50 CFR 17.3). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances, and such measures were provided for in the HCP, the Permittee will be required to implement such measures (50 CFR 17.22(b)(5)(i), 17.32(b)(5)(i); 50 CFR 222.307(g)(1)). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances, and such measures were not provided for in the HCP, USFWS will not require any additional measures beyond those provided for in the HCP, without the consent of the Permittee, provided the HCP is being properly implemented (50 CFR 17.22(b)(5)(ii), 17.32(b)(5)(ii); 50 CFR 222.307(g)(2)).

Unforeseen circumstances are defined as changes in circumstances affecting a species or geographic area covered by an HCP that could not reasonably have been anticipated by Plan developers and USFWS at the time of the negotiation and development of the Plan and that result in a substantial and adverse change in the status of the covered species (50 CFR 17.3). USFWS bears the burden of demonstrating that unforeseen circumstances exist using the best available scientific and commercial data available while considering certain factors (50 CFR 17.22(b)(5)(iii)(C), 17.32(b)(5)(iii)(C); 50 CFR 222.307(g)(3)(iii)).

Under ESA regulations, if unforeseen circumstances arise during the life of the Plan, USFWS may not require additional land or financial compensation or additional restrictions on the use of land, water, or other natural resources, other than those agreed to in the Plan, unless the HCP Permittees consent. Within these constraints, including consent, USFWS may require additional measures, but only under the following circumstances.

1. USFWS proves an unforeseen circumstance exists.
2. Such measures are limited to modifications of the Plan's operating conservation program for the affected species.
3. The original terms of the Plan are maintained to the maximum extent practicable.
4. The overall cost of implementing the Plan is not increased by the modification.

Changed Circumstances

As described above, USFWS will not require any additional conservation or mitigation to address changed circumstances that are not identified in the Plan without the consent of the HCP Permittees as long as the Plan is being properly implemented. *Properly implemented* means the HCP Permittees are implementing or have fully implemented the commitments and provisions of the Plan and ITP. Accordingly, an HCP must identify potential changed circumstances and describe the remedial measures that will be taken to address such circumstances. The HCP Permittees must implement these remedial measures in response to changed circumstances, if they occur, in accordance with the federal No Surprises Regulation. If the HCP Permittees or USFWS becomes aware of the existence of a changed circumstance, that party will immediately notify the other party.

The following changed circumstances can reasonably be anticipated in the Plan Area, but only to the degree defined, after which the circumstances would be considered unforeseen.

1. Covered species delisted.
2. Covered species uplisted.
3. Involuntary loss of Land within the Reserve System

If a changed circumstance occurs in the Plan Area, as defined by these sections, the HCP Permittees will modify their activities in the manner described below to the extent necessary to address the effects of the changed circumstances on the Plan's conservation strategy and will report on their actions to USFWS. The potential costs to implement remedial measures in response to changed circumstances are accounted for in the contingency funds described in Chapter 8, *Costs and Funding*.

Covered Species Delisted

During the permit term, one or more of the covered species may be delisted (i.e., removed from the list of threatened or endangered species). Delisting may occur, for example, due to additional scientific data regarding the genetic distinctiveness or range of the current subspecies of Olympia pocket gopher.⁵³ In other instances, delisting may occur due to successful implementation of conservation actions for the species, including those in this Plan.

⁵³ For example, the Olympia pocket gopher range could be found to be much larger than currently defined, or perhaps several subspecies could be combined with other *Mazama* pocket gopher subspecies, also increasing its known range substantially.

The process to delist a covered species would take several years, so the HCP Permittees would have ample time to evaluate the implications of this decision and plan for it.

Responsive Measures

If a covered species is delisted, the HCP Permittees will take the following responsive actions.

- Confer with USFWS about the implications of the delisting for the Plan. Delisting would remove the prohibition against incidental take of the species.
- The HCP Permittees may determine, after conferring with USFWS, to maintain the Plan as designed, even for the delisted species, because the change in species status does not change the overall conservation strategy being implemented by the HCP Permittees.
- The HCP Permittees may determine, after conferring with USFWS, to prepare an application for a Plan amendment to remove the delisted species, consistent with the requirements in Section 7.12, *Modifications to the Plan*. However, the delisted species would be considered a covered, unlisted species and the Permittees would continue to implement any associated species-specific conservation strategies until a permit amendment, if determined to be warranted, is issued.

Covered Species Uplisted

Over 30 years of Plan implementation, the Olympia pocket gopher may be uplisted from threatened to endangered. Currently, under the ESA 4(d) Rule (Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*), some take of threatened species is allowed to occur, as long as the take does not interfere with survival and recovery of the species. However, if the Olympia pocket gopher were uplisted from threatened to endangered under the ESA, the 4(d) Rule would no longer apply to the species and those activities that were previously allowed without the need for any type of permit coverage, would need compliance through Section 10 for take of the species.

Responsive Measures

If the Olympia pocket gopher were uplisted and the 4(d) Rule would no longer be applicable, no responsive measures would be required. While some level of take from activities is allowed under the 4(d) Rule, they would now need to be permitted before any additional take is allowed. These activities include mowing, disking, and other activities as listed in Section 1.3.1.2, *Endangered Species Act 4(d) Rule for Olympia Pocket Gopher*. However, because these activities are still included as covered activities in the HCP, they would be covered under the ITP in the event the 4(d) Rule would no longer apply. The activities as described in Chapter 3, *Covered Activities*, would be covered under the ITP as well as mitigated as described in Chapter 5, *Conservation Strategy*.

Involuntary Loss of Land within the Reserve System

The County could lose land area within the Reserve System either partially or totally, resulting in the loss of mitigation credit needed to offset mitigation impacts that have already occurred. Loss may result from natural disturbances as discussed in Table 6-5, *Adaptive Management Matrix*.

Responsive Measures

In the event of a loss, the lost Reserve System land value will be replaced in full through commitment of additional Reserve System lands or rehabilitation of the affected site.

7.12 Modifications to the Plan

The Plan and ITP can be modified in accordance with USFWS regulations. Plan modifications are not anticipated to occur on a regular basis. Modifications can be requested by the HCP Permittees or by USFWS. Modifications will fall into one of two categories: corrective revisions or amendments, each of which is described below.

7.12.1 Corrective Revisions and Plan Clarifications

Corrective revisions or Plan clarifications are changes that do not affect the effects assessment or conservation strategy described in the Plan and do not affect the ability of the HCP Permittees to achieve the biological goals and objectives of the Plan. USFWS will be notified when corrective revisions and Plan clarifications occur. These revisions and changes do not require an amendment to the ITP. Examples are listed below.

- Correcting insignificant mapping errors.
- Slightly modifying avoidance and minimization measures.
- Modifying annual reporting protocols.
- Making small changes to monitoring protocols.
- Making changes to funding sources.
- Changing the names or addresses of responsible officials.

To modify the Plan without amending the ITP, the HCP Permittees will submit a written description of the proposed change to USFWS as well as an explanation of why its effects are not believed to be significantly different from those described in the original Plan or analyzed under NEPA. If USFWS concurs with the proposal, it will authorize the modification in writing, and the modification to the Plan will be considered effective on the date of USFWS' written authorization.

7.12.2 Amendments

An amendment is a change in the Plan that may affect the effects analysis or conservation strategy in the Plan. Amendments to the Plan may require an amendment to the ITP through generally the same formal review process as the original Plan and ITP, including NEPA review, FR notices, and an internal ESA Section 7 consultation with USFWS. To obtain USFWS' approval of a proposed amendment, the HCP Permittees must submit the proposed amendment to USFWS in a report that includes a description of the need for the amendment, an assessment of its impacts, and any alternatives by which the objectives of the proposal might be achieved.

Examples of changes that would require an amendment include, but are not limited to, those listed below.

- Addition of new species, either listed or unlisted.
- Increased level or different form of take for covered species.
- Changes to funding that affect the ability of the permittee to implement the HCP.
- Changes to covered activities not previously addressed.

- Changes to covered lands.
- Significant changes to the conservation strategy, including changes to the mitigation measures.
- Extending the ITP term.⁵⁴
- Any other changes in plan implementation that are not described as corrective measures.

7.13 Incidental Take Permit Suspension or Revocation

USFWS has the ability under federal law to suspend or revoke all or part of the permits if the HCP Permittees are not implementing the HCP properly and are therefore out of compliance with the Plan and the ITP (50 CFR 13.27, 13.28). USFWS also has the ability to suspend or revoke all or part of the Section 10(a)(1)(B) permit it issues if continuation of covered activities would appreciably reduce the likelihood of the survival and recovery of a covered species in the wild (50 CFR 17.22(b)(8), 17.32(b)(8)). In the highly unlikely event of such a situation occurring, USFWS will notify the HCP Permittees of the actions they must take, if any, to prevent jeopardy to the species, giving them a reasonable opportunity to implement such actions.

If the permit is revoked, the HCP Permittees will have to fulfill all outstanding mitigation obligations incurred prior to the revocation, including land acquisitions, restoration/enhancement actions, and management and monitoring of the Reserve System lands.

7.14 HCP Discontinuance

The Permittees, either alone or in coordination, could elect to discontinue the Plan as it applies within their respective jurisdictional boundaries. In the highly unlikely event that occurs, the Permittees would coordinate in ensuring a smooth transition. If one Permittee elects to discontinue their participation in the Plan, the remaining Permittee would amend the HCP according to the process described in Section 7.12.2, Amendments, or replace the HCP with a new plan.⁵⁵

If either or both Permittees elects to withdraw from the HCP, the withdrawing Permittee is responsible for completing all mitigation obligations up until the point of withdrawal, including land acquisitions, restoration/enhancement actions, and initiation of permanent management and monitoring of the Reserve System lands. Provisions for management in perpetuity, including funding, must also be established for all Reserve System lands at the time of withdrawal. These obligations must be fulfilled regardless of the status of the Stay-Ahead provision at the time of withdrawal.

After HCP discontinuance, project proponents who require take authorization for any listed species would need to solicit incidental take coverage directly from USFWS.

⁵⁴ Regulations allow an ITP extension for time only as part of a simple approval by USFWS if there is take authorization remaining at the end of the permit term and the HCP Permittees request no other changes to the Plan and ITP.

⁵⁵ If the Port withdraws from the HCP, the City could amend, for example, the HCP to remove all of the Port's remaining covered activities and associated mitigation. If the City withdraws from the HCP, the Port would likely need to replace the HCP with a much smaller plan focused only on the Port's remaining covered activities.

8.1 Overview

This chapter presents estimates of costs to implement the HCP and describes the methods used to estimate the costs and funding needed for the permit term and to continue management after the permit term. This chapter identifies fees and other funding sources that support implementation of the Plan, the funding needed to support ongoing management of Reserve System lands after the permit term ends, and funding adequacy.

8.2 Costs for Plan Implementation

Estimating the full costs of the Plan is an essential step in demonstrating adequate funding to meet regulatory standards. The numerous cost assumptions described in this chapter are based on the conservation strategy outlined in Chapter 5, *Conservation Strategy*, the monitoring and adaptive management program outlined in Chapter 6, *Monitoring and Adaptive Management*, the remedial actions necessary to address changed circumstances in Section 7.11, *Assurances*, and the level of effort needed to administer the HCP, described in Section 7.2.1.1, *HCP Administration*. Costs presented in this chapter are estimated to inform the HCP funding plan. The City has primary responsibility for overall and day-to-day implementation of the Plan. For Plan implementation, the City will annually prepare and approve a budget, based on current information and projections regarding Plan assets, revenues, and expenses.

The major cost categories detailed in this chapter reflect Plan conservation measures and the monitoring and administrative activities required to support those measures. The cost categories are listed below and described in detail in the following subsections.

- Section 8.2.1, *Plan Administration*
- Section 8.2.2, *Establishing a Reserve System*
- Section 8.2.3, *Land Management and Habitat Restoration*
- Section 8.2.4, *Covered Species Translocation Research*
- Section 8.2.5, *Monitoring and Adaptive Management*
- Section 8.2.6, *Contingency*
- Section 8.2.7, *Endowed Costs*

Table 8-1, *HCP Costs (2021 Dollars)*, shows the anticipated cost of each category for this Plan by five year periods and cumulatively for the 30-year permit term. Costs are expressed throughout the chapter in constant 2021 dollars. Summarized cost estimates are generalized predictions of the timing of funding needs. Annual costs will vary over the 30-year permit term, as the Reserve System grows in size and complexity. Actual costs will be assessed at least every five years during Plan implementation, and land cost and other inflation factors will be applied annually to the Plan

mitigation fees to ensure that funding keeps pace with Plan costs (see Section 8.3.1, *Habitat Conversion Fee*).

Management, monitoring, and administrative responsibilities will continue beyond the permit term, although at a somewhat reduced level, as described in Section 8.2.7, *Endowed Costs*. Those costs are estimated as an average annual cost.

To estimate acquisition costs, four scenarios were used to explore different cost outcomes based on different program objectives. The estimates in Table 8-1, *HCP Costs (2021 Dollars)*, present the results for maximizing the amount of high-quality habitat acquired in the program. This scenario reflects the second-highest cumulative 30-year costs of the four scenarios run, second only to the scenario that prioritizes contiguous acquisitions. These costs are based on assumptions and conditions present at the time of analysis. Actual acquisition costs will reflect market conditions at the time of land purchase.

Table 8-1. HCP Costs (2021 Dollars)

	Average Annual Costs	Years 1–5	Years 6–10	Years 11–15	Years 16–20	Years 21–25	Years 26–30	Cumulative 30-Year Costs
Plan Administration	\$57,585	\$302,321	\$302,321	\$302,321	\$302,321	\$302,321	\$302,321	\$1,813,928
Conservation Land Acquisition	\$1,696,443	\$8,482,215	\$8,482,215	\$8,482,215	\$8,482,215	\$8,482,215	\$8,482,215	\$50,893,291
Land Management and Habitat Restoration	\$412,312	\$551,971	\$1,322,901	\$1,914,802	\$2,387,351	\$2,859,899	\$3,332,448	\$12,369,373
Monitoring and Adaptive Management	\$333,460	\$518,679	\$1,379,073	\$1,761,067	\$1,938,032	\$2,114,997	\$2,291,961	\$10,003,810
Olympia Pocket Gopher Research	\$20,000	\$100,000	\$100,000	--	--	--	--	\$200,000
Endowment	\$488,314	\$2,441,570	\$2,441,570	\$2,441,570	\$2,441,570	\$2,441,570	\$2,441,570	\$14,649,422
Total	\$2,994,782	\$12,296,758	\$13,928,081	\$14,901,976	\$15,551,489	\$16,201,003	\$16,850,516	\$89,929,823
<i>Total Acres Impacted</i>	<i>1,529</i>							
<i>Cost Per Acre of Impact</i>	<i>\$58,816</i>							

^a For calculation, see Section 8.3.1, *Habitat Conversion Fee*.

8.2.1 Plan Administration

Plan administration costs are the expenses for City administrative staff and professional services to carry out Plan requirements. Plan administration costs are estimated to average \$57,585 annually during the permit term (Table 8-1, *HCP Costs (2021 Dollars)*). Some Plan administration costs will be necessary beyond the permit term.

For estimating administration costs, the cost model assumes that the City will administer the Plan with a cost structure similar to that for City departments with comparable responsibilities and staffing. This assumption ensures that the model does not understate potential costs of staffing and Plan administration. There may be alternative management structures that result in cost savings. For example, the City may instead contract with nonprofit land managers or researchers working in the Plan Area to accomplish some of the work identified for City staff positions, especially in the early phase of Plan implementation. The City may also leverage existing resources of the Permittees and agencies already working in the Plan Area to use funding as efficiently as possible. Examples include sharing facilities and equipment. Any such savings would be reflected in the periodic financial review of Plan implementation.

8.2.1.1 Staffing

The staffing plan identifies up to one 0.5 full-time equivalent (FTE) staff position annually for Plan implementation during the permit term. The additional staff position is necessary to coordinate efforts for Reserve System lands acquisition, land management, management planning, habitat restoration, monitoring plan development, and annual report completion. After the permit term, the staffing level decreases to 0.25 FTE annually, in order to oversee the continued management of Reserve System lands after the permit term ends. The level of management and monitoring post-permit will be reduced and therefore the level of coordination and reporting will as well, requiring less staff time. Other staffing mixes could fulfill the obligations of this Plan and the City may choose to implement the Plan using portions of multiple staff persons' time; the staffing mix presented here is conservative and satisfies the purposes of the cost analysis and funding plan.

Cost estimates for staff and associated overhead are split among various cost categories for the purposes of the cost and funding analysis. Administrative staffing is covered in the Plan administration cost category. Field and technical staff and associated overhead costs are allocated equally to the land management, habitat restoration, and monitoring and adaptive management cost categories.

8.2.2 Establishing a Reserve System

Establishing the Reserve System entails acquiring land for protection and restoration purposes. The reserve is the largest single component of the Plan's costs, totaling about \$50.4 million over the permit term, representing about 60 percent of Plan costs (Table 8-1, *HCP Costs (2021 Dollars)*). This equates to an average annual cost of \$1,696,443. The reserve assembly cost category includes acquisition costs (the price of fee title or conservation easements), the cost to conduct pre-acquisition surveys, due diligence and transaction costs, and costs for site improvements such as roads, fencing, and gates for lands acquired in fee title. Costs for restoration activity on reserve lands and management and monitoring of reserve lands are included in other cost categories and described in subsequent sections of this chapter.

The reserve assembly cost estimates are based on the acquisition commitments and reserve design parameters specified in Chapter 5, *Conservation Strategy*. If all impacts occur as described in Chapter 4, *Effects Analysis*, by the end of the permit term, the City will have acquired up to 1,945 acres to complete the Reserve System: 1,605 acres of prairie habitat, 40 acres of wetland habitat suitable for Oregon spotted frog (*Rana pretiosa*), and 300 acres of habitat suitable for Streaked Horned Lark (*Eremophila alpestris strigata*).

Land acquisition and associated surveys, transactions, and initial site improvement costs would only be incurred during the 30-year permit term of the Plan, while land acquisition is occurring. These costs will end once the permit term has ended, though long-term routine management and maintenance would continue after the permit term and be paid for by returns on the endowment.

8.2.2.1 Acquisition Costs

Fee-simple acquisition costs for prairie land in the Reserve System were estimated based on Thurston County assessor's data from 2019. A model was developed to identify parcels in the Permit Area with known occupation, high-habitat quality, and low-quality habitat characteristics, and identify targets for acquisition. Four scenarios modeled different acquisition objectives, which yielded different average per-acre costs after acquiring all required acres. The results presented in this section are for the scenario that prioritized high-quality habitat acquisitions based on species habitat modeling described in Chapter 2, *Physical Setting, Land Use, and Biological Resources*. This scenario was among the highest-cost scenarios of the four acquisition strategies evaluated but based on the fact that acquisitions are to mitigate for covered species habitat loss, and to ensure that conservation benefits are realized very soon after acquisition, this scenario was selected.⁵⁶ Actual acquisition costs will depend on market conditions at the time of purchase, and may differ from the averages reported here. Fee-simple acquisition costs for prairie habitat averaged \$40,957 per acre and ranged from \$23,134 to \$67,687. The analysis assumes that 75 percent of prairie habitat acres are acquired fee-simple with a conservation easement, and the rest are secured via conservation easement only.

Under the acquisition strategy, the City would use conservation easements to secure the remaining 25 percent of prairie habitat acres. In those cases the landowners would retain ownership of the land but the City would hold a conservation easement over them. The price of a conservation easement is estimated based on the average easement project price for projects in Thurston County's Conservation Futures Program. Based on five recent transactions, and adjusting to 2021 dollars, the average per-acre easement cost (inclusive of transaction costs, because data reported total project cost rather than easement cost alone) is approximately \$2,905.

The cost to acquire the 40 acres of wetland habitat is estimated at \$7,329 per acre and the cost to acquire the 300 acres of lark habitat is estimated at \$6,141 per acre.

8.2.2.2 Transaction Costs

Transaction costs include costs for appraisals, which are required when state or federal grant funding or public agency general funds are to be utilized, title reports, property line surveys, and preparing legal descriptions, negotiating easement terms, and other due diligence activities such as

⁵⁶ The other scenarios optimized for total cost, minimized number of transactions, and prioritized contiguous parcel acquisitions. The results of this acquisition cost analysis are reported in an accompanying technical memo.

Phase 1 environmental site assessments for hazardous materials.⁵⁷ These costs can vary significantly depending on the size of the site, the conditions present on the property, and the complexity of the land transaction. For the purposes of this cost estimate, based on the experience of local entities acquiring and managing habitat lands, these costs are assumed to be six percent of the adjusted parcel value and are included in the acquisition cost. In addition to transaction costs, acquisition costs include a real estate excise tax that varies from 1.1 percent for purchases less than \$500,000 to 3 percent for purchases over \$3,000,000. These costs are applied to the estimated average per-acre purchase price for fee-simple acquired prairie and wetland habitat.

8.2.2.3 Pre-Acquisition Surveys

As described in Chapter 7, *Implementation*, the City will undertake pre-acquisition assessments to determine the ability of a property to meet the Plan's biological goals and objectives prior to inclusion into the Reserve System. Pre-acquisition assessments include surveys for the following characteristics (Section 7.5.2, *Step 2: Pre-Acquisition Assessment*).

- Baseline conditions, including ecological functions
- Land cover type, including assessment of infrastructure and other site conditions and restoration potential
- Covered species' habitat and presence
- Wetlands and streams (i.e., wetland delineations)
- Site security risks

The model estimates the cost of pre-acquisition surveys based on the estimated number of hours required for each type of survey and associated report writing for a typical 20-acre parcel and the cost per hour, including travel costs, for consulting qualified biologists to conduct the surveys. To account for due diligence investigation of sites investigated but not acquired, the model assumes a 25 percent premium on these costs. This translates to an average of \$122 per acre, and applies to all acres in the Reserve System.

8.2.2.4 Site Improvements

Site improvements will be required on reserve land acquired in fee title. Site improvements may include demolition or repair of unsafe structures; removal of hazardous materials and solid waste; repair and construction of boundary fences; repair and replacement of gates; and installation of signs (e.g., boundary and landmark signs). For reserve lands protected by means of conservation easement, the landowner retains responsibility for repair and maintenance of those site improvements not associated with meeting biological goals and objectives.

8.2.3 Land Management and Habitat Restoration

Once lands have been acquired, the City will implement actions to ensure that the reserves are managed to achieve the biological goals and objectives identified in Chapter 5, *Conservation Strategy*. This cost category includes costs for management planning and reserve management activities. Also included are habitat restoration activities to improve habitat values for species. Reserve System

⁵⁷ A Phase 1 environmental site assessment is a preliminary investigation to determine if a site might contain hazardous materials.

management and restoration activities are budgeted at about \$12.4 million in total or about \$412,312 per year on average during the permit term.

According to the assumptions used for cost and funding planning, at the end of the permit term, the City will own and actively manage approximately 1,945 acres of reserve lands. On the other reserve lands (estimated for the purposes of cost and funding planning to be approximately 391 acres), the private landowner retains responsibility for land management, while the City holds a conservation easement specifying terms related to habitat protection consistent with this Plan's biological goals and objectives. City implementation staff (or third party) responsibilities include the costs to monitor these reserve lands annually to ensure that the landowner's management complies with the terms of the conservation easements are included in the Plan administration cost category. The cost of landowner management may also be supplemented by HCP funding, depending on the terms of the conservation easement and the species and habitat management objectives for the property.

The management cost obligation increases over time as the Reserve System is assembled and the number of acres under stewardship increases. The Plan requires continued reserve management after the permit term ends, although at a somewhat reduced level to that in effect during the permit term (discussed in Section 8.2.7, *Endowed Costs*).

The cost model estimates restoration costs for each 5-year period based on the area of each land-cover type estimated to be restored during that period. Actual restoration will depend on the pace of the covered activities and conservation actions. Restoration projects could be completed by the City, Port, contractors, or third-party partners that have the knowledge and experience, as well as access to the necessary labor, vehicles, and equipment. The City will not maintain in-house the types of labor resources and specialized equipment needed for habitat restoration projects. For large-scale projects, a great deal of labor is typically required (e.g., grading, planting seedlings, cuttings, or container stock for riparian restoration projects), which specialized contractors are best equipped to provide. City staff time needed to provide oversight for the preparation of restoration management plans and hiring and overseeing contractor designs, specifications, and construction is included in Plan administration costs.

Separate costs are presented for restoration of wetlands and prairie habitat types. Activities included in the cost of each are described below.

Wetland restoration is estimated to cost \$24,547 per acre, with 20 of the 40 acres of acquired wetland habitat assumed to require restoration. Smaller sites would cost more per acre and larger sites would cost less per acre. Restoration costs were based on a 1-acre site because that is likely the average size of a wetland restoration project in the Permit Area. Those costs include the following activities.

- Surveys to select sites, delineate wetlands, and prepare detailed habitat maps and species reports for restoration plans
- Soil sampling or geomorphologic mapping
- Design of restoration projects
- Development of plans, specifications, and engineering documents
- Construction bid assistance
- Pre-construction surveys

- Construction activities
- Construction oversight and monitoring
- Post-construction monitoring and maintenance
- Restoration necessary to meet success criteria specified in each reserve unit management plan (monitoring component) and site restoration plans

Prairie restoration is estimated to cost \$598 per acre per year for ten years and is reduced to \$366 per acre for every following year. This is based on the average annual cost over ten years to restore native prairie ecosystem on scotch-broom-covered land on a 50-acre parcel. The actual costs of restoration will depend on the existing conditions on the acquired land and the size of the parcel. Relative to each other, smaller sites may cost more per acre, and larger sites may cost less per acre. Of the 1,605 acres of prairie habitat that will be acquired, all of them will be restored to a higher-quality prairie habitat condition. Restoration activities and costs for the 300 acres of lark habitat are assumed to be the same as those for prairie habitat. Prairie restoration activities include the following.

- Invasive vegetation control
- Seeding with native prairie vegetation
- Prescribed burning
- Mowing
- Grazing
- Tree removal

The cost to acquire reserve land on which restoration activities will take place is counted as a land acquisition cost.

8.2.4 Covered Species Translocation Research

A portion of the HCP mitigation funding will be used to fund research projects on the translocation of covered species. This could include research into the feasibility and techniques of translocation of Olympia pocket gophers (*Thomomys mazama pugetensis*) among Reserve System parcels within the Plan Area and/or genetic research on pocket gopher subspecies as well as moving streaked horned lark (*Eremophila alpestris strigata*) off the Airport to lands acquired as part of the Reserve System (Section 5.5.4, *Conservation Action 4: Fund Covered Species Translocation Research*). The Permittees will coordinate efforts with USFWS and WDFW along with species experts, research organizations, and land managers as needed, to design the Request for Proposals and select suitable researchers who apply for this funding. Whenever possible, research funding provided by the HCP should be leveraged with state or federal grants to maximize total research funds.

The research program would start within the first five years of HCP implementation. The total cost of the program would not exceed \$200,000 during the permit term, or on average \$20,000 per year for a 10-year period, likely at the beginning of the permit term. Depending on the circumstances and the level of funding available, the majority of this money may be needed for a shorter period. For example, a study utilizing the full amount may occur over a 3-year period. If that occurs the City may need to shift some funds away from land acquisition or management temporarily in order to fully fund the research project, while remaining in compliance with the stay-ahead provision. The

rationale for this will be described in the annual report and discussed with USFWS. It is anticipated that this funding would be used to both leverage grant funding from outside sources or be pooled with revenue sources from regional partners who also have an interest in this type of research. The \$200,000 cap on funding is an initial estimate and if additional funding is needed during implementation in order to obtain research results that are adequate to inform the conservation strategy the City and Port will adapt the HCP fees accordingly.

8.2.5 Monitoring and Adaptive Management

Monitoring and adaptive management costs are estimated to be \$10 million over the permit term and, on average, \$333,460 annually (Table 8-1). The cost model based the monitoring cost estimates on the monitoring and adaptive management program outlined in Chapter 6, *Monitoring and Adaptive Management*. Contractors will complete most of the fieldwork, data collection, analysis, and reporting. City staff will manage contractors and provide oversight of fieldwork and compilation of monitoring results. Compliance monitoring to track and document the status of Plan implementation is covered as a staff cost in the Plan administration cost category, as are costs for City staff to provide oversight of contractors executing monitoring activities.

Monitoring and adaptive management costs cover the following items.

- Planning, conducting, analyzing, and reporting for baseline and long-term monitoring for covered species and habitat in the Reserve System.
- Planning, conducting, analyzing, and reporting for periodic status and trends surveys of covered species within the Plan Area, including evaluating the effectiveness of conservation measures.

The cost estimates are based on reserve parcel size assumptions, the pace of reserve site acquisition, the number of qualified biologists required to conduct each survey, the hours of surveying required and the hours required for data analysis and reporting, the number of years required to establish baseline data, and the frequency of survey updates.

All effectiveness monitoring costs will be completed during the permit term. Some compliance monitoring tasks will continue after the permit term is completed. However, monitoring and adaptive management will continue on the Reserve System after the permit term has expired to ensure that the Reserve System retains the biological values maintained and enhanced during the permit term. Costs for post permit term monitoring will be covered by an endowment (Section 8.2.7, *Endowment*).

8.2.6 Contingency

To account for uncertainties in costs and the differences between planning-level estimates and actual implementation experience, the model includes a contingency of five percent for monitoring and administration costs. Contingency funds will be used on a short-term basis to offset any program costs that are higher than predicted. Contingency funds are modest because Plan fees are designed to keep pace with Plan costs, particularly for Reserve System assembly (see Section 8.3.1, *Habitat Conversion Fee*). The City will use contingency funds only when needed to address costs beyond those predicted in this cost estimate and in annual budgets.

Contingency funds could be used for the following purposes.

1. Acquiring materials or data not forecast in the budgets

2. Adding temporary staff or consulting services to address new issues
3. Acquiring land that is more expensive than planned or property that generates extraordinary transaction costs
4. Applying more expensive management techniques in response to adaptive management needs or conducting additional monitoring
5. Implementing remedial actions to address changed circumstances (see Section 7.11, *Assurances*)

Adaptive management needs may arise throughout the permit term in response to monitoring results or external data that dictate shifts in management techniques and protocols. Contingency funds could address other management needs, such as expected actions that simply cost more than budgeted, or minor adjustments in management that result in higher costs. As this contingency budget will accrue over time, it is expected to be adequate to supplement the adaptive management budget described above if necessary. It could also be used to fund other Plan needs.

Contingency funds are assumed to be needed only during the permit term because most Plan costs will be complete (e.g., Reserve System assembly, restoration, management planning) and other annual costs will not only be well understood by the end of the permit term but will also drop substantially after the permit term.

8.2.7 Endowed Costs

Some costs will be incurred only during the permit term (Reserve System assembly, habitat restoration, remedial measures, and contingency), but some responsibilities and associated costs will continue after the permit term. Because most of the effects of the covered activities are considered permanent (see Chapter 4, *Effects Analysis*), mitigating conservation actions must also be permanent. For example, management must continue beyond the permit term to ensure that the Reserve System retains the biological values maintained and enhanced during the permit term. Similarly, in most cases, as Reserve System lands are functioning/performing as intended, limited monitoring must continue beyond the permit term to ensure that management actions are effective, and restoration success criteria are met. The funding available for post-permit needs is sufficient and flexible enough to meet all Plan management and restoration commitments.

Overall, annual costs beyond the permit term are estimated to be about 25 percent of average annual costs in the final years of the permit term—about \$344 per reserve acre. This includes reserve management activities that continue beyond the permit term, which are estimated at \$366 per acre per year. Acquisition and restoration actions will be discontinued and management planning will be reduced. The costs for monitoring will be at about 25 percent of the level in place at the end of the permit term. Staffing and other administration costs will be at about 50 percent of the level in effect during the final years of the permit term.

8.2.7.1 Endowment

A permanent non wasting endowment fund of approximately \$25.2 million in 2021 dollars would be needed at the end of the permit term to generate average real returns (i.e., inflation-adjusted) sufficient to fund post-permit term management and monitoring of the entire Reserve System. Annual real returns on endowment fund balances were assumed to equal 3.25 percent. The endowment will be able to grow over the entire permit term through allocation of a percentage of mitigation fee revenue (see Section 8.3.1, *Habitat Conversion Fee*), interest earnings on endowment

fund balances, and the absence of any withdrawals until the end of the permit term. Nominal rates of return on endowments routinely exceed inflation. Consequently, of the total endowment fund balance required at the end of the permit term, less than the full amount will come directly from mitigation fee revenue. The remainder of the funding will come from endowment capital gains, interest, and dividend income on endowment investments. Fee levels will be adjusted as needed to ensure sufficient endowment funding by the end of the permit term (see Section 8.3.1.3, *Collection and Adjustment of Habitat Conversion Fee*). The endowment will be held by a USFWS approved entity.

8.3 Funding

Methods for assembling and equitably distributing the costs associated with the Plan have been the subject of extensive discussion and consideration by members of the public, officials from local and federal agencies, and elected officials. The Plan, which incorporates the input from this diverse group, offers a balanced approach to mitigating the effects of covered activities and conserving species and habitats while equitably distributing the costs across those in the Permit Area that will need permit coverage under the federal ESA.

The Plan establishes a framework for compliance with federal endangered species laws and regulations that accommodates future growth in the Plan Area, as well as the City's *Comprehensive Plan's* land conservation and open space policies and programs. Without the HCP, public and private entities whose activities affect threatened or endangered species and their habitats may be required to obtain permits and approvals from USFWS before undertaking those activities to mitigate the effects of their activities on the affected species. Proponents of private and public development activities will benefit from this comprehensive approach in several ways.

- They will be assured of federal take coverage.
- They will avoid the time and expense of securing their own regulatory approvals.
- They will have certainty and predictability with respect to their permit obligations and costs.

8.3.1 Habitat Conversion Fee

The Plan utilizes a covered species habitat conversion fee paid because of private and public covered activities to assist in meeting federal ESA requirements. Fees will generate sufficient funding to offset a proportionate share of Plan costs including endowment contributions to fund all post- ITP activities (see Section 8.2.7, *Endowed Costs*). This proportionate share is based on the cost of mitigation that will offset losses of covered species' habitat. These one-time fees pay for the full cost of mitigating project effects on the covered species.

Fees are based on the maximum allowable permanent loss of covered species habitat presented in Chapter 4, *Effects Analysis*. The total acres of covered species habitat estimated to be lost under the Plan equals the fee base. It is assumed that all of the covered activities will be implemented and therefore all of the land acquisition, management, and monitoring, described in Chapter 5, *Conservation Strategy*, will be necessary to offset the impacts of the taking on covered species. The habitat conversion fee calculation provided below therefore assumes full participation by public and private entities implementing covered activities and full implementation of the conservation strategy.

The cost per acre of the Plan over the 30-year permit term is \$58,816 (Total Plan 30-Year Cost = \$89,929,823 / 1,529 acres of impacts = \$58,816). Assuming no other revenue is available to offset this amount, developers would pay this amount as a per-acre fee.

8.3.1.1 Exemptions from Habitat Conversion Fee

Conservation actions described in Chapter 5, *Conservation Strategy*, are exempt from all mitigation fees. The beneficial impacts of these actions will be tracked by the City and reported as supporting the conservation strategy. The adverse effects associated with conservation actions will be minor and temporary in most, if not all, cases.

8.3.1.2 HCP Endowment Fee Component

As described in Section 8.2.7, *Endowed Costs*, the Plan endowment will be built over the course of the permit term. Effectively this means that a portion of the per-acre habitat conversion fee from each covered project will be set aside in an endowment account. Of the \$58,816 per acre fee, \$8,125 per acre, or about 14 percent, will go into the endowment account to fund costs following the permit term. That amount will grow if and as fees increase over time.

8.3.1.3 Collection and Adjustment of Habitat Conversion Fee

The City will collect all fees paid by private project proponents. All fees paid by the Permittees for their own covered activities will be similarly collected according to the same process and schedules developed by the City for fees from private applicants.

8.3.1.4 Timing of Habitat Conversion Fee Payment

The habitat conversion fee will be due at the first applicable step in the project approval process that authorizes ground disturbance, and therefore the conversion of covered species habitat, depending on which one occurs first. Not all projects will require all steps.

1. Grading permit or grading plan issuance.
2. Building permit issuance.
3. Any other final action for a covered activity that authorizes an action that will result in an impact on a covered species or its habitat.

For development projects with common areas such as parks subject to mitigation fees but not subject to future building permit issuance, the entire fee obligation associated with this acreage will be due at grading permit, grading plan issuance, or improvement plan approval.

For projects with multiple phases, the fee for each phase is due at the time of issuance of grading permits, improvement plans, or building permits as described above. Projects may not continue until the fee for the phase is paid in full. Backbone infrastructure improvements that serve more than one phase on multi-phase projects will pay fees at grading permit issuance or improvement plan approval regardless of the number of future phases served by the infrastructure.

8.3.1.5 Fee Adjustment

The dynamic nature of the costs associated with the Plan implementation, including land acquisition, management, and monitoring costs, requires a flexible approach to funding through

time. To keep pace with rising costs due to inflation and expected wider fluctuations in land prices, the Plan includes two mechanisms for adjusting fee levels: (1) automatic adjustments and (2) periodic assessments. Both adjustments will be performed by the City.

Land costs often change in ways different from the general rate of inflation in the economy. At times, the Permit Area has experienced land value increases at rates that exceed the rate of inflation in the economy. Significant demand for housing and relatively limited housing supply can increase housing prices, and in turn increase the market value of developable land. Other, non-land acquisition costs, including the cost of staff, supplies, and equipment involved in managing, operating, and maintaining conservation lands, are more likely to trend upward with the inflation in the broader economy. To address these two sources of cost changes, the Plan applies the following two fee adjustments.

1. **Automatic Fee Adjustment through Cost Index.** An automated increase through the specified cost indices will be applied in all years, except those for which a detailed cost/fee review is conducted.
2. **Periodic Detailed Cost/Fee Review.** Every five years, a thorough evaluation of implementation costs will be conducted and used to recalculate the mitigation fee levels required to cover mitigation costs.

Automatic Fee Adjustment

The variation in the cost of land due to site-specific factors means that it is difficult to develop land cost indices. However, annual changes in land value can be estimated from historical trends. The City will construct an annual index from the data by calculating the year-to-year change in value, weighted by the types of lands that will compose the Reserve System. The index will be a rolling average of the change over the prior five year period, to smooth out the large fluctuations in land values mentioned above and avoid similar fluctuations in the development fees. Between 2015 and 2020, the parcels included in the scenario used in this analysis increased in total assessed value by 38 percent, which translates to a median yearly increase of 6.14 percent. The City can use similar data from Thurston County during implementation as a benchmark for creating the annual index.

For non-land costs, the City will rely on the Consumer Price Index from the U.S. Bureau of Labor Statistics for the West Statistical Area. The City may decide to use other indices during Plan implementation if other indices are developed that better predict the increase in Plan costs. On April 1 of each year following issuance of permits, the City will adjust all mitigation fees based on changes in these indices. The City will then approve and adopt the revised fee schedule by July 1 of the same year. This refinement will allow an annual inflationary or deflationary adjustment of the fees.

Automatic fee adjustments will be applied in all years when the periodic detailed cost/fee adjustments are not conducted. Following periodic cost/fee reviews, the next year's automatic fee adjustment will be based on the new fee approved in the year of the review.

Periodic Cost Review and Fee Adjustment

A detailed review of actual implementation costs will be conducted periodically during the permit term. Habitat conversion fee adjustments may be made by the City based on the periodic cost review. The cost review process will include a review of the actual and estimated costs that underpin the current fee schedule.

To conduct a detailed cost review, the City will review its actual cost expenditures as well as other indicators of cost changes. This review will include the assembly and analysis of data associated with actual land transactions, management, maintenance, monitoring, and administration. Actual cost experience may be supplemented with other relevant cost information where appropriate (e.g., other land transactions data). Once the revised cost estimates are completed, the habitat conversion fee will be recalculated to determine the fee level necessary to cover mitigation costs and ensure sufficient funding is available to meet the Plan's mitigation obligations. These fee estimates will then be compared with current fee levels to determine if fee adjustments are required. The City must approve the periodic fee adjustments, but not the annual fee adjustments, which are automatic.

The administrative burden of conducting detailed cost reviews every year and the limited new information developed over the course of a single year makes annual reviews impractical. Consequently, periodic reviews will be conducted at regular five year intervals. The City will initiate the technical cost review by no later than January 15 of the relevant year with completion of the proposed revised fee schedule expected by April 30. The implementing entity will then approve and adopt the revised fee schedule by July 1 of the same year.

In between the detailed reviews, annual indexed inflationary or deflationary adjustments will be made to the fee schedule (see *Automatic Fee Adjustment*, above). The City may adjust the schedule for detailed reviews if deemed necessary to better track changing costs. Changes in the review schedule may be needed in periods of significant cost change, for example, when land values are rapidly increasing or decreasing, fee levels may quickly become outdated. The City may adjust the timing of these periodic reviews to conduct the reviews more frequently or less frequently, but 6 years is the maximum time between reviews of fees.

8.3.2 Land Dedicated by Project Proponents in Lieu of Habitat Conversion Fee

Any public or private project proponent subject to the habitat conversion fee may propose dedication of land to the reserve in lieu of payment of a portion of the habitat conversion fee. Proposed land dedications may be with a parcel separate from the project site, or may be with a portion of the project site. Any land dedication in lieu of a fee obligation will require a Land Dedication Agreement (Agreement) with the City. The City and the project proponent must execute the agreement before commencement of covered activities to which the credit will be applied.

The Agreement will specify the following terms.

1. **Characteristics of dedicated land:** Identify the Plan objectives (Chapter 5, *Conservation Strategy*) that will be met by inclusion of the lands proposed for dedication, including identification of the specific parcels to be dedicated. The landowner must allow access to, or fund surveys of, the land to establish its conservation value. In addition, the landowner may need to pay due diligence costs (e.g., Phase 1 or 2 environmental assessments) to ensure that the property meets Reserve System requirements as defined in Section 5.5.1.1, *Reserve System Requirements*, and is suitable to meet the Plan's objectives even after the end of the permit term.
2. **Amount of potential land dedication credits (expressed in functional acres):** Determine how many potential functional acres are granted (one for each functional acre of land to be dedicated, based on the specific areas identified for dedication).

3. **Conversion to approved land dedication credits (expressed in dollars):** The project proponent may convert potential land dedication credits (expressed in functional acres) to approved land dedication credits (expressed in dollars) as the land proposed for dedication is transferred to City ownership. The entire parcel must be transferred to the City to convert credits. The project proponent may determine the timing of dedication in consultation with the City. The dollar amount of the dedicated land will be based on market value determined by a qualified appraisal.
4. **Transfer of land dedication credits:** Land dedication credits (dollar value) may only be used for covered activities specified in the Agreement and they may not be transferred to other covered activities.
5. **Remaining dollar value of outstanding land dedication credits** will be based on the value per acre used to establish the original dollar value of the credits and adjusted based on any annual or periodic adjustments to the land conversion fee schedule.
6. **Agreement term:** The Agreement will include an expiration date that will apply to any potential land dedication credits and any approved land dedication credits that are not activated.

8.3.3 Other Funding Sources

Other funding sources may be identified and used during Plan implementation. For example, various types of federal, state, and local grants are commonly used as funding sources in HCPs. Additional funding sources would reduce the developer share of the fee, currently shown in Table 8-1, *HCP Costs (2021 Dollars)*.

8.3.4 Funding Adequacy

As shown in Table 8-1, *HCP Costs (2021 Dollars)*, funding from development fees is planned to meet all expected costs of the Plan. Despite conservative cost assumptions and the potential for additional revenue sources, revenue may fall short of costs. This section further discusses the adequacy of Plan funding.

8.3.4.1 Actions Required Should Mitigation Fees Fall Short of Expectations

Plan implementation costs may exceed those predicted in the cost model due to unforeseen factors outside the control of the Permittees. Conversely, revenue from the habitat conservation fee may temporarily slow due to a slowdown in development projects. In either case, if Plan costs exceed predictions, the Permittees have the following options available to address these additional costs.

- Apply funding reserves (contingency funds).
- Delay non-critical actions until funding is available while ensuring that the Plan remains in compliance.
- Seek external funding to supplement development fees temporarily.
- Interfund loans and acquisition of funds through debt service.
- Conduct a cost review earlier than scheduled in order to adjust development fees to account for increasing costs.

The contingency fund (Section 8.2.6, *Contingency*) is primarily intended to offset land management or monitoring costs that are higher than predicted on a short-term basis. If this fund is inadequate to offset these costs, or if costs are predicted to exceed revenue on a long-term basis, then the Permittees will cease additional covered activities until an assessment can be completed and a plan put in place to raise revenue to offset the funding shortfall. If these adjustments fail to improve the financial situation of the Plan, the Permittees will consider amending the Plan according to the procedure and requirements described in Chapter 7, *Implementation*.

8.3.4.2 Actions Required Should Land Acquisition Costs Rise Substantially

The nature of land acquisition is such that assembly of the Reserve System is not likely to be accomplished in a constant or predictable fashion. Acquisition of large parcels or combinations of parcels is typically more complex and may take longer to realize than acquisition of small parcels. Therefore, additions to the Reserve System are expected to be episodic. Over the long term, larger land acquisitions will save money because of their typically lower price per acre and lower per-acre land transaction costs.

The City will be responsible for performing the conservation actions necessary to comply with the Stay-Ahead provision, as described in Section 7.6, *Stay-Ahead Provision*. If the City determines it is at risk of non-compliance with the Stay-Ahead provision for land acquisition the City may need to consider whether project proponents can provide land in lieu of the habitat conversion fee, for a period of time until the Stay-Ahead provision is met (see Section 7.7.2, *Land Dedicated by Project Proponents*).

8.3.4.3 Funding Adequacy for Management and Monitoring After the Permit Term

The Permittees are obligated to continue to protect, manage, and maintain the Reserve System lands even after the end of the permit term to ensure that they continue to function for the covered species, as described in Chapter 5, *Conservation Strategy*. This obligation includes adaptive management and monitoring at a level sufficient to determine whether management is effective. The Reserve System lands are expected to function as covered species habitat in perpetuity and the funding provided by the endowment is expected to be sufficient to ensure that outcome. Other obligations, however, do not extend after the permit term, and are no longer required. For example, the Permittees are no longer obligated to report the status of the Plan to USFWS annually; however, they are permanently required to regularly report to the easement holder/easement beneficiary, and to maintain implementation records available for review upon request by the public or USFWS. Any shortfalls in the endowment during the permit term will be identified by the periodic funding reviews conducted by the Permittees. If the endowment is not growing fast enough to reach its target size, then the endowment fee portion of the development fees will be increased to make up the shortfall. However, the Permittees do not bear responsibility for shortfalls resulting from extraordinary events that cannot reasonably be planned for (Section 7.11.1, *Regulatory Assurances*). With these built-in safeguards in the endowment, post-permit funding is expected to be adequate to fully offset post-permit costs of management and monitoring.

9.1 Introduction

The federal ESA requires that Section 10 permit applicants specify in a HCP what alternative actions to the take of federally listed species were considered and the reasons why those alternatives were not selected. The *Endangered Species Consultation Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016) identifies two types of alternatives commonly used in HCPs.

1. An alternative that would reduce take below levels anticipated under the HCP.
2. An alternative that would avoid take and hence, not require a permit from USFWS.

This chapter identifies the alternative measures considered that would reduce or avoid the potential for take of species covered in the HCP. The alternatives to take (i.e., take alternatives) addressed in this chapter are the No Take Alternative and a Reduced Permit Term Take Alternative. These take alternatives are assessed in relation to the effects on covered species described in Chapter 4, *Effects Analysis*, for the proposed conservation strategy and covered activities.

As part of the NEPA, a wider range of project alternatives has been identified and evaluated in the Plan's EIS. The analysis of take alternatives in this chapter serves a specific and narrow regulatory purpose, which is separate and distinct from the analysis of project alternatives under NEPA.⁵⁸ The EIS for the Plan identifies a reasonable range of project alternatives and evaluates the potential environmental impacts of those alternatives on resources in relation to the no-action or no-project alternative.

9.2 Take Alternatives

9.2.1 No Take Alternative

An alternative that would restrict covered activities to avoid all adverse effects on covered species and avoid all take of federally listed species would obviate the need for issuance of an ITP by USFWS. The No Take Alternative, which would avoid all incidental take, was rejected because it would eliminate the need for the Plan's conservation strategy and thus preclude implementing actions that exceed mitigation of impacts and would contribute to the recovery of covered species. Implementation of the HCP also provides the potential for a holistic approach to species recovery. In addition, it allows project applicants the option of taking part in this effort as an alternative to working directly with USFWS to secure an ITP.

⁵⁸ The term *take alternative* refers to take alternatives associated with the Plan; the term *alternative* refers to the project alternatives evaluated in the EIS.

9.2.2 Reduced Permit Term

The Reduced Permit Term Take Alternative includes the issuance of an ITP to authorize incidental take of the covered species in association with the covered activities discussed in Chapter 3, *Covered Activities*. Under this alternative, however, the term of the ITP would be 15 years rather than the 30 years identified under the proposed Plan. Under the Reduced Permit Term Take Alternative, the types of effects on covered species resulting from the covered activities would be the same as or similar to those under the proposed Plan. Implementing the conservation strategy would still avoid, minimize, and mitigate impacts on covered species. Impacts would be less than those under the proposed Plan due to the reduced permit term and the likelihood that half as many covered activities would occur in 15 years than in 30 years.

This alternative would provide the applicants with less flexibility than the proposed Plan during project planning and implementation of the covered activities. The proposed permit term of 30 years provides sufficient time to accomplish the following critical elements of the Plan.

- Implementation of the permittees planning documents (e.g., Comprehensive Plan, Subarea Plans, and Capital Facilities Plan).
- Implementation of the Permittees' projects that are covered by the Plan.
- Implementation of the Permittees' conservation actions for the longest duration feasible.
- Assembly of the Reserve System.
- Funding for Plan implementation during the permit term and funding for management of the Reserve System in perpetuity.
- Development of an effective adaptive management program that would be implemented in perpetuity, given the uncertainties about the ecology of covered species and appropriate responses to resource management.

A 30-year permit term provides sufficient incentive for the applicants to commit the substantial resources necessary to implement and complete the Plan. The longer permit term covers all planned projects and conservation actions, making the large up-front investment in the Plan more cost-effective in the end.

A shorter permit term would also result in less funding under a mitigation fee program, which would result in an inadequate amount of funding for implementation of meaningful conservation for the covered species, particularly Olympia pocket gopher. A 30-year period, which would accommodate city development and the fee revenue it would provide, would ensure that the Plan could achieve its biological goals and objectives and contribute more to the recovery of the covered species.

Chapter 10

List of Preparers and Literature Cited

10.1 List of Preparers

10.1.1 City of Tumwater

Brad Medrud – Project Manager

Mike Matlock – Project Manager

10.1.2 Port of Olympia

Rudy Rudolph – Project Manager

Rachael Jamison – Project Manager

10.1.3 ICF

Dr. David Zippin – Project Director

Todd Jones – Project Manager/Senior Conservation Planner

Emma Brenneman – GIS Technician

Christine McCrory – Editor

Jesse Cherry – Publication Specialist

10.1.4 Krippner Consulting

Linda Krippner – Lead Conservation Biologist

Steve Krippner – Lead GIS Technician

10.1.5 ECONorthwest

Sarah Reich – Project Manager

Annaliese Helm – Economic Specialist

10.2 Literature Cited

10.2.1 Chapter 1

City of Tumwater. 2016. *Comprehensive Plan*. Adopted December 20, 2016. Tumwater, WA.

Port of Olympia. 2016. *Airport Master Plan*. Thurston County WA.

Port of Olympia. 2017a. Comprehensive Scheme of Harbor Improvements. Thurston County, WA.

Port of Olympia. 2017b. Development Guidelines. Thurston County, WA.

Reichman, O. J., & Seabloom, E. W. 2002. The role of pocket gophers as subterranean ecosystem engineers. *Trends in Ecology and Evolution*, 17(1), 44–49. [https://doi.org/10.1016/S0169-5347\(01\)02329-1](https://doi.org/10.1016/S0169-5347(01)02329-1)

Thurston County. 2020. Draft Thurston County Habitat Conservation Plan, Thurston County Community Planning and Economic Development Department. Olympia, WA.

U.S. Fish and Wildlife Service 2014

U.S. Fish and Wildlife Service. 2018. Results of the 2017 Mazama Pocket Gopher Screening in Thurston County. U.S. Fish and Wildlife Service Reference: 01EWFW00-2014-F-0430. USFWS Washington Fish and Wildlife Office, Lacey, Washington. 432 pp.

U.S. Fish and Wildlife Service. 2019. *Draft Recovery Plan for the Streaked Horned Lark (Eremophila alpestris strigata)*. Portland Oregon.

Vaughn, T. A. 1961. Vertebrates inhabiting pocket gopher burrows in Colorado. *Journal of Mammalogy*, 42:171–174.

Vaughn, T.A. 1974. 1974. Resource allocation in some sympatric, subalpine rodents. *Journal of Mammalogy*, 55:764–795.

10.2.2 Chapter 2

10.2.2.1 Published Sources

Altman, B. 1999. Status and conservation of grassland birds in the Willamette Valley. Unpublished report submitted to Oregon Dept. Fish and Wildlife, Corvallis.

Altman, B. 2003. Vesper sparrow *Pooecetes gramineus*. Pages 542–545 in D. B. Marshall, M. G. Hunter, and A. L. Contreras, editors. *Birds of Oregon: a general reference*. Oregon State University Press, Corvallis, Oregon.

Altman, B. 2011. Historical and Current Distribution and Populations of Bird Species in Prairie-Oak Habitats in the Pacific Northwest. *Northwest Science* 85(2):194–222.

Altman, B. 2015. Oregon Vesper Sparrow Range-wide Inventory and Habitat Assessment. Final Report. April 1, 2015.

Altman, B. 2017. Working definition of Oregon vesper sparrow habitat in email communications on June 26, 2017.

Altman, B., D.W. Stinson, and G.E. Hayes. 2020. Status report for the Oregon Vesper Sparrow in Washington. Washington Department of Fish and Wildlife, Olympia, WA. 33 pp.

Altman, B., D.W. Stinson, and G.E. Hayes. 2021. Status Report for the Oregon Vesper Sparrow in Washington. Washington Department of Fish and Wildlife, Olympia, Washington. 33+ iii pp.

- American Bird Conservancy. 2017. Petition to List Oregon Vesper Sparrow (*Pooecetes gramineus affinis*) as Endangered or Threatened Under the Endangered Species Act. October 2017. The Plains, VA.
- Anderson, H.E., and S.F. Pearson. 2015. Streaked horned lark habitat characteristics. Center for Natural Lands Management and Washington Department of Fish and Wildlife, Olympia, WA. 23 pp.
- Beason, R.C. 1995. Horned lark (*Eremophila alpestris*). No. 195 in *The Birds of North America* (A. Poole and F. Gill, eds.). The American Academy of Natural Sciences, Philadelphia, PA and The American Ornithologists' Union, Washington, D.C. 24 pp.
- Berger, A.J. 1968. Eastern Vesper Sparrow. Pages 868–882 in *Life histories of North American cardinals, grosbeaks, buntings, towhees, finches, sparrows, and allies* (O. L. Austin, Jr., editor). Dover Publications, Incorporated, New York.
- Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G. Kaiser, A.C. Stewart, and M.C.E. McNall. 2001. *The Birds of British Columbia*. Volume 4, passerines: wood-warblers through Old World sparrows. UBC Press, Vancouver, British Columbia.
- Case, Ronald M. and Jasch, Bruce A. 1994. "Pocket Gophers." *The Handbook: Prevention and Control of Wildlife Damage*. 13. <https://digitalcommons.unl.edu/icwdmhandbook/13>
- City of Tumwater. 1993. *New Market Historic District Master Plan*. Tumwater, WA.
- City of Tumwater. 2014a. *Brewery District Plan*. Thurston Regional Planning Council. Tumwater, WA.
- City of Tumwater. 2014b. *Capitol Boulevard Corridor Plan*. January 7, 2014. Tumwater, WA.
- City of Tumwater. 2016. *Comprehensive Plan*. Adopted December 20, 2016. Tumwater, WA.
- Clegg, M. 1998. The LCTA 1998 bird report. Fort Lewis, Washington.
- Clegg, M. 1999. Avian report, LCTA program 1999. Fort Lewis, WA.
- Collins H.P. and P.E. Rasmussen. 1991. Long-term impacts of tillage, fertilizer, and crop residue on soil organic matter in temperate semiarid regions. *Adv. Agron.* 45:93–134.
- Converse, S, B. Gardner, S. Morey, J. Bush, M. Jensen, C. Langston, D. Stokes, T. Thomas, J. Bakker, T. Kaye, J. Kenagy, S. Pearson, M. Singer and D. Stinson. 2010. Parameterizing patch dynamics models in support of optimal reserve design for Federal candidates in South Puget Sound. Summary Report from Two Expert Workshops (Workshop 1: December 9–11, 2008, and Workshop 2: Recovery Outline for the Streaked Horned Lark 34 October 21–22, 2009). Report prepared for U.S. Fish and Wildlife Service's Washington Fish and Wildlife Office, Lacey, Washington, USA. 28 pp.
- Crawford, R. C. and H. Hall. 1997. Changes in the south Puget Sound prairie landscape. pp 11–15 in P. Dunn and K. Ewing (eds.) *Ecology and Conservation of the south Puget Sound Prairie Landscape*. The Nature Conservancy, Seattle, Washington.
- Dalquest, W.W. 1948. *Mammals of Washington*. University of Kansas Publications, Museum of Natural History 2:1–444

- Dunwiddie, P. W., and J. D. Bakker. 2011. The future of restoration and management of prairie/oak ecosystems in the Pacific Northwest. *Northwest Science* 85:83–92.
- Erickson, R.A. 2008. Oregon Vesper Sparrow in California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California (W.D. Shuford and T Gardali, editors). Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
- Hallock, L.A. 2013. Draft Washington State Recovery Plan for the Oregon Spotted Frog. Washington Department of Fish and Wildlife, Olympia, Washington.
- Hayes, M.P. 1994. The spotted frog (*Rana pretiosa*) in western Oregon. Part I. Background. Part II. Current status. Oregon Department of Fish and Wildlife Tech. Rept. #94–1–01. Unpublished Report.
- Hayes, M.P. 1997. Status of the Oregon spotted frog (*Rana pretiosa sensu stricto*) in the Deschutes Basin and selected other systems in Oregon and northeastern California with a rangewide synopsis of the species' status. Final report prepared for The Nature Conservancy under contract to US Fish and Wildlife Service, Portland, Oregon. 57 pp + Appendices.
- Jewett, S.G., W.P. Taylor, W.T. Shaw, and J.W. Aldrich. 1953. *Birds of Washington State*. University of Washington Press, Seattle, Washington.
- Jones, S.L. and J.E. Cornely. 2002. Vesper sparrow (*Pooecetes gramineus*). In A. Poole and F. Gill, editors. *The Birds of North America*, No. 624. The Birds of North America, Inc., Philadelphia, Pennsylvania.
- Krippner Consulting. 2018. The Preserve Habitat Conservation Plan for the Olympia subspecies of Mazama Pocket Gopher (*Thomomys mazama pugetensis*) and the Oregon Spotted Frog (*Rana pretiosa*) in Thurston County, Washington.
- Krueger, H.O. 1981. Breeding adaptations of the vesper sparrow (*Pooecetes gramineus*) in a fire-altered ecosystem. M.S. thesis, Central Michigan University, Mt. Pleasant.
- Leonard, W.P., H.A. Brown, L.L.C. Jones, K.R. McAllister, and R.M. Storm. 1993. *Amphibians of Washington and Oregon*.
- Licht 1971
- Licht, L.E. 1974. Survival of embryos, tadpoles, and adults of the frogs *Rana aurora aurora* and *Rana pretiosa pretiosa* sympatric in southwestern British Columbia. *Canadian Journal of Zoology* 52:613–627.
- Mauger, G.S., J.H. Casola, H.A. Morgan, R.L. Strauch, B. Jones, B. Curry, T.M. Busch Isaksen, L. Whitely Binder, M.B. Krosby, and A.K. Snover. 2015. *State of Knowledge: Climate Change in Puget Sound*. Report prepared for the Puget Sound Partnership and the National Oceanic and Atmospheric Administration. Climate Impacts Group, University of Washington, Seattle. Doi:10.7915/CIG93777D
- McAllister, K.R., and W.P. Leonard. 1997. Washington State Status Report for the Oregon Spotted Frog. Washington Department of Fish and Wildlife, Olympia. 38 pp.

- McAllister, K. and A. Schmidt. 2005. *An inventory of Mazama pocket gophers (Thomomys mazama) on the Olympia Airport, Thurston County, Washington*. Washington Department of Fish and Wildlife, Olympia.
- McAllister, K.R. and M. Walker. 2003. An Inventory of Oregon Spotted Frogs (*Rana pretiosa*) in the upper Black River Drainage. Unpublished report, Washington Department of Fish and Wildlife, Olympia. 13 pp. + appendices.
- Mlodinow, S.G. 2005. Vesper sparrow *Pooecetes gramineus*. Pages 326–327 in T. R. Wahl, B. Tweit, and S. G. Mlodinow, editors. *Birds of Washington: status and distribution*. Oregon State University Press, Corvallis, Oregon.
- Natural Resources Conservation Service 2018
- Nelson, K.J., and K. Martin. 1999. Thermal aspects of nest-site location for Vesper Sparrows and Horned Larks in British Columbia. Pages 137-143 in *Ecology and conservation of grassland birds in the Western Hemisphere* (P. D. Vickery and J. R. Herkert, editors). *Studies in Avian Biology* 19.
- Pearl and Hayes 2004
- Pearl, Christopher and Hayes, Marc. 2013. *Habitat Associations of Oregon Spotted Frog (Rana pretiosa): A Literature Review*. Washington Department of Fish and Wildlife Technical Report.
- Pearson, S. and B. Altman. 2005. *Range-wide streaked horned lark (Eremophila alpestris strigata) assessment and preliminary conservation strategy*. Washington Department of Fish and Wildlife, Olympia, Washington. 25 pp.
- Pearson, S.F., and M. Hopey. 2004. Streaked Horned Lark inventory, nesting success and habitat selection in the Puget lowlands of Washington. Natural Areas Program Report 2004-1. Washington Department of Natural Resources, Olympia, WA.
- Pearson, S.F., H.E. Anderson, and M. Hopey. 2005. Streaked Horned Lark Monitoring, Habitat Manipulations, and a Conspecific Attraction Experiment. Washington Department of Fish and Wildlife, Olympia, WA. 38 pp.
- Pearson, S. F., A. F. Camfield, and K. Martin. 2008. *Streaked Horned Lark (Eremophila alpestris strigata) fecundity, survival, population growth and site fidelity: research progress report*. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia, Washington, USA.
- Pearson, S.F. and S.M. Knapp. 2016. Considering spatial scale and reproductive consequences of habitat selection when managing grasslands for a threatened species. *PLoS ONE* 11(6):e0156330.doi:10.1371/journal.pone.0156330.
- Pyle, P. 1997. Identification guide to North American birds: part 1. Slate Creek Press, Bolinas, CA. 732 pages.
- Rising, J.D. 1996. A guide to the identification and natural history of the sparrows of the United States and Canada. Academic Press, San Diego, California.

- Rogers, R.E., Jr. 2000. The status and microhabitat selection of streaked horned lark, western bluebird, Oregon vesper sparrow, and western meadowlark in western Washington. M.S. thesis, Evergreen State College, Olympia, Washington.
- Rombough, C.R., M.P. Hayes, and J.D. Engler. 2006. *Rana pretiosa* (Oregon Spotted Frog). Maximum Size. *Herpetological Review* 37(2):210.
- Shovlain, A. 2005. Oregon Spotted Frog habitat use and Herbage (or Biomass) Removal from Grazing at Jack Creek, Klamath County, Oregon. Master's Thesis, Oregon State University, Corvallis, Oregon.
- Sibley, D.A. 2000. National Audubon Society: the Sibley Guide to Birds. Random House, Toronto, Canada.
- Stinson, D.W. 2013. Draft Mazama Pocket Gopher Status Update and Washington State Recovery Plan. Olympia, WA: Washington Department of Fish and Wildlife.
- Stinson, D.W. 2016. Periodic Status Review for the Streaked Horned Lark in Washington. Washington Department of Fish and Wildlife, Olympia, Washington. 21 + iii pp.
- Stinson, D.W. 2019. DRAFT Mazama Pocket Gopher Recovery Plan and Periodic Status Review. Washington Department of Fish and Wildlife, Olympia. 100 pp.
- U.S. Department of Agriculture. 2018. Rare species are finding a home in restored South Puget Sound Prairie. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/wa/newsroom/stories/?cid=nrcs144p2_036646. Accessed May 2018.
- U.S. Fish and Wildlife Service. 2014a. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Olympia Pocket Gopher, Roy Prairie Pocket Gopher, Tenino Pocket Gopher, and Yelm Pocket Gopher, With Special Rule; Final Rule. Federal Register 77 (April 9, 2014), No. 68:19760–19796.
- U.S. Fish and Wildlife Service. 2014b. Endangered and Threatened Wildlife and Plants; Threatened Status for the Oregon Spotted Frog; Final Rule. Federal Register. Vol. 79. No. 168: 51658-51710.
- U.S. Fish and Wildlife Service. 2015. Mazama pocket gopher Conservation Strategy and Mitigation Guidance. Washington Fish and Wildlife Office, Lacey, Washington. Memorandum. July 01, 2015.
- U.S. Fish and Wildlife Service. 2016. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat, Oregon Spotted Frog, Final Rule. Federal Register 88 (May 11, 2016), No. FWS-R1-ES-2013-0088.
- U.S. Fish and Wildlife Service. 2018. Results of the 2017 Mazama Pocket Gopher Screening in Thurston County. U.S. Fish and Wildlife Service Reference: 01EWF00-2014-F-0430. USFWS Washington Fish and Wildlife Office, Lacey, Washington. 432 pp.
- U.S. Fish and Wildlife Service. 2019. Species Biological Report for the Streaked Horned Lark (*Eremophila alpestris strigata*), Version 1.0. Interior Region 9, Portland, Oregon. 43 pp. https://www.fws.gov/pacific/ecoservices/endangered/recovery/documents/Species_Biological_Report.

- U.S. Fish and Wildlife Service. 2022. Recovery plan for four subspecies of *Mazama* pocket gopher. Portland, Oregon. Xi +33 pp.+ appendices.
- Washington Department of Fish and Wildlife. 2013. *Oregon Vesper Sparrow*. WDFW Contract 132232, Thurston County Habitat Conservation Plan. Washington Department of Fish and Wildlife, Olympia, Washington.
- Washington Department of Fish and Wildlife. 2016. Priority Habitat and Species Database.
- Washington Department of Fish and Wildlife 2019
- Watson, J.W., K.R. McAllister, and D.J. Pierce. 2003. Home ranges, movements and habitat selection of Oregon spotted frogs (*Rana pretiosa*). *Journal of Herpetology* 37(2):292–300.
- Western Regional Climate Center. 2015. Monthly Climate Summary for Olympia Airport (Station 456114). Available online at <http://www.wrcc.dri.edu/>. Accessed May 2019.

10.2.3 Chapter 3

- City of Tumwater. 1988. *Memorandum of Understanding: An Urban Growth Management Agreement, Tumwater and Thurston County*. Adopted 1988. Tumwater, WA.
- City of Tumwater. 1993a. *Deschutes Riparian Habitat Rehabilitation Plan*. Tumwater WA.
- City of Tumwater. 1993b. *New Market Historic District Master Plan*. Tumwater, WA.
- City of Tumwater. 1995. *Memorandum of Understanding: Urban Growth Area Zoning and Development Standards, Tumwater and Thurston County*. Adopted 1995. Tumwater, WA.
- City of Tumwater. 1996. *Urban Forestry Plan*. Adopted 1996. Tumwater, WA.
- City of Tumwater. 2001. *Police Master Plan*. Adopted 2001. Tumwater, WA.
- City of Tumwater. 2002. *Comprehensive Street Tree Master Plan*. Adopted 2002. Tumwater, WA.
- City of Tumwater. 2004. *Town Center Street Design*. Adopted 2004. Tumwater, WA.
- City of Tumwater. 2008. *City Wayfinding Master Plan*. Adopted December 16, 2008. Tumwater, WA.
- City of Tumwater. 2010a. *Comprehensive Emergency Management Plan*. Adopted February 2010. Tumwater, WA.
- City of Tumwater. 2010b. *Water System Plan*. Adopted 2010. Tumwater, WA.
- City of Tumwater. 2011. *City of Tumwater Annexation Area Drainage Study*. Adopted 2011. Tumwater, WA.
- City of Tumwater. 2014a. *Capitol Boulevard Corridor Plan*. January 7, 2014. Tumwater, WA.
- City of Tumwater. 2014b. *Union and Pioneer Calvary Cemeteries Master Plan*. Tumwater, WA.
- City of Tumwater. 2015. *City of Tumwater General Sewer Plan*. Adopted 2015. Tumwater, WA.
- City of Tumwater. 2016a. *Comprehensive Plan*. Adopted December 20, 2016. Tumwater WA.

- City of Tumwater. 2016b. *Citywide Design Guidelines*. Tumwater, WA.
- City of Tumwater. 2016c. *Fire Department Five Year Strategic Plan and Operational Guide 2016–2021*. January 2016.
- City of Tumwater. 2016d. *Transportation Improvement Plan (2017–2022)*. Adopted 2016. Tumwater, WA.
- City of Tumwater. 2016e. *Wellhead Protection Plan*. Tumwater, WA.
- City of Tumwater. 2018a. *Littlerock Road Subarea Plan*. Amended January 2018. Tumwater, WA.
- City of Tumwater. 2018b. *Drainage Design and Erosion Control Manual for Tumwater*. Adopted 2018. Tumwater, WA.
- City of Tumwater. 2018c. *Strategic Plan (2010–2014) and Strategic Priorities 2019–2024*. Amended 2018. Tumwater WA.
- City of Tumwater. 2019a. *Economic Development Plan: Achieving a Diverse, Prosperous, and Sustainable Economy*. Tumwater, WA.
- City of Tumwater. 2019b. *Shoreline Master Program, Amended 2019*. Tumwater, WA.
- City of Tumwater. 2019c. *Capital Facilities Plan, 2020–2025*. October 8, 2019. Tumwater, WA.
- City of Tumwater. 2019d. *Stormwater Management Program Plan*.
- City of Tumwater. 2020a. *Brewery District Plan*. Thurston Regional Planning Council. Tumwater, WA.
- City of Tumwater. 2020b. *Draft Urban Forestry Management Plan*. Tumwater, WA.
- City of Tumwater and Thurston County. 2009. *Tumwater/Thurston County Joint Plan: An Element of the Tumwater Comprehensive Plan and Thurston County Comprehensive Plan*.
- Port of Olympia. 1993. *New Market Industrial Campus Real Estate Master Plan*. Adopted 1993.
- Port of Olympia. 2004. *Tumwater Town Center Land Use Plan*. December 2004.
- Port of Olympia. 2016. *Airport Master Plan Update*. Adopted August 8, 2016.
- Port of Olympia. 2017. *Comprehensive Scheme of Harbor Improvements & Development Guidelines*.
- Thurston County. 2004. *Salmon Creek Comprehensive Drainage Basin Plan*. Adopted 2004. Tumwater, WA.
- Thurston County. 2014. *On-Site Sewage Management Plan*. July 2014.
- Thurston County. 2015a. *Guiding Growth, Healthy Watersheds. Black Lake Basin Water Resource Protection Study*.
- Thurston County. 2015b. *County-Wide Planning Policies*. November 10, 2015.
- Thurston Regional Planning Council. 2007. *Thurston Regional Trails Plan*.
- Thurston Regional Planning Council. 2009. *Thurston County Solid Waste Management Plan*.

- Thurston Regional Planning Council. 2013. *Creating Places, Preserving Spaces: A Sustainable Development Plan for the Thurston Region*. December 2013.
- Thurston Regional Planning Council. 2017. *Natural Hazards Mitigation Plan for the Thurston Region*.
- Thurston Regional Planning Council. 2020. *What Moves You? Regional Transportation Plan 2045 for the Thurston Region, Washington State*. Adopted July 10, 2020.
- Tumwater School District. 2020. *Tumwater School District Capital Facilities Plan*. October 2020.
- Washington State Department of Ecology. 2015. *Deschutes River, Percival Creek, and Budd Inlet Tributaries Temperature, Fecal Coliform Bacteria, Dissolved Oxygen, pH, and Fine Sediment Total Maximum Daily Load*. Revised 2018.

10.2.4 Chapter 4

- Anderson, H.E and Pearson S.F. 2015. *Streaked Horned Lark Habitat Characteristics*. Final Report to U.S. Fish and Wildlife Service Center for Natural Lands Management, Olympia, WA.
- Pearson, S.F., and B. Altman. 2005. Range-wide Streaked Horned Lark (*Eremophila alpestris strigata*) Assessment and Preliminary Conservation Strategy. Washington Department of Fish and Wildlife, Olympia, WA. 25pp.
- Pearson, S.F., and M. Hopey. 2004. Streaked Horned Lark inventory, nesting success and habitat selection in the Puget lowlands of Washington. Natural Areas Program Report 2004-1. Washington Department of Natural Resources, Olympia, WA.
- Stinson, D.W. 2013. Draft Mazama Pocket Gopher Status Update and Washington State Recovery Plan. Olympia, WA: Washington Department of Fish and Wildlife.
- Stinson, Derek. 2016. Streaked Horned Lark Periodic Status Review. 10.13140/RG.2.1.4107.0960.
- U.S. Fish and Wildlife Service and National Marine Fisheries Service. 2016. *Habitat Conservation Planning and Incidental Take Permitting Process Handbook*.
- Washington Department of Fish and Wildlife. 2016. Priority Habitat and Species Database.

10.2.5 Chapter 5

- Dennehy, C., E.R. Alverson, H.E. Anderson, D.R. Clements, and T.N. Kaye. 2011. Management strategies for invasive plants in Pacific Northwest prairies, savannas, and oak woodlands. *Northwest Science* 85:329–351. doi: [10.3955/046.085.0219](https://doi.org/10.3955/046.085.0219)
- Dunwiddie, Peter and Bakker, Jonathan. 2011. The Future of Restoration and Management of Prairie-Oak Ecosystems in the Pacific Northwest. *Northwest Science* 85:83–92. 10.3955/046.085.0201.
- Keren and Pearson 2019
- Stanley, A. G., T. N. Kaye, and P. W. Dunwiddie. 2011. Multiple treatment combinations and seed addition increase abundance and diversity of native plants in Pacific Northwest prairies. *Ecological Restoration* 29:35–44.

Stinson, D. W. 2016. Periodic status review for the Streaked Horned Lark in Washington. Washington Department of Fish and Wildlife, Olympia, Washington. 21 + iii pp.

Thurston County Resource Stewardship Department. 2014. Thurston County Prairie Habitat Assessment Methodology: Species and Habitat Risk and Asset Prioritization (SHARP) Model Documentation. Version 1.00. Olympia, WA.

U.S. Fish and Wildlife Service. 2015. Mazama pocket gopher Conservation Strategy and Mitigation Guidance. Washington Fish and Wildlife Office, Lacey, Washington. Memorandum. July 01, 2015.

U.S. Fish and Wildlife Service 2019

U.S. Fish and Wildlife Service 2021

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 2016. *Habitat Conservation Planning and Incidental Take Permitting Process Handbook*.

10.2.6 Chapter 6

Atkinson, A.J., Trenham, P.C., Fisher, R.N., Hathaway, S.A., Johnson, B.S., Torres, S.G. & Moore, Y.C. 2004. *Designing monitoring programs in an adaptive management context for regional multiple species conservation plans*. US Geological Survey, Western Ecological Research Center, Sacramento, California.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 2016. *Habitat Conservation Planning and Incidental Take Permitting Process Handbook*.

Williams, B.K., Szaro, R.C., Shapiro, C.D. 2007. Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, DC.

10.2.7 Chapter 7

National Drought Mitigation Center. 2019. <https://drought.unl.edu/>. Accessed May 2019.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 2016. *Habitat Conservation Planning and Incidental Take Permitting Process Handbook*.

Western Regional Climate Center. 2015. Monthly Climate Summary for Olympia Airport (Station 456114). Available online at <http://www.wrcc.dri.edu/>. (accessed May 2019).

10.2.8 Chapter 9

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 2016. *Habitat Conservation Planning and Incidental Take Permitting Process Handbook*.

Appendix A

Glossary

Adaptive management: A cyclical process whereby managers treat actions as experiments from which they improve management actions.

Biological Goal: What the Conservation Program will accomplish by the end of the Incidental Take Permit duration.

Buffer: Distance outside the footprint that defines the area indirectly impacted by an activity.

Candidate species: Candidate species are plants and animals for which the U.S. Fish and Wildlife Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

Certificate of Inclusion: This is a document issued by the City that enrolls a landowner into the HCP for purposes of obtaining coverage under the city's Incidental Take Permit.

Compliance Monitoring: An evaluation of whether the process did what it said it would accomplish.

Conservation: As defined by Section 3 of the ESA, to use and the use of all methods and procedures necessary to bring any endangered or threatened species to the point at which the measures provided are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resource management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, regulated taking.

Conservation Easement: A Conservation Easement is a voluntary, legal agreement that permanently limits uses of a property or defined portion of a property in order to protect its Conservation Values.

Conservation measure: A specific conservation tool employed in a specific location. May include, but is not limited to, habitat acquisition and habitat restoration.

Objective: Benchmarks by which to measure progress in achieving Biological Goal for each Covered Species, across temporal and spatial scales.

Covered Activity: These are activities that are included in the HCP and covered for incidental take by the Incidental Take Permit.

Covered Species: These are species that are included in the HCP and covered for incidental take by the Incidental Take Permit.

Credits: Quantified, verified, and tradable units of environmental benefit from conservation or restoration action. Credits equate to one functional acre for a given Covered Species.

Critical Areas Ordinance: Is a set of regulations that govern how land is developed in environmentally sensitive areas and in areas where development would pose a threat to humans or wildlife. Critical areas include important fish and wildlife habitat areas (prairies, rivers, streams); wetlands; aquifer recharge areas; frequently flooded areas; and geologically hazardous areas. The state Growth Management Act (Chapter 36.70A RCW) requires protection of these areas.

Critical habitat: Specific areas within the geographic area occupied by the species on which are found those physical and biological features essential to the conservation of the species and which may require special management considerations or protection.

Effectiveness Monitoring: Monitoring to determine whether the restoration or enhancement techniques are meeting the management objective.

Endangered species: Those species threatened with extinction throughout all, or a significant portion, of their range. Species can be listed as endangered or threatened for a number of reasons, including disease or predation, natural or human factors affecting chances for survival or over utilization for commercial, scientific, or recreational purposes, or current or threatened destruction of habitat or range.

Habitat Conservation Plan (HCP): HCPs are planning documents required as part of an application for an Incidental Take Permit. They describe the anticipated effects of the proposed taking; how those impacts will be minimized or mitigated; and how the HCP is to be funded. HCPs can apply to both listed and nonlisted species, including those that are candidates or have been proposed for listing.

Harass: To intentionally or negligently, through act or omission, create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, and sheltering.

Harm: To perform an act that kills or injures wildlife; may include significant modification of habitat or degradation when it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

Historic range: The geographic area where a species was known to or believed to occur within historic time.

Impacts: Impacts may be negative or positive. Negative impacts are ecological stresses to a species and the source of that stress. Positive impacts are impacts whose net effect is beneficial to the species, and may include such activities as mowing or burning.

Incidental take: Take that results from, but is not the purpose of, carrying out an otherwise lawful activity.

Incidental Take Permit: A Permit issued under section 10(a)(1)(B) of the ESA to a non-federal party undertaking an otherwise lawful project that might result in the “take” of a threatened or endangered species. An application for an Incidental Take Permit is subject to certain requirements, including preparation of habitat conservation plan.

Listed species: A species, subspecies, or distinct population segment that has been added to the federal list of endangered and threatened wildlife and plants.

Mitigation: The offset of an environmental impact on a Covered Species with a compensatory environmental benefit for the Covered Species, typically generated through ecological protection, restoration, or enhancement and verified through a crediting program.

Monitoring: Repeated measurements carried out in a consistent manner so that observations are comparable over time.

Non-native species: Those species present in a specified region only as a direct or indirect result of human activity.

Performance Standard: Performance standards describe the habitat conditions necessary to earn and release mitigation credits from Conservation Lands during the phases of their habitat enhancement and management. Performance standards are tied to specific targets in habitat quality and function.

Population: A group of individuals of a species living in certain areas maintaining some degree of reproductive isolation.

Range: The geographic area a species is known to or believed to occupy.

Recovery: A reduction of the risk of extinction to the point that, based upon best available science, it is reasonably sure that the species will remain secure into the foreseeable future.

Recovery Plan: A document drafted by U.S. Fish and Wildlife Service serving as a guide for activities to be undertaken by federal, state, or private entities in helping to recover and conserve endangered and threatened species.

Species: A group of organisms resembling one another, and includes subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate, fish, or wildlife that interbreeds when mature.

Subspecies: A taxonomic rank below species, usually recognizing individuals with certain heritable characteristics distinct from other subspecies of a species.

Take: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct; may include significant habitat modification or degradation if it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, and sheltering.

Terms and conditions: Required actions described in an Incidental Take Permit under section 10 or Incidental Take Statement intended to implement the Reasonable and Prudent Measures under section 7.

Threatened species: A species that is likely to become endangered in the foreseeable future.

Viable: A viable population has a sufficient number of individuals, reproduction by those individuals, and habitat conditions to persist over time.

Watershed: An area of land draining to a common point.

Covered Species Evaluation

Table 1. Evaluation of Species Considered for Coverage in the Bush Prairie HCP

Species	Status (Federal / State)	Range	Impact	Knowledge	Feasibility	Conclusion
Olympia pocket gopher ^{1, 2, 3} <i>Thomomys mazama pugetensis</i>	YES: Threatened / Threatened	YES: Soil types characteristic of existing or former prairie habitats in southern Tumwater extending south into Thurston County.	YES: Take of animals and loss of habitat are likely to occur due to City and Port development plans. Take is also possible on mitigation lands.	YES: WDFW and USFWS survey data (WDFW 2016)	Moderately feasible: Constrained range of this subspecies in areas zoned for development presents conservation challenges (USFWS 2014), and there are liability concerns with changing zoning based only on presence of a species or suitable habitat.	Definitely cover. Take will occur.
Roy Prairie Pocket Gopher ³ <i>Thomomys mazama glacialis</i>	YES: Threatened / Threatened	YES: Soil types characteristic of existing or former prairie habitats in parts of Thurston County, but not within Tumwater UGA.	YES: However, take is only possible if it occurs on mitigation lands. It is very unlikely that mitigation lands would be sited within the range of this species.	YES: USFWS (2016), WDFW (2016)	Feasible: Species will only occur at mitigation sites, and only if they already provide suitable habitat.	Cover if, and only if, it occurs on mitigation lands.
Tenino Pocket Gopher ³ <i>Thomomys mazama tumuli</i>	YES: Threatened / Threatened	YES: Soil types characteristic of existing or former prairie habitats in parts of Thurston County, but not within Tumwater UGA.	YES: However, take is only possible if it occurs on mitigation lands. It is very unlikely that mitigation lands would be sited within the range of this species.	YES: USFWS (2016), WDFW (2016)	Feasible: Species will only occur at mitigation sites, and only if they already provide suitable habitat.	Cover if, and only if, it occurs on mitigation lands.
Yelm Pocket Gopher ³ <i>Thomomys mazama yelmensis</i>	YES: Threatened / Threatened	YES: Soil types characteristic of existing or former prairie habitats in parts of Thurston County, but not within Tumwater UGA.	YES: However, take is only possible if it occurs on mitigation lands. It is very unlikely that mitigation lands would be sited within the range of this species.	YES: USFWS (2016), WDFW (2016)	Feasible: Species will only occur at mitigation sites, and only if they already provide suitable habitat.	Cover if, and only if, it occurs on mitigation lands.
Western gray squirrel ^{1, 2}	YES: None / Threatened	NO: Deciduous (mainly oak) forest and woodland in Washington.	NO: Take unlikely because habitat (large interconnected canopy forest with sparse understory) for this species is lacking in Tumwater and will not be provided on mitigation lands.	YES: Wiles (2015)	Low feasibility: The time it would take to create suitable habitat in Tumwater is long, relative to the scope of the anticipated HCP term.	Do not cover. Low risk of take and mitigation is not feasible.
Streaked horned lark ^{1, 2, 3} <i>Eremophila alpestris strigata</i>	YES: Threatened / Endangered	YES: Exceptionally flat, open grassland habitats in Western Washington and Oregon.	YES: Take of animals may occur and loss of habitat is likely to occur due to airport operations and Port development on airport lands. Take is also possible on mitigation lands.	YES: WDFW (2016); Mead and Hunt (2013)	Moderately feasible: Species requires large, open habitats that are rare in the study area, so mitigation will likely need to be sited in a distant location (i.e., not within the City or its UGA).	Definitely cover. Take is likely to occur.
Oregon vesper sparrow ^{1, 2}	YES: None / Candidate, but has an appreciable listing risk	YES: Breeding has been known to occur at the Olympia Airport. Other suitable habitat may occur nearby.	YES: Could be taken by City or Port development, maintenance, or at mitigation sites.	YES: Knowledge is currently quite limited, but USFWS staff advises that coverage is feasible. Mead & Hunt (2013); WDFW (2012a);	Feasible: There are opportunities to conserve habitat for this species at mitigation sites.	Definitely cover. High risk of take if listed, although listing is uncertain. Mitigation is feasible.

Species	Status (Federal / State)	Range	Impact	Knowledge	Feasibility	Conclusion
				WDFW (2016)		
Slender-billed white-breasted nuthatch ^{1,2}	YES: None / Candidate, but has an appreciable listing risk	NO: Oak forest habitats in Baja California, California, Oregon, Washington.	NO: Take unlikely because habitat (oak forest) for this species is lacking in Tumwater.	YES: WDFW (2012b)	Not feasible: The time it would take to create oak habitat in Tumwater is long relative to the 30-year term of the HCP.	Do not cover. Low risk of take and mitigation is not feasible.
Yellow-billed cuckoo ³ <i>Coccyzus americanus</i>	YES: Threatened / Candidate	NO: Breeds and forages primarily in dense shrub-scrub wetland, in western US, southwestern Canada, and western Mexico.	NO: Take due to loss of breeding habitat (forest and shrubby areas near streams and rivers) is not likely to occur in Tumwater.	YES: WDFW (2012c)	Not feasible: This wide-ranging species may not be present in Thurston County and does not use open grassland habitats.	Do not cover. Low risk of take and mitigation is not feasible.
Oregon spotted frog ^{1,2,3} <i>Rana pretiosa</i>	YES: Threatened / Endangered	YES: Specialized wetland habitats at rare locations in California, Oregon, Washington, British Columbia.	YES: Species and habitat may be taken by development in Tumwater and may occur at mitigation sites.	YES: WDFW (2016)	Moderately feasible: There are opportunities to conserve habitat for this species at some potential mitigation sites.	Definitely cover. High risk of take and mitigation is feasible.
Western toad ² <i>Anaxyrus boreas</i>	NO: None / Candidate, and no appreciable listing risk	YES: Pond and riparian habitats in western US and Canada.	YES: Take is unlikely. Although toads are not known to occur in the study area, suitable habitat does exist and they are known from nearby (Spurgeon Creek).	YES: WDFW (2016)	Moderately feasible: There are opportunities to conserve habitat for this species at some potential mitigation sites.	Do not cover. Low risk of take, and listing is doubtful within HCP term.
Bull Trout ³ <i>Salvelinus confluentus</i>	YES: Threatened / Candidate	NO: Cold waters and major water bodies in the Pacific Northwest; not within Tumwater UGA.	NO: Take is not expected. Any mechanism causing take would likely involve in-water work (a federal nexus, thus could be a Section 7 consultation).	YES: Extensive literature base.	Not feasible: Suitable habitat does not occur within the Tumwater UGA and is rare in Thurston County.	Do not cover. Take is unlikely, species does not occur within the Tumwater UGA, and mitigation is not feasible.
Puget Sound Chinook salmon ³ <i>Oncorhynchus tshawytscha</i>	YES: Threatened / Candidate	NO: Streams and larger water bodies in the Pacific Northwest.	NO: Take is not expected. Any mechanism causing take would likely involve in-water work (a federal nexus, thus could be a Section 7 consultation).	YES: Extensive literature base.	Not feasible: Suitable habitat likely does not occur within the Tumwater UGA and is rare in Thurston County.	Do not cover. Take is unlikely, species likely does not occur within the Tumwater UGA, and mitigation is not feasible.
Hoary elfin butterfly ^{1,2} <i>Callophrys polios obscurus</i>	YES: None / None, but has an appreciable listing risk	YES: Washington, only known from 10-15 localities in the south Puget Sound prairies. Little is known about its habitat needs.	YES: Not known if it occurs within Tumwater UGA. If it does, take might result from covered activities.	NO: Schultz et al. (2011)	Feasibility uncertain due to data gaps about habitat needs.	Deferred Decision. For each of the five currently-unlisted butterflies, there is limited knowledge of potential to occur on lands within the HCP plan area. Excepting Mardon skipper and Valley silverspot butterfly, there is also very little known about the biology of these species. A fuller analysis will be developed during Phase 2 of the HCP development process and a decision whether to cover will be made at that time.
Mardon skipper butterfly ^{1,2} <i>Polites mardon</i>	YES: None / Endangered, but has an appreciable listing risk	YES: Western Washington prairies, the Mt. Adams area, and the Klamath-Siskiyou area; in Washington, primarily near Tenino.	YES: Not known to occur within Tumwater UGA; potentially found at mitigation sites, where it could be taken by management activities.	YES: Xerces et al. (2002), USFWS (2016)	Feasible: Species will only occur at mitigation sites, and only if they provide suitable habitat for it to colonize.	Deferred Decision, rationale stated above. Note that listing of this species was found “not warranted” by USFWS in 2012; listing is unlikely during permit term.
Oregon branded skipper butterfly ^{1,2} <i>Hesperia colorado oregonia</i>	YES: None / None, but has an appreciable listing risk	YES: British Columbia and Washington, with 6 known localities in the south Puget Sound prairies. Little is known about its habitat needs.	YES: Not known to occur within Tumwater UGA; potentially found at mitigation sites, where it could be taken by management activities.	NO: Schultz et al. (2011)	Feasibility uncertain due to data gaps about habitat needs.	Deferred Decision, rationale stated above.

Species	Status (Federal / State)	Range	Impact	Knowledge	Feasibility	Conclusion
Puget blue butterfly ^{1, 2} <i>Icaricia icarioides blackmorei</i>	YES: None / Candidate, but has an appreciable listing risk	YES: British Columbia and Washington, known from 7-10 localities in the south Puget Sound prairies. Little is known about its habitat needs.	YES: Not known to occur within Tumwater UGA; potentially found at mitigation sites, where it could be taken by management activities.	NO: Schultz et al. (2011)	Feasibility uncertain due to data gaps about habitat needs.	Deferred Decision , rationale stated above.
Taylor’s checkerspot butterfly ^{1, 2, 3} <i>Euphydryas editha taylori</i>	YES: Endangered / Endangered	YES: Prairie habitat at rare locations in Oregon, Washington, British Columbia	YES: Does not occur within Tumwater UGA; potentially found at mitigation sites, where it could be taken by management activities.	YES: USFWS (2013)	Feasible: Species will only occur at mitigation sites, and only if they provide suitable habitat for it to colonize.	Cover if, and only if, it occurs on mitigation lands. Low risk of take, but self-mitigating since species is only likely to occur at mitigation sites.
Valley silverspot butterfly ¹ <i>Speyeria zerene bremnerii</i>	YES: None / Candidate, but has an appreciable listing risk	YES: Historically, from southwestern British Columbia to west-central Oregon. Extirpated now in Oregon. Found in native prairies and grasslands.	YES: Does not appear to occur within Tumwater UGA, but is associated with south Puget Sound prairie habitat. Take might result from covered activities.	YES: Xerces (2009)	Moderately feasible: There are opportunities to conserve habitat for this species at some potential mitigation sites.	Deferred Decision , rationale stated above.
Golden paintbrush ³ <i>Castilleja levisecta</i>	YES: Threatened / Threatened	YES: Oregon and Washington, including prairies in Thurston County, where it has been reestablished and is starting to develop self-perpetuating populations.	YES: Not known to occur within Tumwater UGA and occurrence is unlikely. Could establish naturally in suitable habitat at mitigation sites, where take might result from management activities.	YES: USFWS (2010, 2016)	Feasible: Species will only occur at mitigation sites, and only if they provide suitable habitat for it to colonize.	Cover if, and only if, it occurs on mitigation lands. Low risk of take, but self-mitigating since species is only likely to occur at mitigation sites.
Kincaid’s lupine ³ <i>Lupinus sulphureus</i> ssp. <i>kincaidii</i>	YES: Threatened / Endangered	YES: Prairies of western Oregon and Washington, but not known north of southwestern Lewis County.	YES: Not known to occur within Tumwater UGA and occurrence is very unlikely. Could occur at mitigation sites within its range, where take might result from management activities.	YES: USFWS (2010)	Not feasible: Mitigation sites are unlikely to be sited within the range of this species.	Cover if, and only if, it occurs on mitigation lands. No risk of take, unless a mitigation site is selected within its range.
Marsh sandwort ³ <i>Arenaria paludicola</i>	YES: Endangered / Extirpated	NO: Formerly reported from Washington (not Thurston County); all extant populations are in California from San Francisco southwards.	NO: Reasonably certain that it does not occur in Washington; no risk of take.	YES: USFWS (2016)	Feasibility unknown; little in known of its Washington habitats.	Do not cover. No risk of take. Does not occur in Thurston County.
Nelson’s checker-mallow ³ <i>Sidalcea nelsoniana</i>	YES: Threatened / Endangered	YES: Prairies of western Oregon and Washington, but not known north of southwestern Lewis County.	YES: Not known to occur within Tumwater UGA and occurrence is very unlikely. Could occur at mitigation sites within its range, where take might result from management activities.	YES: USFWS (2010)	Not feasible: Mitigation sites are unlikely to be sited within the range of this species.	Cover if, and only if, it occurs on mitigation lands. No risk of take, unless a mitigation site is selected within its range.
Puget balsamorhiza ² <i>Balsamorhiza deltoidea</i>	NO: None / None, and no appreciable listing risk	YES: A common plant, widely distributed from California to British Columbia.	YES: Take possible, would most likely occur through management activities at mitigation sites.	YES: USDA (2016)	Feasible: There are opportunities to conserve habitat for this species at mitigation sites	Do not cover. Moderate risk of take and mitigation is feasible, but listing is very unlikely within HCP term.
Rose checker-mallow ² <i>Sidalcea malviflora</i> ssp. <i>virgata</i>	YES: None / Endangered, but has an appreciable listing risk	YES: A very rare plant known to occur in Thurston County. Very little is known of it.	YES: If it does occur within the Tumwater UGA, there would be a take risk.	NO: NatureServe (2016)	Mitigation not currently feasible because little is known of its habitat needs.	Do not cover. Take risk unknown. Mitigation not feasible. Not listed, and listing is not foreseeable.

Species	Status (Federal / State)	Range	Impact	Knowledge	Feasibility	Conclusion
Water howellia ³ <i>Howellia aquatilis</i>	YES: Threatened / Sensitive	YES: Annual aquatic plant of Oregon, Idaho, California, Montana and Washington, including Thurston County. Not reported from within Tumwater UGA.	NO: It occasionally occupies habitats used by Oregon spotted frog, but take is unlikely except through development that causes fill of high-quality wetlands.	YES: USFWS (2016)	Moderately feasible: There would likely be opportunities to conserve habitat for this species at some potential mitigation sites.	Do not cover. There is a small risk of take, but it would not be cost-effective to attempt to cover and mitigate for effects to this species, given that it is unlikely to be taken and that take of its aquatic habitat would trigger federal involvement via a Clean Water Act Section 404 permit.

Notes

¹ One of the Thurston County HCP Covered Species.

² One of the species listed in the Section 6 Grant Proposal for Bush Prairie HCP.

³ One of the species listed in the USFWS species list for Thurston County (USFWS 2016), except that species that require old growth forest or live only in salt water are not included.

References

- Mead and Hunt. 2013. Final Report: Critical Area (Priority Habitat & Species) Recommended Mitigation Measures for Port of Olympia/Olympia Regional Airport. Prepared by Mead & Hunt and Anchor QEA, LLC. September 2013.
- NatureServe. 2016. *Sidalcea malviflora* ssp. *Virgata* (T.J. Howell) C.L. Hitchc.
http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=155257&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=155257&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=155257, accessed 2016.10.11.
- Schultz, Cheryl B., Erica Henry, Alexa Carleton, Tyler Hicks, Rhiannon Thomas, Ann Potter, Michele Collins, Mary Linders, Cheryl Fimbel, Scott Black, Hannah E. Anderson, Grace Diehl, Sarah Hamman, Rod Gilbert, Jeff Foster, Dave Hays, David Wilderman, Roberta Davenport, Emily Steel, Nick Page, Patrick L. Lilley, Jennifer Heron, Nicole Kroeker, Conan Webb and Brian Reader. 2011. Conservation of Prairie-Oak Butterflies in Oregon, Washington, and British Columbia. *Northwest Science* 85(2):361-388.
- US Department of Agriculture (USDA). 2016. *Balsamorhiza deltoidea* Nutt. deltoid balsamroot. Available: <http://plants.usda.gov/core/profile?symbol=bade2>, accessed 2016.10.11.
- US Fish and Wildlife Service (USFWS). 2010. Recovery plan for the prairie species of western Oregon and southwestern Washington. http://ecos.fws.gov/docs/recovery_plan/100629.pdf, accessed 2016.10.11.
- US Fish and Wildlife Service (USFWS). 2013. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Taylor's Checkerspot Butterfly and Threatened Status for the Streaked Horned Lark; Final Rule. October 3, 2013. Federal Register. Volume 78. Number 192. 61452-61503.
- US Fish and Wildlife Service (USFWS). 2014. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Olympia Pocket Gopher, Roy Prairie Pocket Gopher, Tenino Pocket Gopher, and Yelm Pocket Gopher, With Special Rule. U.S. Department of the Interior, Fish and Wildlife Service. April 9, 2014. Federal Register. Volume 79, Number 68. 19760-19796.
- USFWS. 2016. IPaC Information for Planning and Conservation. U.S. Fish & Wildlife Service. Search of resources for projects in Thurston County, Washington at <https://ecos.fws.gov/ipac/> Accessed on October 6, 2016.
- Washington Department of Fish and Wildlife (WDFW). 2012a. Annual Report on Candidate Species: Oregon Vesper Sparrow (*Pooecetes gramineus affinis*).
http://wdfw.wa.gov/conservation/endangered/species/oregon_vesper_sparrow.pdf. Accessed on October 7, 2016.
- Washington Department of Fish and Wildlife (WDFW). 2012b. Annual Report on Candidate Species: Slender-billed White-breasted Nuthatch (*Sitta carolinensis aculeate*).
http://wdfw.wa.gov/conservation/endangered/species/slender-billed_white-breasted_nuthatch.pdf. Accessed on October 10, 2016.
- Washington Department of Fish and Wildlife (WDFW). 2012c. Annual Report on Candidate Species: Yellow-billed Cuckoo (*Coccyzus americanus*).

http://wdfw.wa.gov/conservation/endangered/species/yellow-billed_cuckoo.pdf. Accessed on October 10, 2016.

Washington Department of Fish and Wildlife (WDFW). 2016. Priority Habitats and Species database. Accessed on August 25, 2014.

Wiles, G. 2016. Periodic Status Review for the Western Gray Squirrel in Washington. Washington Department of Fish and Wildlife. Olympia, Washington. 19 +iii pp.

Xerces Society, Gifford Pinchot Task Force, Northwest Environmental Defense Center, Center for Biological Diversity, Oregon Natural Resources Council, Friends of the San Juans, and Northwest Ecosystem Alliance. 2002. Petition to list the Mardon skipper butterfly (*Polites mardon*) as an endangered species under the U.S. Endangered Species Act. <http://ecos.fws.gov/docs/petitions/92210/82.pdf>, accessed 2016.10.11.

Section 106 of the National Historic Preservation Act for the Bush Prairie ITP/HCP, Tumwater, Washington

1. Introduction

The City of Tumwater (City) and the Port of Olympia (Port) (collectively referred to as the “Permittees”) have applied to the U.S. Fish and Wildlife Service (USFWS) for an incidental take permit (ITP) pursuant to Section 10 of the Endangered Species Act (ESA), 16 U.S.C. 1539. The proposed term of the ITP is 30 years.

USFWS considers ITP issuance a Federal undertaking for purposes of Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. 306108. The ITP would authorize the “take” of ESA-listed species and certain other sensitive species when the take is incidental to the City’s otherwise lawful urban development, which includes residential, commercial, industrial, and institutional developments and associated infrastructure, as well as operations and maintenance activities within the City, including Port-owned properties in the City. The ITP will also cover effects on covered species from infrastructure construction activities at the Olympia Regional Airport and ongoing management on Airport lands. These activities are described in a Habitat Conservation Plan (HCP) prepared by the City in support of its ITP application.

USFWS’ expectations are that the City would assume a leading role in consultation and historic property identification, avoidance, minimization, and mitigation for individual projects covered under an ITP, given the City’s existing program to identify, avoid, minimize, and mitigate impacts of the HCP-covered activities on historic and cultural resources, its Certified Local Government (CLG) status, and its responsibility for reviewing and permitting development projects in over the requested 30-year ITP term. USFWS expects that after the ITP is issued, certain day-to-day Section 106 consultation responsibilities would be delegated to the Permittees. Accordingly, we expect that consideration of the effects of the City’s HCP activities on historic properties would be accomplished primarily through the implementation of the City’s and State of Washington’s (state) cultural resource protection procedures, with USFWS support, consistent with our delegation authorities under Section 106 of NHPA.

2. Cultural Resource Protection by the City

The City’s status as a CLG is described by the state Department of Archaeology and Historic Preservation (DAHP) as follows in their Requirements and Procedures for CLGs:

The purposes of the Certified Local Government (CLG) program are: (1) to ensure the broadest possible participation of local governments in the national historic preservation program while maintaining standards consistent with the National Historic Preservation Act, and the Secretary of the Interior’s “Standards and Guidelines for Archaeology and Historic Preservation”; (2) to enrich, develop, and help maintain local historic preservation programs in cooperation and coordination with the State Historic Preservation Office thereby officially recognizing and protecting the local

community's heritage; and (3) to provide financial and technical assistance to further these purposes.

As a designated CLG, the City has established a historic preservation program meeting federal and state standards.

In its capacity as a CLG, the City's responsibilities include maintaining an Historic Preservation Commission, surveying local historic properties, enforcing state and local preservation laws, reviewing nominations to the National Register of Historic Places, and providing for public participation in historic preservation activities. Given the City's CLG status and its responsibility for permitting HCP activities over the term of the ITP, USFWS and City recognize that the City will play a leading role in historic property identification, consultation, avoidance, minimization, and mitigation efforts for HCP activities. Under state rules for a CLG, the State Historic Preservation Officer has the authority to require the City to adopt and enforce a local historic preservation ordinance that provides for the designation and protection of historic properties, which must be consistent with the purposes of the NHPA as amended (16 U.S.C. 470 et. seq.), the State Historic Preservation Plan, and other provisions.

As described further below, USFWS remains ultimately responsible for all findings and determinations related to the ITP, and will aid the City whenever it identifies an HCP activity that cannot avoid, minimize, or mitigate an adverse effect to a historic property. In addition, USFWS recognizes its responsibility cannot be delegated. USFWS will conduct government-to-government consultation on City HCP activities that may affect a federally recognized Tribe's (Tribe) interest in historic properties should a Tribe's request to do so.

a) City Responsibilities

- I. Administer its historic and cultural resources program in accordance with Chapter 2.62 *Historic Preservation* of the Tumwater Municipal Code (TMC), including as described in Section 3 of this below.
- II. Conduct historic preservation review according to TMC Chapter 2.62 *Historic Preservation* and the State Environment Policy Act (SEPA) (43.21C RCW), as these laws may be amended from time-to-time.
- III. Maintain its status as a CLG pursuant to TMC Chapter 2.62 *Historic Preservation* and maintain a Historic Commission that conducts historic preservation review.
- IV. Designate a point of contact who will coordinate with the USFWS, DAHP, and Tribes for matters regarding the implementation of the procedures in this Appendix.

b) USFWS Responsibilities

- I. Upon the confirmation by the City that the City will adhere to the contents of this Appendix, USFWS will acknowledge the NHPA Section 106 compliance approach in its letter to consulting parties.
- II. In the context of ITP implementation, USFWS will conduct government-to-government consultation with Tribes respecting historic and cultural resources matters of importance to Tribes. However, given the lead role of the City will fulfill in implementing this cultural resource protection on a day-to-day basis, for efficiency Tribes may elect consultation with

the City, or staff-level or government-to-government consultation with USFWS where they have identified a potential for adverse impacts.

- III. Coordinate with the City on significant historic property identification, consultation, and treatment issues upon City request.
- IV. Review and as appropriate respond to City-generated annual reports produced pursuant to their HCP.
- V. Designate a point of contact who will coordinate with the City, USFWS, DAHP, and Tribes for matters regarding the implementation of the procedures in this Appendix.

3. Historic Preservation Review of HCP Activities by the City

a) City Historic Preservation Commission

As a CLG, the City will maintain a Historic Preservation Commission that conducts a historic preservation review for the HCP activities according to the procedures identified in TMC Chapter 2.62 *Historic Preservation*. While the entirety of TMC Chapter 2.62 *Historic Preservation* is pertinent to historic preservation review of the HCP activities, the following sections are especially pertinent and directly quoted from the chapter as follows: The City's Historic Preservation Commission will:

- I. *Identify and actively encourage the conservation the conservation of the city's historic resources by initiating and maintaining a register of historic places and reviewing proposed changes to register properties; to raise community awareness of the city's history and historic resources; and to serve as the city's primary resource in matters of history, historic planning, and preservation (TMC 2.62.040(D))*
- II. *Conduct and maintain a comprehensive inventory of historic resources within the boundaries of the city and known as the Tumwater historic inventory; publicize and periodically update inventory results (TMC 2.62.040(D)(1))*
- III. *Review proposals to conduct, change, alter, modify, remodel, move, demolish, and significantly affect properties or districts on the register as provided in TMC 2.62.060; and adopt standards in its rules to be used to guide this review and the issuance of a certificate of appropriateness or waiver (TMC 2.62.040(D)(4))*

b) Historic Preservation Review of HCP activities by the City

Per TMC Chapter 2.62 *Historic Preservation*, when an HCP activity entails an application associated with the following, "...change the use, construct any new building or structure, or reconstruct, alter, restore, remodel, repair, move, or demolish any existing property on the Tumwater register of historic places or within a historic district on the Tumwater register of historic places..." a review is required:

No person shall change the use, construct any new building or structure, or reconstruct, alter, restore, remodel, repair, move, or demolish any existing property on the Tumwater register of historic places or within a historic district

on the Tumwater register of historic places without review by the commission and without receipt of a certificate of appropriateness, or in the case of a demolition, a waiver, as a result of the review. Historic cemeteries shall be reviewed under subsection C of this section and in compliance with TMC Chapter 12.40.

This review shall apply to all features of the property, interior and exterior, that contribute to its designation and are listed in the nomination form. Information required by the commission to review the proposed changes is established in the rules. (TMC 2.62.060(A))

I. Exemptions

The following activities do not require a certificate of appropriateness or review by the commission

- i. *Ordinary repair and maintenance; (TMC 2.62.060(B)(1))*
- ii. *Painting as part of ordinary repair and maintenance that is consistent with the historic register designation report for the property; (TMC 2.62.060(B)(2))*
- iii. *Emergency measures defined in TMC 2.62.030; (TMC 2.62.060(B)(3)) and*
- iv. *Resurfacing of areas such as parking lots, trails, sidewalks, and streets with materials that are consistent with the historic register designation report for the property. (TMC 2.62.060(B)(4))*

II. Review Process:

- i. Requests for Review and Issuance of a Certificate of Appropriateness or Waiver.

An applicant shall file their building permit application with a request for review or issuance of a certificate of appropriateness with the department of community development. The building official or director of community development shall report any application for a permit to work on a designated Tumwater register property or in a Tumwater register historic district to the commission. If the activity is not exempt from review, the commission shall notify the applicant of the review requirements. The building official or director of community development shall not issue any such permit until a certificate of appropriateness or a waiver is received from the commission but shall work with the commission in considering building and fire code requirements. (TMC 2.62.060(C)(1))

- ii. Historic Preservation Commission Review

The owner or his/her agent (architect, contractor, lessee, etc.) shall apply to the commission for a review of proposed changes on a Tumwater register property or within a Tumwater register historic district and request a certificate of appropriateness or, in the case of a demolition, a waiver. Each application for review of proposed changes shall be accompanied by such information as is required by the commission established in its rules for the proper view of the proposed project.

The commission shall meet with the applicant and review the proposed work according to the design review criteria established in rules. All such actions shall be made at regular meetings of the commission. The commission shall complete its review and make its

recommendations within thirty days of the date of receipt of the application. If the commission is unable to process the request, the commission may ask for an extension of time. (TMC 2.62.060(C)(2))

iii. Demolition

A waiver of the certificate of appropriateness is required before a permit may be issued to allow whole or partial demolition of a designated Tumwater register property or in a Tumwater register historic district. (TMC 2.62.060(C)(3))

iv. Appeal of Approval, Denial, or Waiver of a Certificate of Appropriateness

The commission's decision regarding an approval, denial, or waiver of a certificate of appropriateness may be appealed to the hearing examiner within ten days. The appeal must state the grounds upon which the appeal is based. The appeal shall be reviewed by the hearing examiner only on the records of the commission. Appeal of the hearing examiner's decision regarding an approval, denial, or waiver of a certificate of appropriateness may be appealed to superior court. (TMC 2.62.060(C)(4))

4. Activities subject to the State Environmental Policy Act

The City will adhere to TMC Chapter 16.04 *Environmental Policy*, RCW 43.21C.120, and WAC 197-11-904 review procedures for HCP activities subject to the SEPA process. Additionally, SEPA threshold determinations and environmental checklists are provided to multiple state and local government agencies (including DAHP), Tribes, and the public through the process set forth in TMC Chapter 16.04 *Environmental Policy*, RCW 43.21C.120, and WAC 197-11-904 for comment and/or appeal of decision.

5. Post Review Discoveries

The City will coordinate with USFWS and work directly with DAHP and Tribes to evaluate post review discoveries as needed. The City will coordinate towards ensuring the process is followed as outlined in the Standard Inadvertent Archaeological and Historic Resources Discovery Plan, approved by the City and DAHP.

In the event that any ground-disturbing activities or other project activities related to this development or in any future development uncover protected cultural material (e.g., bones, shell, antler, horn or stone tools, or the evidence of historic artifacts), the following actions will be taken:

- a) When an unanticipated discovery of protected cultural material (see definitions below) occurs, the property owner or contractor will completely secure the location and contact:
 - I. The property owner and project representative;
 - II. A professional archaeologist;
 - III. The DAHP – Contact Gretchen Kaehler, Local Government Archeologist, or assign to the appropriate person, (360) 586-3088 or (360) 628-2755 cell;

- IV. Nisqually Indian Tribe – Contact Annette “Nettsie” Bullchild, (360) 456-5221 ext. 1106 or Jackie Wall, (360) 456-5221 ext. 2180, Tribal Historic Preservation Officers, or assign to the appropriate person;
 - V. Squaxin Island Tribe – Contact Rhonda Foster, Cultural Resources Director, or assign to the appropriate person, (360) 423-3850;
 - VI. Confederated Tribes of the Chehalis Reservation – To assign to the appropriate person, contact (360) 273-5911; and
 - VII. City Department of Community Development Department – (360) 754-4180
- b) If the discovery is human remains, the property owner or contractor will stop work in and adjacent to the discovery, completely secure the work area by moving the land-altering equipment to a reasonable distance, and will immediately contact:
- I. The property owner;
 - II. The City Police Department – (360) 754-4200;
 - III. The Thurston County Coroner, Gary Warnock or assign to the appropriate person, (360) 867-2140 to determine if the remains are forensic in nature;
 - IV. If the remains are not forensic in nature, the DAHP – Gretchen Kaehler, Local Government Archeologist, (360) 586-3088 or (360) 628-2755 cell, or Guy Tasa, State Physical Anthropologist, (360) 586- 3534 or (360) 790-1633 (cell), or assign to the appropriate persons; will take the lead on determining the appropriate method of treatment for the remains and will consult with the affected Tribes;
 - V. A professional archaeologist; and
 - VI. City Department of Community Development – (360) 754-4180
- Historic and prehistoric human remains are subject to protection under RCW Sections 68.50.645, 27.44.050, and 68.60.055. The treatment of human remains will conform to the process described above, except for remains discovered on federally managed lands, which will be treated by the authorized land manager.
- c) Cultural material that may be protected by law could include but is not limited to:
- I. Buried layers of black soil with layers of shell, charcoal, and fish and mammal bones;
 - II. Non-natural sediment or stone deposits that may be related to activity areas of people;
 - III. Stone, bone, shell, horn, or antler tools that may include projectile points (arrowheads), scrapers, cutting tools, wood working wedges or axes, and grinding stones; and
 - IV. Stone tools or stone flakes
 - V. Buried cobbles that may indicate a hearth feature;
 - VI. Old ceramic pieces, metal pieces, tools and bottles; and
 - VII. Perennially damp areas may have preservation conditions that allow for remnants of wood and other plant fibers; in these locations there may be remains including:

- i. Fragments of basketry, weaving, wood tools, or carved pieces; and
 - ii. Human remains.
- d) Compliance with all applicable laws pertaining to archaeological resources (RCW 27.53, RCW 27.44, and WAC 25-48) and with human remains (RCW 68.50) is required. Failure to comply with these requirements could result in a misdemeanor and possible civil penalties and/or constitute a Class C felony.

6. Tribal Consultation

- a) USFWS recognizes that it has a unique legal relationship with Tribes including the Nisqually Indian Tribe, Squaxin Island Tribe, Confederated Tribes of the Chehalis Reservation, and the Cowlitz Indian Tribe, hereafter Tribes, as set forth in the Constitution of the United States, treaties, regulations, and court decisions, and that consultation with a Tribe must, therefore, recognize the government-to-government relationship between the Federal Government and Tribes. Nothing in this Appendix affects or changes USFWS's responsibilities and obligations toward Tribes.
- b) In accordance with 36 CFR 800.14(b)(2)(iv), USFWS will send a letter to Tribes notifying them that the City may initiate consultation with the Tribes for City Activities carried out under the provisions of their HCP.
- c) The City will ensure that Tribes are provided information through the SEPA process regarding proposed Activities during planning and are invited to comment as early as practicable within City procedures.
- d) Upon written request from an officially designated representative of a Tribe to consult with USFWS in lieu of, or in addition to the City, USFWS will consult with that Tribe for the City's Covered Activity.
- e) USFWS and the City will abide by the confidentiality provision of 54 USC 307103 of the NHPA in determining what information may be provided to non-Federal parties.

7. Documentation and Reporting

- a) All documentation prepared pursuant to the cultural resource procedures outlined in this Appendix will be maintained by the City and will be made available to USFWS upon request. The City's staff person identified in paragraph 2(A)(iv) will serve as the principal point of contact for documentation and reporting described in this Appendix.
- b) All surveys, identification, and evaluation of historic properties will be completed under the direction and supervision of individuals as described in Appendix A of 36 CFR Part 61.
- c) All cultural resource work will adhere to the DAHP's State Standards for Cultural Resource Reporting and the City's Standard Inadvertent Archaeological and Historic Resource Discovery Plan.

- d) The City will submit to USFWS on an annual basis during HCP implementation a report that summarizes the historic preservation review process for each year. This report may be delivered as a stand-alone document or incorporated with the City's annual HCP report to USFWS.

8. Duration

The procedures described in this Appendix will remain in effect for the term of the ITP.

Appendix D

Stakeholders

#	Role	Name	Title	Organization	Phone (o)	Phone (m)	Email	Mailing address
1	Applicant	Mike Matlock	Community Development Director	City of Tumwater	(360) 754-4180		MMatlock@ci.tumwater.wa.us	City of Tumwater, Community Development Department, 555 Israel Road SW, Tumwater WA 98501
2	Applicant	Brad Medrud	Planning Manager	City of Tumwater	(360) 754-4180	(360) 915-2185	BMedrud@ci.tumwater.wa.us	City of Tumwater, Community Development Department, 555 Israel Road SW, Tumwater WA 98501
3	Applicant	Rudy Rudolph	Airport Director	Port of Olympia	(360) 528-8079	(360) 789-5455	RudyR@portolympia.com	Port of Olympia, 7643 Old Hwy 99 SE, Olympia, WA 98501
4	Applicant	Rachael Jamison Lisa Parks	Director of Environmental Programs Capital Investments, Planning & Environmental Programs Director	Port of Olympia	(360) 528-8020	(360) 701-1604	Rachaelj@portolympia.com lisap@portolympia.com	Port of Olympia, 606 Columbia St NW, Suite 300, Olympia, WA 98501
5	Applicant	Chris Carlson Tami Merriman	Permit Manager	City of Tumwater	(360) 754-4180		CCarlson@ci.tumwater.wa.us tmerriman@ci.tumwater.wa.us	City of Tumwater, Community Development Department, 555 Israel Road SW, Tumwater WA 98501
6	Consultant	Troy Rahmig Adam Wagschal	Senior Manager	ICF	(206) 801-2823 (415) 677-7100	(408) 677-8031	Troy.Rahmig@ICF.com Adam.Wagschal@icf.com	ICF, 710 Second Ave., Suite 550, Seattle, WA 98104
7	Consultant	David Zippin	Vice President	ICF	(415) 677-7179		David.Zippin@ICF.com	ICF, 620 Folsom St., San Francisco CA 94107
8	Consultant	Linda Krippner	Ecologist	Krippner Consulting		(206) 954-0901	linda@krippnerconsulting.com	Krippner Consulting, PO Box 17621, Seattle WA 98127
9	Consultant	Steve Krippner	GIS	Krippner Consulting			steve@krippnerconsulting.com	Krippner Consulting, PO Box 17621, Seattle WA 98127
10	Consultant	Ruth Bell	Principal	Cascadia Consulting Group	(206) 449-1103	(206) 418-9541	ruth@cascadiaconsulting.com	Cascadia Consulting Group, 1109 First Ave, Ste. 400, Seattle, WA 98101
11	USFWS	Marty Acker	Endangered Species Ecologist	USFWS	(360) 753-9073	(360) 951-6970	Marty_Acker@fws.gov	U. S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 510 Desmond Dr. SE, Lacey WA 98503
12	Stakeholder	Jeff Pantier	Sr. Vice President	Hatton Godat Pantier	(360) 943-1599	(360) 791-9739	JeffP@hattonpantier.com	Hatton Godat Pantier 3910 Martin Way E Olympia WA 98506
13	Stakeholder	John Kaufman and Theresa Wall	President	Kaufman Construction & Development, Inc.	(360) 491-5230	(360) 791-2670	john@kaufmancd.com	7711 Martin Way East Olympia WA 98516
14	Stakeholder	Kelly Cairnes	Doelman Farm sibling		(360) 570-2050			
15	WDFW	Terra Rentz and Michelle Tirhi	Ecosystem Services Division Manager and Area Habitat Biologist	WDFW	(360) 902-2555 and (360) 902-2562		terra.rentz@dfw.wa.gov and michelle.tirhi@dfw.wa.gov	Washington Department of Fish and Wildlife, 600 Capitol Way N., Olympia, WA 98501
16	Stakeholder	Andy Deffobis	Associate Planner	Thurston County Planning Department	360 (754) 3355 ext. 5467		deffoba@co.thurston.wa.us	Thurston County Planning Department, 2000 Lakeridge Dr. SW, Olympia, WA 98502-6045

#	Role	Name	Title	Organization	Phone (o)	Phone (m)	Email	Mailing address
17	Stakeholder	Thom Woodruff	Board Member	Capitol Land Trust	(360) 943-3012			Capitol Land Trust, 209 4th Ave E Suite 205, Olympia, WA 98501 NOTE: Thom might defer to a CLT staff but should be the first point of contact.
18	Stakeholder	Lisa Dennis-Perez	Environmental Planning & Communications Director	LOTT Clean Water Alliance	(360) 664-2333		lisadennis-perez@lottcleanwater.org	LOTT Cleanwater Alliance, 500 Adams Street NE, Olympia, WA 98501
19	Stakeholder	Mel Murray	Supervisor of Capital Projects	Tumwater School District	(360) 709-7004		mel.murray@tumwater.k12.wa.us	Tumwater School District, 621 Linwood Avenue SW, Tumwater, WA 98512
20	Stakeholder	Sarah Moorehead	Deputy Director Interim Executive Director / Agricultural Outreach Specialist	Thurston County Conservation District	(360) 754-3588		smoorehead@thurstoncd.com	Thurston County Conservation District, 2918 Ferguson St SW, Suite A Tumwater, WA 98512
21	Stakeholder	David Schaffert or Doug Mah	President/CEO	Thurston County Chamber of Commerce	(360) 357-3362		dschaffert@thurstonchamber.com	Thurston County Chamber of Commerce, PO Box 1427, Olympia WA 98507
22	Stakeholder	Debra Nickerson	President	Audubon Society	(360) 754-5397		pres@blackhills-audubon.org / debranick@gmail.com	Black Hills Audubon Society, 3013 Azalea Court SE, Olympia, WA 98501 Black Hills Audubon Society, PO Box 2524, Olympia, WA 98507
23	Stakeholder	Patrick Dunn	South Puget Sound Program Director	Center for Natural Lands Management	(360) 956-9713		pdunn@cnlm.org	Center for Natural Lands Management, 120 Union Avenue SE #215, Olympia, WA 98501
24	Stakeholder	Erin Hall	Government Affairs Director	Olympia Master Builders	(360) 754-0912		erin@omb.org	Olympia Master Builders, 1211 State Avenue NE Olympia, WA 98506
25	Stakeholder	Katrina Van Every	Associate Planner	Thurston Regional Planning Council	(360) 956-7575		vaneveryk@trpc.org	Thurston Regional Planning Council, 2424 Heritage Court SW, Suite A Olympia, Washington 98502
26	Stakeholder	Michael Cade	Executive Director	Thurston Economic Development Council	(360) 754-6320	(360) 480-8781	mcade@thurstonedc.com	Thurston Economic Development Council, 4220 6th Ave SE, Lacey, WA 98503
27	Stakeholder	Wendy Steffensen	Environmental Project Manager	LOTT Clean Water Alliance	(360) 528-5773		WendySteffensen@lottcleanwater.org	LOTT Clean Water Alliance, 500 Adams St NE, Olympia, WA 98501
28	Stakeholder	Glenn Wells	Developer	Vine Street Investors	(360) 342-4553		glennwellsarchitect@gmail.com	324 West Bay Drive NW Olympia, WA 98502
29	Stakeholder	Don Moody	First Vice President	CBRE	(253) 596-0045	(253) 919-0556	Don.moody@cbre.com	CBRE Advisory & Transaction Services - Land Services Group/Special Properties Group 1201 Pacific Avenue, Suite1502 Tacoma, WA 98402
30	Stakeholder	Laurence Reeves	Conservation Director	Capitol Land Trust	(360) 943.3012		laurence@capitolandtrust.org	Capitol Land Trust, 4405 7th Ave SE, Suite 306, Lacey, WA 98503

#	Role	Name	Title	Organization	Phone (o)	Phone (m)	Email	Mailing address
31	Stakeholder	Farron McCloud	Chairman, Nisqually Tribal Council	Nisqually Tribe			McCloud.Farron@nisqually-nsn.gov	Nisqually Tribe, 4820 She-Nah-Num Drive SE, Olympia, WA 98513
32	Mailing List Addition	Pamela Gunther	Managing Principal, Natural Resources	Hart Crowser, Inc.		(425) 777-5075 (cell)	Pam.gunther@hartcrowser.com	Hart Crowser, Inc., 3131 Elliott Ave, Seattle, WA 98121
33	Stakeholder Addition	Joel L. Molander	President	Puget Western, Inc.	(425) 765-8002		Joel.molander@pugetwestern.com	Puget Western, Inc., P.O. Box 1529, Bothell, WA 98041-1529
34	Resource	Marty Chaney	Vegetation Specialist	United States Department of Agriculture	(360) 704-7751			
35	Resource	Dan Ufnar	Soils Specialist	United States Department of Agriculture	(360) 704-7755			
36	Stakeholder	Jennifer McNeil	Appraiser Analyst	Thurston County Assessor's Office	(360) 867-2235		mcneilj@co.thurston.wa.us	Thurston County Assessor's Office, 2000 Lakeridge Drive SW, Olympia WA 98502
37	Stakeholder	Toni Hartje	Senior Municipal Land Planner	Puget Sound Energy		(425) 505-3252 (cell)	Toni.hatje@pse.com	Municipal Relations Puget Sound Energy 10885 NE 4th Street, PSE9N, Bellevue WA 98004 PO Box 97034, Bellevue WA 98009-9734
38	Stakeholder	Jessica Jackson	Municipal Land Planner	Puget Sound Energy	(425) 457-5751	(425) 223-1745 (cell)	Jessica.Jackson@pse.com	Puget Sound Energy PO Box 97034 PSE-09N Bellevue, WA 98009-9734
39	Mailing List Addition	Rod Wetherbee		Spencer Aircraft	(253) 750-3226		Rod@spenceraircraft.com	13105 Houston Road Sumner, WA 98390
40	Mailing List Addition	Melissa Denton					blithemdjd@gmail.com	
41	Stakeholder	Teresa Hoyer	Commercial Appraiser Analyst	Thurston County Assessor's Office	(360) 867-2235		Teresa.hoyer@co.thurston.wa.us	Thurston County Assessor's Office, 2000 Lakeridge Drive SW, Olympia WA 98502
42	Stakeholder	Jeanne-Marie Wilson	Appraiser Analyst	Thurston County Assessor's Office	(360) 867-2235		Jeanne- marie.wilson@co.thurston.wa.us	Thurston County Assessor's Office, 2000 Lakeridge Drive SW, Olympia WA 98502
43	Stakeholder	Kelly Cairns	Family Member / Land Owner				bkcairns@gmail.com	
44	Stakeholder	Christina Chaput	Associate Planner	Thurston County Planning Department	(360) 754-3355 x. 5486		chaputc@co.thurston.wa.us	Thurston County Planning Department, 2000 Lakeridge Dr. SW, Olympia, WA 98502-6045
45	Stakeholder	Theresa Nation	Biologist	Washington State Department of Fish and Wildlife	(360) 902-2562	(360) 688-4745	theresa.nation@dfw.wa.gov	Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501
46	WDFW	Hannah Anderson	Listing and Recovery Section Manager	Washington State Department of Fish and Wildlife	(360) 902-8403		Hannah.Anderson@dfw.wa.gov	Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501
47	WDFW	Brian Calkins	Regional Wildlife Program Manager	Washington State Department of Fish and Wildlife	360-249-1222		Brian.Calkins@dfw.wa.gov	Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501

#	Role	Name	Title	Organization	Phone (o)	Phone (m)	Email	Mailing address
48	WDFW	Derek Stinson	Biologist	Washington State Department of Fish and Wildlife			Derek.Stinson@dfw.wa.gov	Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501
49	WDFW	Lisa Hallock	Oregon spotted frog species lead out	Washington State Department of Fish and Wildlife			Lisa.Hallock@dfw.wa.gov	Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501
50	Stakeholder	Amy Tousley	Municipal Liaison Manager	Puget Sound Energy			Amy.Tousley@pse.com	Puget Sound Energy 2711 Pacific Avenue SE OLY-SVC Olympia, WA 98501
51	Mailing List Addition	Jeff Beckwith	Forester, Supervisor	Puget Sound Energy			jeff.beckwith@pse.com	Puget Sound Energy
52	Stakeholder	Kelly McAllister	Fish and Wildlife Program Manager	Washington State Department of Transportation	(360) 705-7426		kelly.mcallister@wsdot.wa.gov	Washington State Department of Transportation 310 Maple Park SE Olympia WA 98504
53	Mailing List Addition	Jeremiah McKinney	Manager	Blackland Environmental	(210) 834-4368		jeremiah@bk-land.com	Blackland Environmental 8803 Timmermann Cv San Antonio, TX 78266
54	Stakeholder	Mara Healy	Habitat Specialist	Thurston County Conservation District	(360) 754-3588, ext. 138		mhealy@thurstoncd.com	Thurston County Conservation District, 2918 Ferguson St SW, Suite A Tumwater, WA 98512
55	Mailing List Addition	Lisa Danielski	Senior Environmental Scientist	HDR	(425) 450-6390	(425) 559-0964	lisa.danielski@hdrinc.com	HDR 929 108 th Avenue NE, Suite 1300 Bellevue, WA 98004
56	Mailing List Addition	Sarah Smyth McIntosh	Attorney	Smyth McIntosh PS	(360) 352-0866	(360) 791-0324	sarah@smythlanding.com	Smyth McIntosh PS 1801 West Bay Drive NW Suite 202A Olympia, Washington 98502
57	Mailing List Addition	Carol DeMent	Bridlewood Resident				cyclista@comcast.net	
58	Mailing List Addition	Al and Linda King	Resident				Alking1@comcast.net	
59	Mailing List Addition	Jan Lindsey	Resident				jhawk@gglbbs.com	
60	Mailing List Addition	Ray Aspri	Property Owner				Ray@Aspri.com	
61	Mailing List Addition	Gary Aspri	Property Owner				Garyr@Aspri.com	
62	Mailing List Addition	Kramer Aspri	Property Owner				KramerAspri@gmail.com	
63	Mailing List Addition	Elizabeth Rodrick	Resident				elizrodrick@gmail.com	
64	Mailing List Addition	Joel Hansen	Community Meeting Attendee	City of Tumwater Planning Commission		(360) 970-3321	joelahansen@gmail.com	
65	Mailing List Addition	Sue Danver	Community Meeting Attendee			(360) 705-9247	Sdanver7@aol.com	

#	Role	Name	Title	Organization	Phone (o)	Phone (m)	Email	Mailing address
66	Mailing List Addition	Jessica Hausman	Community Meeting Attendee			(360) 339-2155	Jhausman09@gmail.com	
67	Mailing List Addition	Michele McGraw	Community Meeting Attendee	Ecological Land Services		(360) 560-3008	michele@eco-land.com	Ecological Land Services 1157 3rd Avenue, Suite 220A Longview, WA 98632
68	Mailing List Addition	Coli Huffman	Community Meeting Attendee	Ecological Land Services		(360) 708-0780	coli@eco-land.com	Ecological Land Services 1157 3rd Avenue, Suite 220A Longview, WA 98632
69	Mailing List Addition	Terry Kirkpatrick	Community Meeting Attendee	City of Tumwater Planning Commission		(360) 943-3293	terrykirk@comcast.net	
70	Mailing List Addition	Jan Tveten	Community Meeting Attendee			(360) 273-9379	tvetenjt@hotmail.com	
71	Mailing List Addition	Debra Jaqua	Community Meeting Attendee			(360) 491-3325	djaqua@comcast.net	
72	Mailing List Addition	Jeff Foster	Community Meeting Attendee			(360) 491-3325	tenpeak@comcast.net	3104 59th Court Olympia, WA 98501
73	Mailing List Addition	Bonnie Blessing	Community Meeting Attendee			(360) 943-6629	Bonnie.blessing@gmail.com	
74	Mailing List Addition	Bob Vadas Jr.	Community Meeting Attendee			(360) 705-2231	bobesan@comcast.net	
75	Mailing List Addition	Derek Vetter	Community Meeting Attendee			(360) 581-1355	Derek.vetter@hotmail.com	
76	Mailing List Addition	Ilon Logan	Director – Biological Resources	ESA Environmental Science Associates	(206) 789-9658	(206) 576-3751	ilogan@esassoc.com	5309 Shilshole Avenue NW, Suite 200 Seattle, WA 98107
77	Mailing List Addition	John Schlotfeldt	Property owner			(360) 701-0495	Johnd.schlotfeldt@gmail.com	
78	Mailing List Addition	Patrick Rofo	Executive Director	Community Farm Land Trust	(360) 353-4838		patrick@communityfarmlandtrust.org	2918 Ferguson Street SW #1-A Tumwater, WA 98512
79	Mailing List Addition	Amy Evans	Vice President	Kidder Mathews	(406) 460-5530		amy.evans@kidder.com	1550 Irving Street, Suite 200 Tumwater, WA 98512
80	Stakeholder WDFW	Gwen Lentes	Assistant Regional Habitat Program Manager	Washington State Department of Fish and Wildlife	(360) 972-4232		Gwendolen.lentes@dfw.wa.gov	Region 6, Olympia Office Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501
81	Mailing List Addition	Pat Rasmussen	Property Owner				edibleforestgardens@gmail.com	
82	Mailing List Addition	JJ Lindsey	Property Owner				jhawk@gglbbs.com	

#	Role	Name	Title	Organization	Phone (o)	Phone (m)	Email	Mailing address
83	Mailing List Addition	Nicole Jones-Vogel	Project Manager and Environmental Planner	Soundview Consultants LLC	(253) 514-8952		nicole@soundviewconsultants.com	Soundview Consultants LLC 2907 Harborview Drive Gig Harbor, WA 98335
84	Mailing List Addition	Bjorn Brynestad	Development Manager	Panattoni Development Company, Inc.	(206) 838-1730		BJorn@panattoni.com	Panattoni Development Company, Inc. 1821 Dock St., Suite 100 Tacoma, WA 98402
85	Mailing List Addition	Amy M. Evans	Vice President	Kidder Mathews	<u>(360) 705-1337</u>		amy.evans@kidder.com	Kidder Mathews 1550 Irving Street SW, Suite 200 Olympia, WA 98512
86	Mailing List Addition	Evan Parker	Senior Vice President	Kidder Mathews	<u>(360) 705-0174</u>		evan.parker@kidder.com	Kidder Mathews 1550 Irving Street SW, Suite 200 Olympia, WA 98512
87	Mailing List Addition	Len Psyk	Senior Development Manager	Panattoni Development Company, Inc.	(206) 838-3847	(206) 755-6722	LPSyk@panattoni.com	Panattoni Development Company, Inc. 1821 Dock St., Suite 100 Tacoma, WA 98402
88	Mailing List Addition	David Toyer	President	Toyer Strategic Advisors	(425) 344-1523		david@toyerstrategic.com	Toyer Strategic Advisors 3705 Colby Avenue, Suite 1 Everett, WA 98201
89	Mailing List Addition	Peter Condyles		Toyer Strategic Advisors	(425) 344-1523		peter@toyerstrategic.com	Toyer Strategic Advisors 3705 Colby Avenue, Suite 1 Everett, WA 98201
90	Mailing List Addition	Matt DeCaro	Associate Principal	Soundview Consultants LLC	(253) 514-8952		matt@soundviewconsultants.com	Soundview Consultants LLC 2907 Harborview Drive Gig Harbor, WA 98335
91	Mailing List Addition	Sidney Jones		Pinnacle Development Services, LLC	(360) 951-2043		sid@pindev.net	
92	Mailing List Addition	Cathy Arnold	Engineer	KBA, Inc.	(425) 455-9720	(425) 393-5472	carnold@kbacm.com	KBA, Inc. 11201 SE 8th St #160 Bellevue, WA 98004
93	Mailing List Addition	Sherry Buckner	Resident				bucknersherry@hotmail.com	
94	Mailing List Addition	Grant Novak	Principal Aquatic Ecologist	Confluence Environmental Company	(206) 397-3741		grant.novak@confenv.com	Confluence Environmental Company 146 N Canal St, Suite 111 Seattle, WA 98103-8652
95	WDFW	Janet Gorrell		Washington State Department of Fish and Wildlife			Janet.Gorrell@dfw.wa.gov	Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501
96	WDFW	Mary Huff	Land Use Conservation & Policy Section Manager	Washington State Department of Fish and Wildlife	(360) 902-8306	(360) 480-4503	mary.huff@dfw.wa.gov	Washington State Department of Fish and Wildlife 600 Capitol Way North Olympia, WA 98501
97	Mailing List Addition	Rob Risinger	Vice President of Development	MJS Investors	(425) 417-6004		robr@mjsinvestors.com	MJS Investors 11201 SE 8 th Street, Suite 116 Bellevue, WA 98004-6652
9	Mailing List Addition	Phyllis Farrell	Resident				phyllisfarrell681@hotmail.com	7600 Redstart Drive SE Olympia, WA 98513

(Based on the HCP Contacts List (version 2017.03.02) with additions and corrections on May 5, 2017, June 20, 2017, June 26, 2017, December 13, 2017, January 9, 2018, March 7, 2018, June 1, 2018, July 26, 2018, October 24, 2018, October 30, 2018, November 13, 2018, November 14, 2018, November 16, 2018, January 11, 2019, January 15, 2019, January 16, 2019, February 25, 2019, February 27, 2019, March 5, 2019, March 6, 2019, April 22, 2019, April 25, 2019, May 24, 2019, November 1, 2019, November 4, 2019, November 8, 2019, November 18, 2019, November 20, 2019, February 24, 2020, February 27, 2020, February 28, 2020, May 7, 2020, June 1, 2020, August 24, 2020, August 26, 2020, September 24, 2020, September 25, 2020, November 23, 2020, December 14, 2020, May 5, 2021, May 18, 2021, October 18, 2021, November 1, 2021, January 24, 2022, February 1, 2022, and November 7, 2022)

Appendix E

Tumwater Municipal Code 16 Environment

Title 16

ENVIRONMENT

Chapters:

- 16.04 ENVIRONMENTAL POLICY**
- 16.08 PROTECTION OF TREES AND VEGETATION**
- 16.28 WETLAND PROTECTION STANDARDS**
- 16.32 FISH AND WILDLIFE HABITAT PROTECTION**

Chapter 16.04

ENVIRONMENTAL POLICY

Sections:

16.04.170 Critical areas.

16.04.170 Critical areas.

The city of Tumwater conservation plan identifies and sets forth policy to protect critical areas. Critical areas include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas. Critical areas regulations are contained in this title. Environmental review of actions within these areas shall be in accordance with WAC 197-11-908. All critical areas shall be designated using best available science (BAS) in accordance with WAC 365-190-080.

(Ord. O2016-024, Amended, 03/21/2017; Ord. O99-001, Amended, 04/20/1999; Ord. 1007, Added, 09/18/1984)

Chapter 16.08

PROTECTION OF TREES AND VEGETATION

Sections:

- 16.08.010 Short title.
- 16.08.020 Purposes.
- 16.08.030 Definitions.
- 16.08.035 City tree protection professional.
- 16.08.038 Forest practice applications.
- 16.08.040 Tree account.
- 16.08.050 Permit required – Applications – Requirements – Processing – Conditions of issuance.
- 16.08.060 Performance and maintenance bond may be required.
- 16.08.070 Standards.
- 16.08.072 Maintenance requirements.
- 16.08.075 Heritage trees designated.
- 16.08.080 Exemptions.
- 16.08.090 Alternative plans.
- 16.08.100 Appeal procedure.
- 16.08.110 Violation – Criminal penalties.
- 16.08.120 Violation – Civil penalties – Presumption – Other remedies.

16.08.010 Short title.

This chapter shall be known and may be cited as the “tree and vegetation protection ordinance” of the city.

(Ord. O2002-012, Amended, 07/16/2002; Ord. O94-029, Amended, 09/20/1994; Ord. 1190, Added, 05/16/1989)

16.08.020 Purposes.

The regulations are adopted for the following purposes:

- A. To promote public health, safety and general welfare of the citizens of Tumwater, and to retain as many existing mature trees as possible, without preventing the reasonable development and maintenance of land;
- B. To preserve and enhance the city’s physical and aesthetic character by preventing indiscriminate removal or destruction of trees and ground cover, and by encouraging development that incorporates existing trees and ground cover into site development practices;
- C. To retain trees and vegetation for their positive environmental effects including, but not limited to, the protection of wildlife habitat;
- D. To promote identification and protection of trees that have historical significance; are unusual due to their size, species, or age; are unusual for their aesthetic quality; or have other values or characteristics that make them worthy of protection;
- E. To prevent erosion and reducing the risk of landslides;
- F. To protect environmentally sensitive areas;
- G. To minimize surface water runoff and diversion. To reduce siltation and other pollution entering city storm sewer systems, other utility improvements, and the city’s rivers, streams, and lakes;
- H. To retain trees and ground cover to assist in abatement of noise, to provide wind breaks, and for improvement of air quality;

- I. To promote building and site planning practices that are consistent with the city's natural topographical, soil, and vegetation features and to reduce landscaping costs for new development by utilizing existing trees and ground cover to help fulfill landscaping requirements;
- J. To ensure prompt development, restoration and replanting, and effective erosion control of property after land clearing;
- K. To promote conservation of energy;
- L. To educate the public regarding urban forestry;
- M. To implement objectives of the State Environmental Policy Act and Growth Management Act; and
- N. To implement and further the city's comprehensive plan and other related ordinances.

(Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O2000-012, Amended, 08/01/2000; Ord. O97-029, Amended, 03/17/1998; Ord. O94-029, Amended, 09/29/1994; Ord. 1190, Added, 05/16/1989)

16.08.030 Definitions.

- A. "Buildable area" is that portion of a parcel of land wherein a building, parking and other improvements may be located and where construction activity may take place. Buildable area shall not include streams, flood hazard areas, geological hazard areas or wetlands and their buffers as defined in TMC Chapter 18.04. For the purpose of calculating required tree protection open space area, existing and newly dedicated city rights-of-way shall not be included.
- B. "City" means the city of Tumwater, Washington.
- C. "Code administrator" means the director of the community development department or the director's designated representative.
- D. "Conversion option harvest plan (COHP)" means a voluntary plan developed by the landowner and approved by the Washington State Department of Natural Resources and the city of Tumwater, indicating the limits and types of harvest areas, road locations, and open space. This approved plan, when submitted to the Department of Natural Resources as part of the forest practice application and followed by the landowner, maintains the landowner's option to convert to a use other than commercial forest product production (releases the landowner from the six-year moratorium on future development).
- E. Critical Root Zone or CRZ. Unless determined otherwise by the tree protection professional, the root protection zone for trees means an area contained inside an area on the ground having a radius of one foot for every inch of tree diameter, measured from four and one-half feet above ground level, but in no event shall the root protection zone be less than a six-foot radius.
- F. "Drip line" of a tree means an imaginary line on the ground created by the vertical projections of the foliage at its circumference.
- G. "Environmentally sensitive area" means any lands with the following characteristics:
 - 1. "Geologically hazardous areas" as defined in TMC Chapter 16.20;
 - 2. Lakes, ponds, stream corridors, and creeks as defined in TMC Chapter 16.32;
 - 3. Identified habitats with which endangered, threatened, or sensitive species have a primary association as defined in TMC Chapter 16.32;
 - 4. Wetlands as defined in TMC Chapter 16.28.

- H. “Grading” means excavation, filling, or any combination thereof. Excavation and grading is governed by the International Building Code (IBC).
- I. “Greenbelt” means certain designated areas of a project or development that are intended to remain in a natural condition, and/or private permanent open space, or serve as a buffer between properties or developments.
- J. “Greenbelt zone” means any area so designated on the official zoning map of the city and subject to the provisions of TMC Chapter 18.30.
- K. “Ground cover” means vegetation that is naturally terrestrial excluding noxious or poisonous plants and shall include trees that are less than six inches in diameter measured at four and one-half feet above ground level.
- L. “Hazardous tree” means any tree that, due to its health or structural defect, presents a risk to people or property.
- M. “Heritage tree(s)” means tree(s) designated by the city and their owners as historical, specimen, rare, or a significant grove of trees.
- N. “Historic tree” means any tree designated as an historic object in accordance with the provisions of TMC Chapter 2.62.
- O. “Land clearing” or “clearing” means any activity which removes or substantially alters by topping or other methods the vegetative ground cover and/or trees.
- P. “Open space” means unoccupied land that is open to the sky and which may or may not contain vegetation and landscaping features, subject to the provisions in TMC 17.04.325 and 17.12.210.
- Q. “Parcel” means a tract or plot of land of any size which may or may not be subdivided or improved.
- R. “Qualified professional forester” is a professional with academic and field experience that makes them an expert in urban forestry. This may include arborists certified by the International Society of Arboriculture, foresters with a degree in forestry from a Society of American Foresters accredited forestry school, foresters certified by SAF, or urban foresters with a degree in urban forestry. A qualified professional forester must possess the ability to evaluate the health and hazard potential of existing trees, and the ability to prescribe appropriate measures necessary for the preservation of trees during land development. Additionally, the qualified professional forester shall have the necessary training and experience to use and apply the International Society of Arboriculture’s Guide for Plant Appraisal and to successfully provide the necessary expertise relating to management of trees specified in this chapter.
- S. “Topping” is the removal of the upper crown of the tree with no consideration of proper cuts as per the current ANSI A300 Standard. Cuts created by topping create unsightly stubs that promote decay within the parent branch and can cause premature mortality of a tree. Topping a tree is considered to be a removal, and may require a tree removal permit.
- T. “Tree” means any healthy living woody plant characterized by one or more main stems or trunks and many branches, and having a diameter of six inches or more measured four and one-half feet above ground level. Healthy in the context of this definition shall mean a tree that is rated by a professional with expertise in the field of forestry or arbor culture as fair or better using recognized forestry or arbor cultural practices. If a tree exhibits multiple stems and the split(s) or separation(s) between stems is above grade, then that is considered a single tree. If a tree exhibits multiple stems emerging from grade and there is visible soil separating the stems, then each soil-separated stem is considered an individual tree. Appropriate tree species under six inches may be considered with approval of the city tree protection professional.
- U. “Tree plan” is a plan that contains specific information pertaining to the protection, preservation, and planting of trees pursuant to this chapter.

- V. “Tree protection open space” is a separate dedicated area of land, specifically set aside for the protection and planting of trees.
- W. “Tree protection professional” is a certified professional with academic and field experience that makes him or her a recognized expert in urban tree preservation and management. The tree protection professional shall be either a member of the International Society of Arboriculture or the Society of American Foresters or the Association of Consulting Foresters, and shall have specific experience with urban tree management in the Pacific Northwest. Additionally, the tree protection professional shall have the necessary training and experience to use and apply the International Society of Arboriculture’s Guide for Plant Appraisal and to successfully provide the necessary expertise relating to management of trees specified in this chapter.

(Ord. O2013-017, Amended, 08/19/2014; Ord. O2013-025, Amended, 01/07/2014; Ord. O2011-002, Amended, 03/01/2011; Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O97-029, Amended, 03/17/1998; Ord. O94-029, Amended, 09/20/1994; Ord. 1311, Amended, 04/07/1992; Ord. 1190, Added, 05/16/1989)

16.08.035 City tree protection professional.

In the city’s interest of achieving professional assistance in the city’s tree protection efforts and achieving consistency in tree protection decisions; the city shall contract with a “city tree protection professional” that qualifies as a tree protection professional under the definition of this chapter. The tree protection professional shall be responsible for providing the information and services required of a tree protection professional described herein.

Individual applicants will be responsible for payment of costs of the tree protection professional for projects necessitating work to be performed by the tree protection professional with the exception that the code administrator may waive payment by the applicant for minor work of the tree protection professional in determining an exempt project; provided however, that the city shall be responsible for billing and collecting costs charged to the applicant and transferring payment to the tree protection professional unless the city has opted for some other mechanism of providing for the costs, such as inclusion of costs in application fees.

(Ord. O2002-012, Amended, 07/16/2002; Ord. O97-029, Added, 03/17/1998)

16.08.038 Forest practice applications.

Pursuant to RCW 76.09.240, requiring local jurisdictions to set standards for and to process class IV forest practice applications, such permits shall be processed as a land clearing permit, and shall meet the requirements of this chapter.

- A. The application of this chapter to forest practice activities regulated by the Washington State Forest Practices Act (Chapter 76.09 RCW) shall be limited to:
 - 5. General forest practices.
- B. This chapter is intended to allow the city of Tumwater to assume jurisdiction for approval of general forest practices, approvals occurring in the city of Tumwater, as authorized under the Washington State Forest Practices Act, Chapter 76.09 RCW. Until such time as jurisdiction for these permits is transferred to the city by the State Department of Natural Resources, the city will act as the State Environmental Policy Act (SEPA) lead agency for all general forest practice approvals occurring within the city limits. This chapter shall rely upon existing definitions contained within the Washington State Forest Practices Act (Chapter 76.09 RCW), Rules for the Washington State Forest Practices Act (Chapter 222-16 WAC), and the Tumwater Municipal Code.

(Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Added, 07/16/2002)

16.08.040 Tree account.

There is hereby established within the city a “tree account” for the purposes of acquiring, maintaining and preserving wooded areas, and for planting and maintaining trees within the city.

- A. Collections and Deposits. All fines collected for violations of this chapter shall be deposited into the tree account. All donations and mitigation fees collected related to the preservation of trees or the enhancement of wooded buffer areas shall also be deposited into the tree account.
- B. Maintenance of Account. The tree account shall be maintained by the finance director as a separate, interest-bearing account.
- C. Use of Funds. Funds in the tree account shall be used only upon appropriation by the city council. Funds may be withdrawn from the tree account with the approval of the code administrator, and may be used for any purpose consistent with the intent of this chapter. Funds used to plant trees may be used only on city-owned property, or on property upon which the city has been granted an easement for the purpose of establishing or maintaining trees or other vegetation.

(Ord. O2002-012, Amended, 07/16/2002; Ord. O94-029, Added, 09/20/1994)

16.08.050 Permit required – Applications – Requirements – Processing – Conditions of issuance.

- A. No person, corporation, or other legal entity not exempt under TMC 16.08.080 shall engage in land clearing or tree removal in the city without having received a land clearing permit.
- B. Requirement Established. The application for land clearing permit shall be submitted with any project permit as defined in TMC 14.02.020(O), including single-family and duplex structures unless a land clearing permit was previously reviewed as part of prior project permit. A tree protection plan is required to obtain a land clearing permit and is also required for any land development not exempt under TMC 16.08.080. The tree protection plan shall be developed by a qualified professional forester and be submitted in conjunction with other environmental submittals and site plan development permits. For single-family homes on lots created prior to November 1994, the applicant has the option of using the city tree protection professional to prepare the permit application. This service will be provided at the same hourly rates charged to the city under its contractual arrangement with the tree protection professional.
- C. An application for a land clearing permit shall be submitted on a form provided by the city. Accompanying such form shall be a report which includes the following information:
1. General vicinity map;
 2. Date, north arrow and scale;
 3. Property boundaries, the extent and location of proposed clearing and major physical features of the property (streams, ravines, etc.);
 4. Tree Inventory. Drawn to scale on the preliminary or conceptual site plan: a map delineating vegetation types. Each type should include the following information:
 - a. Average trees and basal area per acre, by species and six-inch diameter class. For nonforested areas, a general description of the vegetation present.
 - b. Narrative description of the potential for tree preservation for each vegetation type. This should include soils, wind throw potential, insect and disease problems, and approximate distance to existing and proposed targets.
 - c. Description of any off-site tree or trees, which could be adversely affected by the proposed activity;
 5. Tree Protection Plan. Drawn to scale on the site plan, grading and erosion control and landscape plans. It should include the following information:
 - a. Surveyed locations of perimeters of groves of trees and individual trees to be preserved, adjacent to the proposed limits of the construction. General locations of trees proposed for removal. The critical root zones of trees to be preserved shall be shown on the plans.

- b. Limits of construction and existing and proposed grade changes on site.
 - c. Narrative description, buildable area of the site, and graphic detail of tree protection, and tree maintenance measures required for the preservation of existing trees identified to be preserved.
 - d. Timeline for clearing, grading and installation of tree protection measures.
 - e. Final tree protection plan will be drawn to scale on the above described plans and submitted with the final application packet;
 6. Tree Replacement Plan. Drawn to scale on the site and landscape plans. The tree replacement plan shall be developed by a licensed Washington landscape architect, Washington certified nursery professional, ISA certified arborist, board certified horticulturist, qualified professional forester or Washington certified landscaper. It should include the following information:
 - a. Location, size, species and numbers of trees to be planted.
 - b. Narrative description and detail showing any site preparation, installation and maintenance measure necessary for the long-term survival and health of the trees.
 - c. Narrative description and detail showing proposed locations of required tree planting, site preparation, installation and maintenance within critical root zones of preserved groups or individual trees.
 - d. Cost estimate for the purchase, installation and three years' maintenance of trees;
 7. A timeline for implementation and monitoring of the tree protection, and/or replacement plan;
 8. A plan indicating how the site will be revegetated and landscaped;
 9. A proposed time schedule for land clearing, land restoration, revegetation, landscaping, implementation of erosion controls, and any construction of improvements;
 10. Information indicating the method to be followed in erosion control and restoration of land during and immediately following land clearing;
 11. A note indicating that the city will have the right of entry upon the subject property for the purpose of performing inspections consistent with the provisions of this chapter;
 12. The approved tree protection plan map will be included in contractor's packet of approved plans used for construction on the project; and
 13. Other information as deemed appropriate to this chapter and necessary by the code administrator or city tree protection professional.
- D. In addition to the requirements noted in subsection C of this section, on timbered property greater in size than one acre or commercial property with more than fifteen trees, or other sites the city deems necessary because of special circumstances or complexity, the code administrator may require review of the site and proposed plan and submittal of a report by the city's tree protection professional for compliance with the requirements of this chapter.
- Further provided, that the code administrator may modify the submittal requirements of subsections C and D of this section, on individual applications where the information is not needed or is unavailable.
- E. Each application shall be submitted with a fee established by resolution of the city council, to help defray the cost of handling the application, no part of which fee is refundable.

- F. The code administrator shall notify the applicant whether the application is complete within twenty-eight calendar days of receipt of the application. If incomplete, the code administrator shall indicate in the notice the information required to make the application complete. The code administrator shall approve, approve with conditions or deny the permit within thirty calendar days of receipt of the complete application, or within thirty calendar days of completion of any environmental review, whichever is later. For applications such as site development proposals where there is more than a land clearing permit pending, the code administrator shall, whenever feasible, coordinate reviews, notices and hearings, and act upon the land clearing permit concurrently with other pending permits.
- G. Any permit granted under this chapter shall expire eighteen months from the date of issuance, unless said permit is associated with another development permit. If it is associated with another development permit, the restrictions and deadlines of that approval will apply. Upon a written request, a permit not associated with another development permit may be extended by the code administrator for one six-month period. Approved plans shall not be amended without being resubmitted to the city. Minor changes consistent with the original permit intent will not require a new permit fee or full application standards to be followed. The permit may be suspended or revoked by the city because of incorrect information supplied or any violation of the provisions of this chapter.
- H. Once issued, the permit shall be posted by the applicant on the site, in a manner so that the permit is visible to the general public.

(Ord. O2017-022, Amended, 12/05/2017; Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O97-029, Amended, 03/17/1998; Ord. O94-029, Amended, 09/20/1994; Ord. 1190, Added, 05/16/1989)

16.08.060 Performance and maintenance bond may be required.

- A. The code administrator may require bonds and bond agreements in such form and amounts as may be deemed necessary to assure that the work shall be completed in accordance with the permit. Bonds, if required, shall be furnished by the applicant or property owner. A bond agreement shall provide assurance that the applicant has sufficient right, title and interest in the property to grant the city all rights set forth in the agreement.
- B. In lieu of a bond, the applicant may file assigned funds or an instrument of credit with the city in an amount equal to that which would be required in a bond.
- C. The amount of bonds or other assurance instrument shall not exceed the estimated cost of the total restoration, revegetation, planting or landscaping work planned, as determined by the code administrator.
- D. The duration of any bond or other required surety shall be not less than three years from the date that said restoration, revegetation, planting or landscaping has been accepted by the code administrator.

(Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O94-029, Amended, 09/20/1994; Ord. 1190, Added, 05/16/1989)

16.08.070 Standards.

All land clearing not exempt under TMC 16.08.080 shall conform to the approved plan and the following standards and provisions unless alternate procedures that are equal to or superior in achieving the purposes of this chapter are authorized in writing by the code administrator:

- A. No land clearing and/or ground surface level changes shall occur in a greenbelt zone as delineated on the official zoning map except as required for uses permitted in that zone. In addition, such land clearing and/or ground surface changes shall be subject to all other applicable standards and regulations;
- B. Land clearing in designated greenbelt, open space, tree tract or buffer areas of approved and recorded subdivisions or approved projects which would substantially alter the character or purpose of said greenbelt or buffer areas is prohibited, except in cases involving land clearing plans approved by the code

- administrator for removal of hazard trees, invasive or noxious plant species and replanting with native plant and tree species;
- C. Erosion control measures shall be provided by the applicant's professional engineer, in conformance with the Drainage Design Erosion Control Manual for the Thurston Region, Washington, as currently written and subsequently amended. The erosion control measures shall be reviewed and subject to approval by the code administrator. The requirement for a professional engineer may be waived by the code administrator on a case-by-case basis;
 - D. Land clearing shall be accomplished in a manner that will not create or contribute to landslides, accelerated soil creep, settlement and subsidence on the subject property and/or adjoining properties;
 - E. When land clearing occurs that does not include development, the proposal shall contain provisions for the protection of natural land and water features, vegetation, drainage, retention of native ground cover, and other indigenous features of the site;
 - F. Land clearing shall be accomplished in a manner that will not create or contribute to flooding, erosion, or increased turbidity, siltation, or other form of pollution in a watercourse;
 - G. Land clearing in wetlands, and fish and wildlife habitat areas shall be in accordance with the provisions of TMC Chapter 16.28, Wetland Protection Standards, and TMC Chapter 16.32, Fish and Wildlife Habitat Protection;
 - H. During the months of November, December, and January, no land clearing shall be performed in areas with average slopes of fifteen percent or greater, or any slopes of forty percent or greater;
 - I. During the months of November, December, and January, no land clearing shall be performed in areas with fine-grained soils and a slope greater than five percent. For the purposes of this section, fine-grained soils shall include any soil associations which are classified in hydrologic soil groups C or D, as mapped in the Thurston County Soil Survey, or as determined by a qualified soil scientist;
 - J. Land clearing shall be undertaken in such a manner as to preserve and enhance the city's aesthetic character. The site shall be revegetated and landscaped as soon as practicable, in accordance with the approved revegetation plan. Where the construction schedule does not provide for revegetation of the site prior to October 15 of any year, all disturbed areas shall be hydro seeded or otherwise revegetated on an interim basis. The revegetation plan shall include plantings along public streets and adjoining property boundaries, especially between areas of differing intensities of development. For land clearing permits that are part of a specific development proposal, land use development shall be initiated or a vegetative screen or buffer established within six months of the date of initiation of land clearing activities;
 - K. Land clearing shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time, consistent with the construction schedule. Provisions shall be made for interim erosion control measures;
 - L. Land clearing activities shall be limited to the hours of 7:00 a.m. to 8:00 p.m. on weekdays and 9:00 a.m. to 8:00 p.m. on Saturdays in accordance with TMC Chapter 8.08;
 - M. Open burning of land clearing debris is prohibited. Slash shall be properly disposed of off site or chipped and applied to the site within six months of the completion of the land clearing. Chipped material deposited on the site shall be spread out or other means used to prevent fire hazard;
 - N. Any trees to be retained shall be flagged or otherwise marked to make it clear which tree or groups of trees are to be retained;
 - O. Any trees or groups of trees to be retained shall have temporary fencing installed around the critical root zone. Temporary fencing must be adequate to protect the critical root zone of trees designated for retention. On construction sites where circumstances warrant, the code administrator may require more substantial tree protection fencing, as necessary, to protect intrusion of construction activity into the CRZ areas.

Machinery and storage of construction materials shall be kept outside of the CRZ of trees designated for retention. The code administrator may require fencing beyond the CRZ if, in the code administrator's determination, such additional protection is needed to protect the tree from damage. Trees designated for retention shall not be damaged by scoring, ground surface level changes, compaction of soil, attaching objects to trees, altering drainage or any other activities that may cause damage of roots, trunks, or surrounding ground cover;

- P. Any trees designated for retention shall be field verified by the city tree protection professional before land clearing begins;
- Q. Not more than thirty percent of the trees on any parcel of land shall be removed within any ten-year period, unless the clearing is accomplished as part of an approved development plan. Such clearing shall be done in such a way as to leave healthy dominant and codominant trees well distributed throughout the site (taking into account the interdependency of the trees) unless, according to the determination of the city tree protection professional, this requirement would conflict with other standards of this section. For every tree removed at least one replacement tree shall be planted. Replacement trees shall consist of seedlings of the same or similar species to those trees removed, which shall be at least two years old. In lieu of this planting of replacement trees, the applicant may contribute a cash payment to the city's tree account in an amount equal to one hundred twenty-five percent of the retail value replacement cost. The time schedule for the planting of replacement trees shall be specified in the approved plan. If a land clearing permit is applied for as part of a development plan within ten years of clearing under this subsection, all trees removed under this standard will be counted towards required tree retention/replacement when a land clearing permit is issued;
- R. When land clearing is performed in conjunction with a specific development proposal not less than twenty percent of the trees, or not less than twelve trees per acre (whichever is greater), shall be retained.

Provided, however, where it can be demonstrated that the trees on a site were planted as part of a commercial Christmas tree farm, then no less than seventeen percent or twelve trees per acre, whichever is less, shall be retained. Commercial tree farm status must be verified by the city tree protection professional.

- 1. Size, Type and Condition of Retained Trees.
 - a. For the purpose of calculating tree retention standards, trees twenty-four inches or greater in diameter measured four and one-half feet above ground level shall count as two trees.
 - b. Species such as willow, cottonwood, poplar and other species, the roots of which are likely to obstruct or injure site improvements, sanitary sewers or other underground utilities, shall not be considered trees for the purpose of calculating tree retention standards if located within the buildable portion of the lot.
 - c. A tree must meet the following standards in order to be counted for the purpose of meeting tree retention standards:
 - i. Must have a post-development life expectancy of greater than ten years;
 - ii. Must have a relatively sound and solid trunk with no extensive decay or significant trunk damage;
 - iii. Must have no major insect or pathological problems;
 - iv. Must have no significant crown damage;
 - v. Should be fully branched and generally proportional in height and breadth for the tree age;
 - vi. Must be windfirm in their post-development state.

2. These standards may be waived or modified by the code administrator if the applicant provides substantial evidence demonstrating that strict compliance would make reasonable use of the property impracticable for three or more of the following reasons:
 - a. Removal of the tree or trees is needed to enable use of a solar system. A waiver for this reason must be accompanied by a bond assuring completion of the solar system within the timeframe associated with the underlying building permit issued for the project.
 - b. The tree retention standard cannot be achieved because of the necessity of complying with applicable zoning and development requirements including, but not limited to, residential densities, open space requirements for active recreation, floor area ratios (FAR), parking requirements, stormwater requirements, street construction requirements, etc.
 - c. The tree retention standard cannot be achieved because the tree or trees do not have a reasonable chance of survival once the site is developed or modified and may pose a threat to life or property if retained.
 - d. The applicant has made reasonable efforts to reconfigure or reduce the building footprint(s), site access, on-site utility systems and parking area(s) to avoid impacts to trees on the property.
 - e. For commercial and industrial land uses, the project pro forma demonstrates that economically viable use of the property cannot be achieved while meeting the tree retention standards in this chapter. This standard is presumed to be met without a pro forma if the area disturbed by development of the property would be less than eighty-five percent of the land.
 - f. The granting of the waiver or modification will not result in increasing the risk of slope failure, significant erosion or significant increases in surface water flows that cannot be controlled using best management practices.
3. Where the standard is waived or modified, the applicant shall plant not less than three trees for each tree cleared in excess of the standard.
 - a. These replacement trees shall be at least two inches in diameter measured at a height of six inches above the root collar.
 - b. Replacement trees shall be planted on the same parcel as the proposed development, unless the code administrator approves of an alternate location.
 - c. Replacement trees must first be planted in a “tree protection open space.” The tree protection open space shall be comprised of a minimum of five percent of the buildable area for the purpose of retaining existing trees and/or for the planting of replacement trees. Replacement trees in the tree protection open space shall be a mix of native coniferous and deciduous trees. The tree protection open space shall be a contiguous area. The tree protection open space is required to be eighty percent covered by tree canopy after fifteen years utilizing retained and/or replacement trees. Approved trees and their CRZ area within a critical area buffer may count for up to fifty percent of the required tree protection open space. Stormwater facilities can be considered as part of the tree protection open space if trees can be retained and/or planted successfully and not disable the operating functions of the facility.
 - d. If more replacement trees are required than necessary to meet the canopy requirement in the tree protection open space, then these trees (either native and/or nonnative species) can be planted elsewhere on the parcel(s).
 - e. If the city tree protection professional determines that more replacement trees are required than can be planted in the tree protection open space and the rest of the parcel, then the applicant shall contribute a cash payment to the city’s tree account in an amount determined by the current city fee resolution.

4. In situations where a parcel of land to be developed does not meet the retention standards above in an undeveloped state, the applicant shall be required to reforest the site to meet the applicable standard outlined above at a 1:1 ratio as a condition of project approval.
5. In determining which trees shall be given the highest priority for retention, the following criteria shall be used:
 - a. Heritage or historic trees;
 - b. Trees which are unusual due to their size, age or rarity;
 - c. Trees in environmentally sensitive areas;
 - d. Trees that act as a buffer to separate incompatible land uses;
 - e. Trees which shelter other trees from strong winds that could otherwise cause them to blow down;
 - f. Trees within greenbelts, open space, tree protection open space or buffers;
 - g. Trees with significant habitat value as identified by a qualified wildlife biologist or by the city tree protection professional; and
 - h. Trees which are part of a continuous canopy or which are mutually dependent, as identified by a qualified professional forester or the city tree protection professional;
- S. In addition to the provisions of this chapter, the cutting or clearing of historic trees requires the issuance of a certificate of appropriateness in accordance with TMC Chapter 2.62.

(Ord. O2013-017, Amended, 08/19/2014; Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O97-029, Amended, 03/17/1998; Ord. O94-029, Added, 09/20/1994)

16.08.072 Maintenance requirements.

- A. Maintenance Requirement. Trees are to be maintained in a vigorous and healthy condition, free from diseases, pests and weeds. Trees which become diseased, severely damaged or which die shall be removed by the owner as soon as possible but no later than sixty days after notification by the city. As it pertains to this section, all replacement trees that die shall be replaced with healthy trees of the same size and species as required by the approved tree protection plan for the property. If retained trees die due to construction damage or negligence on the part of the applicant, the city tree protection professional shall determine the appraised landscape value of the dead trees, and the applicant shall plant the equivalent value of trees back onto the site. In the event that space is not available for the required replacement trees (as determined by the city tree protection professional), the equivalent value shall be paid into the tree fund.
- B. For areas dedicated as tree protection open space areas, street trees and single-family residential land divisions, the maintenance requirement of this section shall be in effect for three years from the date the final plat is approved or the trees are planted. The tree plan shall be a condition of approval and identified on the face of the plat. The applicant shall also execute a covenant in a form agreeable to the city, which shall require the applicant and his successors to comply with the maintenance requirement of this section. The covenant shall obligate both the property owner and the homeowner's association and shall be recorded with the county auditor. The recording fee shall be paid by the applicant.
- C. For multifamily residential, commercial, and industrial developments, the maintenance requirement for all trees covered by the tree plan shall apply in perpetuity. The applicant shall execute a covenant in a form agreeable to the city, which shall require that the applicant and his successors comply with the maintenance requirement imposed by this section. The covenant shall be binding on successor property owners and owners' associations. The covenant shall be recorded with the county auditor and the recording fee shall be paid by the applicant.

- D. Maintenance Agreement. Each development to which the maintenance requirement for this chapter applies and that contain a heritage tree(s) shall also be subject to a maintenance agreement. The code administrator shall require the applicant to execute a maintenance agreement with the city, in a form acceptable to the city attorney, which shall include the provisions of the maintenance requirement in this chapter, to ensure the survival and proper care of any heritage trees identified in the tree plan.
- E. Failure to Maintain. Retained trees, replacement trees and street trees as per the requirements of this chapter and/or TMC Chapter 18.47, Landscaping, shall be maintained according to the American National Standards Institute, current edition of the American National Standards, ANSI A300. Failure to regularly maintain the trees as required in this section shall constitute a violation of this chapter and, if applicable, the plat covenant.

(Ord. O2006-014, Added, 04/17/2007)

16.08.075 Heritage trees designated.

- A. Trees can be nominated for designation by citizens, the Tumwater tree board, or city staff.
 - 1. Application for heritage tree designation must be submitted to the community development department. The application must include a short description of the trees, including address or location, and landowner's name and phone number. The application must be signed by both the landowner and nominator.
 - 2. The tree board reviews the application and makes a recommendation to the city council.
 - 3. All heritage trees will be added to city tree inventory and public works maps.
- B. Trees that are designated as heritage trees shall be classified as follows:
 - 1. Historical – A tree which by virtue of its age, its association with or contribution to a historical structure or district, or its association with a noted citizen or historical event.
 - 2. Specimen – Age, size, health, and quality factors combine to qualify the tree as unique among the species in Tumwater and Washington State.
 - 3. Rare – One or very few of a kind, or is unusual in some form of growth or species.
 - 4. Significant Grove – Outstanding rows or groups of trees that impact the city's landscape.
- C. The city will provide an evaluation and recommendation for tree health and care and will provide up to one inspection annually upon request of the landowner. The city may, at its discretion, provide a plaque listing the owner's name and/or tree species/location.
- D. Heritage Tree Removal.
 - 1. A tree removal permit is required for removal of any heritage tree(s).
 - 2. The city tree protection professional shall evaluate any heritage trees prior to a decision on the removal permit. Recommendations for care, other than removal, will be considered.
 - 3. Dead or hazardous trees are exempt from a tree removal permit after verification by the city tree protection professional.
- E. Heritage Tree Declassification. Any heritage tree may, at any time, be removed from heritage tree status at the request of the landowner after providing two weeks' written notice to the community development department. Unless an agreement can be reached to preserve the tree, the tree will be removed from the heritage tree inventory list and the plaque, if any, will be removed.

(Amended during 2011 reformat; O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O2000-012, Added, 07/18/2000)

16.08.080 Exemptions.

The following shall be exempt from the provisions of this chapter; provided however, the code administrator may require reasonable documentation verifying circumstances associated with any proposal to remove trees under any of the following exemptions:

- A. Land clearing in emergency situations involving immediate danger to life or property. For every tree cleared under this exemption, at least one replacement tree shall be planted. Except for the number of trees, replacement trees shall conform to the standard for replacement trees described in TMC 16.08.070(R);
- B. Land clearing associated with routine maintenance by utility companies such as the power company and telephone company. Utility companies shall notify the community development department at least two weeks prior to the start of work and shall follow appropriate vegetation management practices;
- C. Land clearing performed within any public right-of-way or any public easement, when such work is performed by a public agency and the work relates to the installation of utilities and transportation facilities (such as streets, sidewalks and bike paths). To the greatest extent possible, all such work shall conform to the standards set forth in this chapter;
- D. Land clearing within ten feet (when required for construction) of the perimeter of the single-family or duplex dwellings and associated driveways or septic systems must be indicated on the plot plan submitted to the building official with an application for a building permit. This exemption does not apply to land clearing located within environmentally sensitive areas, or to areas subject to the provisions of the shoreline master program;
- E. Clearing of dead, diseased, or hazardous trees, after verification by the city tree protection professional. For every tree cleared under this exemption, at least one replacement tree shall be planted. Except for the number of trees, replacement trees shall conform to the standard for replacement trees described in TMC 16.08.070(R);
- F. Clearing of trees that act as obstructions at intersections in accordance with the municipal code;
- G. The removal of not more than six trees from any parcel of land in three consecutive calendar years. This exemption does not apply to heritage or historic trees, or to trees located in a greenbelt or greenbelt zone, or in wetlands or critical areas and their buffers or to tree topping. A letter of "waiver" for the exempt removals must be obtained from the community development department prior to tree removal;
- H. Land clearing associated with tree farming operations specifically preempted by Chapter 76.09 RCW, Washington Forest Practices Act; provided, that a harvesting and reforestation plan is submitted to the code administrator prior to any land clearing;
- I. Clearing of noxious ground cover for the purposes of utility maintenance, landscaping, or gardening. This exemption applies solely to ground cover, for protected trees clearing must conform to subsection G of this section;
- J. Clearing of trees that obstruct or impede the operation of air traffic or air operations at the Olympia Airport. The tree replacement standards of this chapter must be met. Trees should be replanted outside the air operations area;
- K. Clearing of not more than six trees every three consecutive calendar years on developed properties, when such clearing is necessary to allow for the proper functioning of a solar-powered energy system. Such clearing may be done only after verification of the need to clear the trees, issuance of a waiver letter, and the issuance of a building permit for such a system by the code administrator.

(Amended during 2011 reformat; O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O97-029, Amended, 03/17/1998; Ord. O94-029, Amended, 09/20/1994; Ord. 1311, Amended, 04/07/1992; Ord. 1190, Added, 05/16/1989)

16.08.090 Alternative plans.

Required tree mitigation must conform to the standards contained in this chapter unless alternate plans that are equal to or superior in achieving the purposes of this chapter are authorized in writing by the code administrator. The code administrator may modify or waive the requirements of this chapter only after consideration of a written request for any of the following reasons:

- A. Special circumstances relating to the size, shape, topography or physical conditions, location, or surroundings of the subject property, or to provide it with use rights and privileges permitted to other properties in the vicinity and zone in which it is located;
- B. Improvement as required without modification or waiver would not function properly or safely or would not be advantageous or harmonious to the neighborhood or city as a whole;
- C. The proposed modification would result in an increased retention of mature trees and/or naturally occurring vegetation on the site;
- D. The proposed modification represents a superior result than that which could be achieved by strictly following the requirements of this chapter, the proposed modification complies with the stated purpose of TMC 16.08.020 and the proposed modification will not violate any city of Tumwater codes or ordinances.

Any modifications under this chapter shall be as limited as possible to achieve the aim of relating required mitigation for tree protection to the impacts caused by the individual development.

(Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. 1190, Added, 05/16/1989)

16.08.100 Appeal procedure.

Any person aggrieved by a decision or an action of the code administrator in the enforcement or implementation of this chapter may, within fourteen calendar days of such decision or action, file a written appeal to the hearing examiner. Any decision of the hearing examiner may be appealed to the Thurston County superior court in accordance with the provisions of TMC Chapter 2.58.

(Ord. O2017-022, Amended, 12/05/2017; Ord. O2006-014, Amended, 04/17/2007; Ord. O2002-012, Amended, 07/16/2002; Ord. O94-029, Amended, 09/20/1994; Ord. 1259, Amended, 11/06/1990; Ord. 1190, Added, 05/16/1989)

16.08.110 Violation – Criminal penalties.

- A. Any person who violates the provisions of this chapter or fails to comply with any of the requirements shall be guilty of a misdemeanor and subject to the penalties set forth in TMC 1.12.010. In keeping with the city's concern regarding protection of the environment, the court should consider the imposition of minimum fines of no less than \$1,000 per occurrence. Each day such violation continues shall be considered a separate, distinct offense. In cases involving land clearing in violation of this chapter, the clearing of any area up to the first acre shall be considered one offense, and the clearing of each additional acre and of any additional fractional portion that does not equal one more acre shall each be considered a separate and distinct offense.
- B. Any person who commits, participates in, assists or maintains such violation may be found guilty of a separate offense and suffer the penalties as set forth in subsection A of this section.
- C. In addition to the penalties set forth in subsections A and B of this section, any violation of the provisions of this chapter is declared to be a public nuisance and may be abated through proceedings for injunctive or similar relief in superior court or other court of competent jurisdiction.
- D. Upon determination that a violation of the provisions of this chapter has occurred, the building official shall withhold issuance of building permits for the affected property until corrective action is taken by the

responsible party. However, if mitigating circumstances exist and reasonable commitments for corrective action are made, the building official may issue building permits. Such corrective action may include:

1. Restoration and replanting of surface vegetation with plant material similar in character and extent as existed prior to the unauthorized clearing;
2. Implementation of drainage and erosion control measures;
3. Replanting of trees equal in value to those lost through unauthorized clearing. The value of the trees removed shall be determined by the city's tree protection professional using landscape tree appraisal methodology published in the current edition of the International Society of Arboriculture's Guide for Plant Appraisal.

(Ord. O2002-012, Amended, 07/16/2002; Ord. O97-029, Amended, 03/17/1998; Ord. O94-029, Amended, 09/20/1994; Ord. 1311, Amended, 04/07/1992; Ord. 1190, Added, 05/16/1989)

16.08.120 Violation – Civil penalties – Presumption – Other remedies.

- A. As a supplement or alternative to the remedies set forth in TMC 16.08.110, the code administrator shall have the authority to seek civil penalties for violation of the provisions of this chapter.

Any person, corporation, partnership or other entity being the owner of real property or holder of timber rights upon such property who violates the provision of this chapter or fails to comply with any of its requirements shall upon a proper showing be deemed to have committed a class 1 civil infraction as defined by TMC 1.10.120(D)(1). Civil liability shall also attach to others who violate the provisions of this chapter, whether or not such violation occurs at the direction of the owners or holder of timber rights.

As provided by law, the Tumwater municipal court is hereby vested with jurisdiction to hear civil infraction cases under this chapter. Said cases shall be heard by the court without jury and upon a finding that the infraction has been committed by a preponderance of the evidence.

The code administrator shall have the authority to charge as a separate violation each such tree removed or destroyed.

- B. Presumption. For purposes of administration and prosecution of alleged violations of this chapter, there is hereby created a rebuttable presumption that the person whose name appears on tax records of the Thurston County assessor, with respect to the real property in question, has responsibility for ensuring that violations of provisions of this chapter do not occur on the property in question.
- C. In addition to the penalties set forth in this chapter, any violation of the provisions of this chapter is declared to be a public nuisance and may be abated through proceedings for injunctive or similar relief in superior court or other court of competent jurisdiction.
- D. Upon determination that a violation of the provisions of this chapter has occurred, the building official shall withhold issuance of building permits for their affected property until corrective action is taken by the responsible party. However, if mitigating circumstances exist and reasonable commitments for corrective action are made, the building official may issue building permits. Such corrective action may include:
1. Restoration of surface vegetation with plant material similar in character and extent as existed prior to the unauthorized clearing;
 2. Implementation of drainage and erosion control measures;
 3. Replanting of trees equal in value to those lost through unauthorized clearing. The value of the trees removed shall be determined by the city's tree protection professional using landscape tree appraisal methodology published in the current edition of the International Society of Arboriculture's Guide for Plant Appraisal.

(Amended during 2011 reformat; O2002-012, Amended, 07/16/2002; Ord. O97-029, Amended, 03/17/1998; Ord. O94-029, Added, 09/20/1994)

Chapter 16.28

WETLAND PROTECTION STANDARDS

Sections:

16.28.010	Short title.
16.28.020	Intent.
16.28.030	Definitions.
16.28.040	Abrogation and greater restrictions.
16.28.050	Interpretation.
16.28.060	Applicability.
16.28.070	Maps and inventory.
16.28.080	Determination of regulatory wetland boundary.
16.28.090	Wetlands rating system.
16.28.095	Small wetland standards.
16.28.100	Regulated activities.
16.28.110	Allowed activities.
16.28.115	Exceptions – Infrastructure.
16.28.120	Permit requirements, compliance.
16.28.130	Wetland permits, extensions.
16.28.140	Permit applications, requirements.
16.28.150	Permit processing.
16.28.160	Standards for permit decisions.
16.28.170	Wetland buffers.
16.28.180	Avoiding wetland impacts.
16.28.190	Reasonable use exception.
16.28.210	Acting on the application.
16.28.220	Compensating for wetlands impacts.
16.28.230	Mitigation plans.
16.28.240	Appeals.
16.28.250	Modification of wetland permits.
16.28.260	Resubmittal of denied permit applications.
16.28.270	Temporary emergency permit.
16.28.280	Enforcement.
16.28.290	Existing legal nonconforming structures, uses, and activities.
16.28.300	Judicial review.
16.28.310	Amendments.
16.28.320	Severability.
16.28.330	Nonregulatory incentive program.

16.28.010 Short title.

This chapter shall be known and may be cited as the “wetland protection standards ordinance” of the city of Tumwater.

(Ord. 1278, Added, 08/20/1991)

16.28.020 Intent.

It is the declared policy of the city of Tumwater to require site planning to avoid or minimize damage to wetlands wherever possible; to require that activities not dependent upon a wetland location be located at upland sites; and to achieve no net loss of wetlands by requiring restoration or enhancement of degraded wetlands or creation of new wetlands to offset losses that are unavoidable.

(Ord. 1278, Added, 08/20/1991)

16.28.030 Definitions.

For the purposes of this chapter, the following definitions shall apply:

- A. “Applicant” means a person who files an application for any permit subject to this chapter and who is either the owner of the land on which that proposed activity would be located, a contract vendee, a lessee of the land, the person who would actually control and direct the proposed activity, or the authorized agent of such a person.
- B. “Best available science” means current scientific information used in the process to designate, protect, or restore critical areas, that is derived from a valid scientific process as defined by WAC 365-195-900 through 365-195-925. Sources of best available science are included in “Citations of Recommended Sources of Best Available Science for Designation and Protecting Critical Areas” published by the State of Washington Department of Commerce, as written or hereafter amended.
- C. “Best management practices” means conservation practices or systems of practices and management measures that:
 - 1. Control soil loss and reduce water quality degradation caused by nutrients, animal waste, toxics, and sediment; and
 - 2. Minimize adverse impacts to surface water and groundwater flow, circulation patterns, and to the chemical, physical, and biological characteristics of wetlands.
- D. “Bog” means a wetland that is dominated by organic soils, low nutrients and low pH (between 3.5 and 5.0). Plants growing in these sensitive wetlands are specifically adapted to such conditions and are not commonly found elsewhere. Bogs provide habitat for unique species of plants and animals.
- E. “Compensation project” means actions necessary to replace project-induced wetland and/or wetland buffer losses, including land acquisition, planning, engineering, construction, monitoring and contingency actions.
- F. “Compensatory mitigation” means replacing project-induced wetland losses or impacts, and includes, but is not limited to, the following:
 - 1. “Restoration” means actions performed to reestablish wetland functional characteristics and processes which have been lost by alterations, activities, or catastrophic events within an area which no longer meets the definition of a wetland.
 - 2. “Creation” means actions performed to intentionally establish a wetland at a site where it did not formerly exist.
 - 3. “Enhancement” means actions performed to improve the condition of existing degraded wetlands so that the functions they provide are of a higher quality.
 - 4. “Preservation” means actions taken to ensure the permanent protection of existing wetlands.
- G. “Buildable area” means an area outside of wetlands and wetland buffers.
- H. “Department” means the Washington State Department of Ecology.
- I. “Emergent wetland” means a regulated wetland with at least thirty percent of the surface area covered by erect, rooted, herbaceous vegetation as the uppermost vegetative strata.
- J. “Essential habitat” means habitat necessary for the survival of federally listed threatened, endangered and sensitive species and state-listed priority species.
- K. “Exotic” means any species of plants or animals that are foreign to the planning area.

- L. “Existing and ongoing agriculture” includes those activities conducted on lands defined in RCW 84.34.020(2), and those activities involved in the production of crops or livestock. Activities which bring an area into agricultural use are not part of an ongoing operation. An operation ceases to be ongoing when the area on which it is conducted is converted to a nonagricultural use or has lain idle for more than five years.
- M. “Extraordinary hardship” means strict application of this chapter and/or programs adopted to implement this chapter by the city when these actions would prevent all reasonable economic use of the parcel.
- N. “Forested wetland” means a regulated wetland with at least twenty percent of the surface area covered by woody vegetation greater than twenty feet in height that is at least partially rooted within the wetland.
- O. “Functions,” “beneficial functions,” or “functions and values” means the beneficial roles served by wetlands including, but not limited to, water quality protection and enhancement, fish and wildlife habitat, food chain support, flood storage, conveyance and attenuation, groundwater recharge and discharge, erosion control, wave attenuation, historical and archaeological and aesthetic value protection, and recreation. These beneficial roles are not listed in order of priority.
- P. “High-intensity land use” includes land uses which are associated with high levels of human disturbance or substantial wetland habitat impacts including, but not limited to: commercial, industrial, institutional, residential densities of one or more units per acre, new agricultural uses (high-intensity processing such as dairies, nurseries and green houses, raising and harvesting crops requiring annual tilling, raising and maintaining animals), high-intensity recreation (golf courses, ball fields) and hobby farms.
- Q. “Hydric soil” means a soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper stratum. The presence of hydric soil shall be determined following the methods described in the approved federal delineation manual and applicable regional supplements for the delineation of wetlands that are adopted in accordance with applicable state law.
- R. “Hydrophytic vegetation” means macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. The presence of hydrophytic vegetation shall be determined following the methods described in the approved federal wetland delineation manual and applicable regional supplements.
- S. “Infrastructure” means facilities such as water and sewer transmission lines or pipes and their appurtenances, telephone, fiber optic cable, gas and electrical transmission and distribution facilities, and streets and roads.
- T. “In-kind compensation” means to replace wetlands with substitute wetlands whose characteristics closely approximate those destroyed or degraded by a regulated activity. It does not mean replacement within the same wetlands rating category.
- U. “Isolated wetlands” means those regulated wetlands which:
 - 1. Are outside of and not contiguous to any one-hundred-year floodplain of a lake, river, or stream; and
 - 2. Have no contiguous hydric soil or hydrophytic vegetation between the wetland and any surface water.
- V. “Low-intensity land use” includes land uses which are associated with low levels of human disturbance or low wetland habitat impacts, including, but not limited to, passive recreation, open space, or forest management land uses.
- W. “Mitigation” includes avoiding, minimizing or compensating for adverse wetland impacts. Mitigation, in the following order of preference, is defined as:
 - 1. Avoiding the impact altogether by not taking a certain action or parts of an action;

2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
 3. Rectifying the impact by repairing, rehabilitating or restoring the affected environment to the conditions existing at the time of the initiation of the project;
 4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
 5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments;
 6. Monitoring the impact and the compensation project and taking appropriate corrective measures. Mitigation for individual actions may include a combination of the above measures.
- X. “Moderate-intensity land use” means land uses which are associated with moderate levels of human disturbance or substantial habitat impacts including, but not limited to, not more than one residential dwelling unit per acre, moderate-intensity open space (parks), and moderate agricultural uses (orchards, hay fields), and paved trails.
- Y. “Native vegetation” means plant species which are indigenous to the area in question.
- Z. “Off-site compensation” means to replace wetlands away from the site on which a wetland has been impacted by a regulated activity.
- AA. “On-site compensation” means to replace wetlands at or adjacent to the site on which a wetland has been impacted by a regulated activity.
- BB. “Out-of-kind compensation” means to replace wetlands with substitute wetlands whose characteristics do not closely approximate those destroyed or degraded by a regulated activity. It does not refer to replacement out of the wetland rating category.
- CC. “Practicable alternative” means an alternative that is available and capable of being carried out after taking into consideration costs, existing technology, and logistics in light of overall project purposes, and having fewer impacts to regulated wetlands.
- DD. “Priority habitats” means a habitat type or elements with unique or significant value to one or more species as classified by the Washington State Department of Fish and Wildlife. A priority habitat may consist of a unique vegetation type or dominant plant species, a described successional state, or a specific structural element.
- EE. “Priority species” are those species that are of concern due to their population status and their sensitivity to habitat manipulation. Priority species include those which are state-listed endangered, threatened and sensitive species.
- FF. “Regulated wetlands” means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Regulated wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands created as mitigation and wetland modified for approved land use activities shall be considered as regulated wetlands. All category I wetlands shall be considered regulated wetlands. Regulated wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate the conversion of wetlands. The applicant shall bear the burden of proving that the site was not previously a wetland. For identifying and delineating a regulated wetland, the city shall consider the approved federal wetland delineation manual and applicable regional supplements.

- GG. “Regulated activities” means any of the following activities which are directly undertaken or originate in a regulated wetland or its buffer:
1. The removal, excavation, grading, or dredging of soil, sand, gravel, minerals, organic matter, or material of any kind;
 2. The dumping, discharging, or filling with any material;
 3. The draining, flooding, or disturbing of the water level or water table;
 4. The driving of pilings;
 5. The placing of obstructions;
 6. The construction, reconstruction, demolition, or expansion of any structure;
 7. The destruction or alteration of wetlands vegetation through clearing, harvesting, shading, intentional burning, or planting of vegetation that would alter the character of a regulated wetland; provided, that these activities are not part of a forest practice governed under Chapter 76.09 RCW and its rules; or
 8. Activities that result in a significant change of water temperature, a significant change of physical or chemical characteristics of wetlands water sources, including quantity, or the introduction of pollutants.
- HH. “Repair or maintenance” means an activity that restores the character, scope, size and design of a serviceable area, structure, or land use to its previously authorized and undamaged condition. Activities that change the character, size, or scope of a project beyond the original design and drain, dredge, fill, flood, or otherwise alter additional regulated wetlands are not included in this definition.
- II. “Scrub-shrub wetland” means a regulated wetland with at least thirty percent of its surface area covered by woody vegetation less than twenty feet in height as the uppermost strata.
- JJ. “Serviceable” means presently usable.
- KK. “Unavoidable and necessary impacts” are impacts to regulated wetlands that remain after a person proposing to alter regulated wetlands has demonstrated that no practicable alternative exists for the proposed project.
- LL. “Water-dependent” means requiring the use of surface water that would be essential to fulfill the purpose of the proposed project.
- MM. “Wetlands” means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate conversion of wetlands. The approved federal wetland delineation manual and applicable regional supplements shall be used for identifying and delineating a wetland.
- NN. “Wetland buffers” or “wetland buffer zones” is an area that surrounds and mitigates the adverse impacts to the functions and values of a regulated wetland.
- OO. “Wetland rating system” is defined in TMC 16.28.090.
- PP. “Wetland permit” means any permit issued, conditioned or denied specifically to implement this chapter.

QQ. “Wetland edge” means the delineation of the wetland edge as based on the approved federal wetland delineation manual and applicable regional supplements, as required by RCW 36.70A.175 and WAC 173-22-035.

RR. “Wetland mosaic” means a patchwork of wetlands that is considered one unit where each patch of wetland is less than one acre; each patch is less than one hundred feet on average; and the areas delineated as vegetated wetland are more than fifty percent of the total area of the wetlands and uplands together.

(Ord. O2017-018, Amended, 10/17/2017; Ord. O2012-005, Amended, 03/18/2014; Amended during 2011 reformat; O2005-023, Amended, 09/06/2005; Ord. O2004-019, Amended, 05/17/2005; Ord. O96-008, Amended, 11/05/1996; Ord. 1278, Added, 08/20/1991)

16.28.040 Abrogation and greater restrictions.

It is not intended that this chapter repeal, abrogate, or impair any existing regulations, easements, covenants, or deed restrictions. However, where this chapter imposes greater restrictions, the provisions of this chapter shall prevail.

(Ord. 1278, Added, 08/20/1991)

16.28.050 Interpretation.

The provisions of this chapter shall be held to be minimum requirements in their interpretation and application and shall be liberally construed to serve the purposes of this chapter.

(Ord. 1278, Added, 08/20/1991)

16.28.060 Applicability.

- A. When any provision of any other chapter of the city of Tumwater conflicts with this chapter, that which provides more protection of wetlands and wetland buffers shall apply unless specifically provided otherwise in this chapter; provided, that if there are any conflicts between the shoreline master program and the wetland protection standards which apply in shoreline jurisdiction, the requirements of the shoreline master program apply.
- B. The city is authorized to adopt written procedures for the purpose of carrying out the provisions of this chapter. The city of Tumwater shall not grant any approval or permission to conduct a regulated activity in a wetland or wetland buffer prior to fulfilling the requirements of this chapter. Such permits and approvals include but are not limited to the following:

Building permit; conditional use permit; franchise right-of-way construction permit; binding site plan; grading; land clearing permit; planned unit development; right-of-way permit; shoreline substantial development permit; shoreline variance; shoreline conditional use permit; shoreline environmental redesignation; variance; zoning code amendment; rezone; land division; or any subsequently adopted permit or required approval not expressly exempted by this chapter.

(Ord. O2012-005, Amended, 03/18/2014; Ord. 1278, Added, 08/20/1991)

16.28.070 Maps and inventory.

This chapter shall apply to all lots or parcels on which wetlands and/or wetland buffers are located within the city of Tumwater. The approximate location and extent of wetlands is displayed on the Thurston County Wetlands Inventory. The Thurston County Wetlands Inventory is to be used as a guide to the general location or extent of wetlands. Wetlands not shown on the Thurston County Wetlands Inventory are presumed to exist in the city of Tumwater and are protected under all the provisions of this chapter. In the event that any of the wetland designations shown on the maps conflict with the criteria set forth in this chapter, the criteria shall control.

(Amended during 2011 reformat; O96-008, Amended, 11/05/1996; Ord. 1278, Added, 08/20/1991)

16.28.080 Determination of regulatory wetland boundary.

- A. The exact location of the wetland boundary shall be determined by the applicant through the performance of a field investigation applying the wetland definition provided in TMC 16.28.030. A qualified wetlands professional shall perform wetland delineations using the approved federal wetland delineation manual and

applicable regional supplements. The applicant is required under TMC 16.28.140(C) to show the location of the wetland boundary on a scaled drawing as a part of the permit application.

- B. The city, when requested by the applicant, may waive the delineation of boundary requirement for the applicant and, in lieu of delineation by the applicant, perform the delineation. The city shall consult with qualified professional scientists and technical experts or other experts as needed to perform the delineation. The applicant may be required to reimburse the city for costs incurred for this service including administration costs.
- C. Where the city performs a wetland delineation at the request of the applicant, such delineation shall be considered a final determination.
- D. Where the applicant has provided a delineation of the wetland boundary, the city shall verify the accuracy of, and may render adjustments to, the boundary delineation. In the event the adjusted boundary delineation is contested by the applicant, the city shall, at the applicant's expense, obtain expert services to render a final delineation.

(Ord. O2012-005, Amended, 03/18/2014; Ord. O2005-023, Amended, 09/06/2005; Ord. O2004-019, Amended, 05/17/2005; Ord. O96-008, Amended, 11/05/1996; Ord. 1278, Added, 08/20/1991)

16.28.090 Wetlands rating system.

Wetlands shall be rated according to: (A) the Washington State Wetland Rating System for Western Washington: 2014 Update (Washington State Department of Ecology publication 14-06-029, effective January 2015), as revised; or (B) a regionally specific, scientifically based method for categorizing wetlands that evaluates the existing wetland functions and values to determine what functions must be protected (WAC 365-190-090). In the event of a conflict or discrepancy between the provisions of a regionally specific wetlands rating system and the Washington State Wetland Rating System for Western Washington, the Washington State Department of Ecology's wetlands rating system shall control.

The Washington State Wetland Rating System categorizes wetlands based on specific attributes such as rarity, sensitivity to disturbance, and the functions they provide. The range of possible scores for a wetland category based on function is from nine to twenty-seven and includes improving water quality, hydrologic, and habitat, each of which are rated on a scale of three to nine.

According to the Washington State Department of Ecology wetland rating system, as set forth in the Washington State Wetland Rating System for Western Washington, the wetland rating categories applicable to the city are defined as follows:

- A. Washington State Four-Tier Wetlands Rating System.
 - 1. Category I Criteria.
 - a. Wetlands of high conservation value that are identified by scientists of the Washington Natural Heritage Program at the Washington State Department of Natural Resources;
 - b. Bogs;
 - c. Mature and old growth forested wetlands larger than one acre; or
 - d. Wetlands that perform many functions well (functions scoring twenty-three points or more).
 - 2. Category II Criteria. Wetlands with a moderately high level of functions (functions scoring between twenty and twenty-two points).
 - 3. Category III Criteria. Wetlands with a moderate level of functions (functions scoring between sixteen and nineteen points).

4. Category IV Criteria. Category IV wetlands have the lowest levels of functions (functions scoring less than sixteen points) and are often heavily disturbed.

Wetland buffer widths, replacement ratios and avoidance criteria shall be based on these rating systems.

- B. Wetland rating categories shall be applied as the regulated wetland exists on the date of adoption of the rating system by the city; as the regulated wetland may naturally change in accordance with permitted activities. Wetland rating categories shall not be altered to recognize illegal modifications.

(Ord. O2018-007, Amended, 10/16/2018; Ord. O2017-018, Amended, 10/17/2017; Ord. O2004-019, Amended, 05/17/2005; Ord. 1278, Added, 08/20/1991)

16.28.095 Small wetland standards.

Small wetlands of four thousand square feet or less may or may not provide wetland functions that require protection. The following standards apply to regulating wetlands of four thousand square feet or less:

- A. Wetlands of less than one thousand square feet are exempt when the applicant can show all of the following:
 1. The wetland is not associated with a riparian corridor;
 2. The wetland is not part of a wetland mosaic; and
 3. The wetland does not contain habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife;
- B. For wetlands between one thousand and four thousand square feet, the wetland should be rated to establish the category and evaluate functions. Type III and IV wetlands may be disturbed or eliminated subject to all of the following criteria:
 1. The wetland is not associated with a riparian corridor;
 2. The wetland is not part of a wetland mosaic;
 3. The wetland does not score thirteen points or more in the wetland rating score;
 4. The wetland does not contain habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife; and
 5. Impacts allowed under this provision shall be fully mitigated as required in TMC 16.28.220.

(Ord. O2017-018, Amended, 10/17/2017; Ord. O2004-019, Added, 05/17/2005)

16.28.100 Regulated activities.

A permit shall be obtained from the city prior to undertaking the following activities in a regulated wetland or its buffer unless authorized by TMC 16.28.110:

- A. The removal, excavation, grading, or dredging of soil, sand, gravel, minerals, organic matter, or material of any kind;
- B. The dumping, discharging, or filling with any material;
- C. The draining, flooding, or disturbing of the water level or water table;
- D. The driving of pilings;
- E. The placing of obstructions;
- F. The construction, reconstruction, demolition, or expansion of any structure;

- G. The destruction or alteration of wetlands vegetation through clearing, harvesting, or intentional burning, that would alter the character of a regulated wetland, provided that these activities are not part of a forest practice governed under Chapter 76.09 RCW and its rules; or
- H. Activities that result in a significant change of water temperature, a significant change of physical or chemical characteristics of wetlands water sources, including quantity, or the introduction of pollutants.

(Ord. 1278, Added, 08/20/1991)

16.28.110 Allowed activities.

The following uses which require no specific permit shall be allowed within a wetland or wetland buffer to the extent that they are not prohibited by any other chapter or law and provided they are conducted using best management practices, except where such activities result in the conversion of a regulated wetland or wetland buffer to a use to which it was not previously subjected and provided further that forest practices and conversions shall be governed by Chapter 76.09 RCW and its rules:

- A. Conservation or preservation of soil, water, vegetation, fish, shellfish, and other wildlife that does not entail changing the structure or functions of the existing wetland;
- B. Outdoor recreational activities, including fishing, birdwatching, hiking, boating, horseback riding, swimming, canoeing, and bicycling;
- C. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling of soil, planting of crops, or alteration of the wetland by changing existing topography, water conditions or water sources;
- D. The maintenance of drainage ditches to original specifications;
- E. Education, scientific research, and use of nature trails;
- F. Navigation aids and boundary markers;
- G. Minimal soil disturbance for site investigative work necessary for land use application submittals such as surveys, soil logs, percolation tests and other related activities. In every case, wetland impacts shall be minimized and disturbed areas shall be immediately restored; and
- H. The following uses which require no specific permit under this chapter can occur within wetlands and/or wetland buffers after review by the community development department; provided, that wetland impacts are minimized and that disturbed areas are immediately restored, or where no feasible alternative location exists:
 - 1. Normal maintenance, repair, or operation of existing serviceable structures, utilities, facilities, or improved areas. Maintenance and repair does not include any modification that changes the character, scope, or size of the original structure, facility, or improved area and does not include the construction of a maintenance road; and
 - 2. Modification to Existing Structures. Structural modification of, addition to, or replacement of an existing legally constructed structure that does not further alter or increase the impact to the critical area or buffer and there is no increased risk to life or property as a result of the proposed modification of, addition to or replacement; provided, that restoration of the structures substantially damaged by fire, flood, or act of nature must be initiated within one year of the date of such damage, as evidenced by the issuance of a valid building permit, and diligently pursued to completion; and
 - 3. Activities within the Improved Right-of-Way. Replacement, modification, installation, or construction of utility facilities, lines, pipes, mains, equipment, or appurtenances, not including substations, when such facilities are located within the improved portion of the public right-of-way or a city authorized private roadway except those activities that alter a wetland or watercourse, such as culverts or bridges, or result in the transport of sediment or increase stormwater; subject to the following:

- a. Retention and replanting of native vegetation shall occur wherever possible along the right-of-way improvement and resulting disturbance.
4. Operation, Maintenance or Repair. Operation, maintenance, or repair of existing structures, infrastructure improvements, utilities, public or private roads, dikes, levees, or drainage systems, that do not require construction permits, if the activity does not further alter or increase impact to, or encroach further within, the critical area or buffer and there is no increased risk to life or property as a result of the proposed operation, maintenance, or repair. Operation and maintenance includes vegetation management performed in accordance with best management practices that is part of ongoing maintenance of structures, infrastructure, or utilities; provided, that such management actions are part of a regular ongoing maintenance, do not expand further into the critical area, are not the result of an expansion of the structure or utility; and do not directly impact endangered species.
5. Minor Utility Projects. Utility projects which have minor or short duration impacts to critical areas, as determined by the community development director in accordance with the criteria below, and which do not significantly impact the functions or values of a critical area(s), provided that such projects are constructed with best management practices and additional restoration measures are provided. Minor activities shall not result in the transport of sediment or increased stormwater. Such allowed minor utility projects shall meet the following criteria:
 - a. There is no practical alternative to the proposed activity with less impact on critical areas;
 - b. The activity involves the placement of a utility pole, street signs, anchor, or vault or other small component of a utility facility;
 - c. The activity involves disturbance of no more than seventy-five square feet.
6. Emergencies. Those activities necessary to prevent an immediate risk of damage to private property and that require remedial or preventative action in a timeframe too short to allow for compliance with the requirements of this chapter. Emergency actions that create an impact to a critical area or its buffer shall use all reasonable methods to address the emergency; in addition, they must have the least possible impact to the critical area or its buffer. The person or agency undertaking such action shall notify the city within one working day following commencement of the emergency activity. Within thirty days, the community development director shall determine if the action taken was within the scope of the emergency actions allowed in this subsection. If the community development director determines that the action taken was beyond the scope of an allowed emergency action, then inspection and remedial action would be required. If remedial action is required and not completed, then enforcement provisions would apply.
7. Allow the removal of beaver dams as long as the proponent has obtained hydraulic project approval from the Washington State Department of Fish and Wildlife.
- I. Fish hatcheries, associated appurtenances, and related interpretive centers are permitted in accordance with an approved critical area report that demonstrates the following:
 1. Natural shoreline processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, shoreline substrate within one-fourth mile of the project area.
 2. The aquaculture facilities will not degrade fish or wildlife habitat conservation areas or associated wetlands.
 3. Adequate mitigation measures ensure that there is no net loss of the functions or values of riparian habitat as a result of the proposed aquaculture facilities.

(Ord. O2016-024, Amended, 03/21/2017; Ord. O2011-002, Amended, 03/01/2011; Ord. O2004-019, Amended, 05/17/2005; Ord. 1278, Added, 08/20/1991)

16.28.115 Exceptions – Infrastructure.

- A. If the application of this title would prohibit a development proposal by a public agency, public utility, or a private entity installing public or private infrastructure that is in compliance with the comprehensive transportation, capital facilities or utility plans of Tumwater, the agency or utility may apply for an exception pursuant to this section.
- B. Exception Request and Review Process. An application for an infrastructure exception shall be made to the city and shall include a critical area identification form; critical area report, including mitigation plan, if necessary; and any other related project documents such as permit applications to other agencies, special studies, and environmental documents prepared pursuant to the State Environmental Policy Act (Chapter 43.21C RCW). The community development director shall prepare a recommendation to the hearing examiner based on review of the submitted information, a site inspection, and the proposal's ability to comply with infrastructure exception review criteria in subsection D of this section.
- C. Hearing Examiner Review. The hearing examiner shall review the application and the community development director's recommendation, and conduct a public hearing. The hearing examiner shall approve, approve with conditions, or deny the request based on the proposal's ability to comply with all of the infrastructure exception review criteria in subsection D of this section.
- D. Infrastructure Exception Review Criteria. The criteria for review and approval of infrastructure exceptions follow:
1. There is no other practical alternative to the proposed development with less impact on critical areas;
 2. The application of this title would unreasonably restrict the ability to provide utility services to the public;
 3. The proposal does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site;
 4. The proposal attempts to protect and mitigate impacts to the critical area functions and values consistent with other applicable regulations and standards.
- E. Burden of Proof. The burden of proof shall be on the applicant to bring forth evidence in support of the application and to provide sufficient information on which any decision has to be made on the application.

(Ord. O2012-005, Amended, 03/18/2014; Ord. O2011-002, Amended, 03/01/2011; Ord. O2006-026, Amended, 04/03/2007; Ord. O2004-019, Added, 05/17/2005)

16.28.120 Permit requirements, compliance.

Except as specifically provided in TMC 16.28.110, no regulated activity shall occur or be permitted to occur within a regulated wetland or wetland buffer without a written permit from the city of Tumwater. Any alteration approved by such written permit shall comply fully with the requirements and purposes of this chapter, other applicable regulations, and any terms or conditions of said permit. All activities that are not exempt or permitted shall be prohibited.

(Ord. 1278, Added, 08/20/1991)

16.28.130 Wetland permits, extensions.

- A. Application for a wetland permit to conduct any regulated activity not specifically authorized by TMC 16.28.110 within a wetland or wetland buffer shall be made to the city on forms furnished by that office. Permits shall normally be valid for a period of three years from the date of issue and shall expire at the end of that time unless a longer or shorter period is specified by the city upon issuance of the permit.
- B. An extension of an original permit may be granted upon written request to the city by the original permit holder or the successor in title. Prior to the granting of an extension, the city shall require updated studies and/or additional hearings if, in its judgment, the original intent of the permit is altered or enlarged by the

renewal, if the circumstances relevant to the review and issuance of the original permit have changed substantially, or if the applicant failed to abide by the terms of the original permit.

(Ord. 1278, Added, 08/20/1991)

16.28.140 Permit applications, requirements.

- A. Request for Determination of Applicability. Any person seeking to determine whether a proposed activity or an area is subject to this chapter may request in writing a determination from the city. Such a request for determination shall contain plans, data, and other information as may be specified by the city.
- B. Prepermit Consultations. Any person intending to apply for a wetland permit is strongly encouraged, but not required, to meet with the city during the earliest possible stages of project planning in order to discuss wetland impact avoidance and minimization, and compensation before large commitments have been made to a particular project design.
- C. Information Requirements. Unless the city waives one or more of the following information requirements, applications for a wetland permit under this chapter shall include:
 - 1. A description and maps overlaid on an aerial photograph at a scale no smaller than one inch equals four hundred feet showing the entire parcel of land owned by the applicant and the exact boundary pursuant to TMC 16.28.080 of the wetland on the parcel;
 - 2. A description of the vegetative cover of the wetland and adjacent area including dominant species;
 - 3. A site plan for the proposed activity overlaid on an aerial photograph at a scale no smaller than one inch equals four hundred feet showing the location, dimensions of all existing and proposed structures, roads, sewage treatment facilities, and installations within the wetland and its buffer on the subject parcel;
 - 4. The exact sites and specifications for all regulated activities;
 - 5. Existing ground contours of the site within the wetland and its buffer at contour intervals of no greater than two feet;
 - 6. Plan view and typical cross-sectional views of that portion of the wetland located on the site and its buffer drawn to scale;
 - 7. A discussion of measures, including avoidance, minimization and mitigation, proposed to preserve existing wetlands;
 - 8. A habitat and native vegetation conservation strategy that addresses methods to protect and enhance on-site habitat and wetland functions;
 - 9. A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs;
 - 10. Specific means to mitigate any potential adverse environmental impacts of the applicant's proposal. The city may require additional information, including, but not limited to, an assessment of wetland functional characteristics, including a discussion of the methodology used; documentation of the ecological, aesthetic, economic, or other values of the wetland; a study of flood erosion, or other hazards at the site and the effect of any protective measures that might be taken to reduce such hazards; and any other information deemed necessary to verify compliance with the provisions of this chapter or to evaluate the proposed use in terms of the purposes of this chapter. The city shall maintain and make available to the public, all information applicable in their possession to any wetland and its buffer located within the city.
- D. Filing Fees. At the time of an application or request for letter of delineation, the applicant shall pay a filing fee as provided for by resolution.

E. Notification.

1. Upon receipt of the completed permit application, the city shall notify the individuals and agencies, including federal and state agencies, having jurisdiction over or an interest in the matter to provide such individuals and agencies an opportunity to comment. This will include Department of Ecology's wetlands section on all class I wetland permits.
2. The city shall establish a mailing list of all interested persons and agencies who wish to be notified of such applications.

F. Notice on Title.

1. The owner of any property which includes a field verified wetland or wetland buffer pursuant to TMC 16.28.080 on which a development proposal is submitted shall file for record with the Thurston County auditor a notice approved by the city in a form substantially as set forth in subsection G of this section. Such notice shall provide notice in the public record of the presence of a wetland or wetland buffer, the application of this chapter to the property, and that limitations on actions in or affecting such wetlands and their buffers may exist.
2. The applicant shall submit proof that the notice has been filed for record before the city of Tumwater shall approve any development proposal for such site.

G. Form of Notice.

WETLAND AND/OR WETLAND BUFFER NOTICE

Legal Description:

Parcel No.:

Present Owner:

NOTICE: This property contains wetlands or their buffers as defined by City of Tumwater Ordinance. The property was the subject of a development proposal for (type of permit) application # _____ filed on (date). Restrictions on use or alteration of the wetlands or their buffers may exist due to natural conditions of the property and resulting regulations. Review of such application has provided information on the location of wetlands or wetland buffers and restrictions on their use through setback areas. A copy of the plan showing such setback areas is attached hereto.

Signature of Owner

STATE OF WASHINGTON)

) ss.

COUNTY OF THURSTON)

On this day personally appeared before me _____ to me known to be the individual(s) described in and who executed the foregoing instrument, and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes therein mentioned.

Given under my hand and official seal this _____ day of _____, 20__.

Notary Public in and for the State of Washington.

Residing at _____.

My commission expires _____.

(Ord. O2004-019, Amended, 05/17/2005; Ord. 1278, Added, 08/20/1991)

16.28.150 Permit processing.

A. Consolidation. The city shall, to the extent practicable and feasible, consolidate the processing of wetlands related aspects of other city of Tumwater regulatory programs which affect activities in wetlands, such as subdividing, clearing and grading, floodplain, and environmentally sensitive chapter, etc., with the wetland permit process established herein so as to provide a timely and coordinated permit process.

B. Completeness of Application. After receipt of the permit application, the city shall notify the applicant as to the completeness of the application in accordance with the procedures outlined in TMC Chapter 14.02. An application shall not be deemed complete until and unless all information necessary to evaluate the proposed activity, its impacts, and its compliance with the provisions of the chapter have been provided to the satisfaction of the city. Such determination of completeness shall not be construed as approval or denial of the permit application.

(Ord. O96-008, Amended, 11/05/1996; Ord. 1278, Added, 08/20/1991)

16.28.160 Standards for permit decisions.

A. A permit shall only be granted if the permit, as conditioned, is consistent with the provisions of this chapter. Additionally, permits shall only be granted if:

1. A proposed action avoids adverse impacts to regulated wetlands or their buffers or takes affirmative and appropriate measures to minimize and compensate for unavoidable impacts;
2. The proposed activity results in no net loss of wetland functions and/or values; or
3. Denial of a permit would cause an extraordinary hardship on the applicant.

B. Wetland permits shall not be effective and no activity thereunder shall be allowed during the time provided to file a permit appeal.

(Ord. 1278, Added, 08/20/1991)

16.28.170 Wetland buffers.

A. Standard Buffer Zone Widths. Wetland buffer zones shall be required for all regulated activities adjacent to regulated wetlands.

1. Any wetland created, restored or enhanced as compensation for approved wetland alterations shall also include the standard buffer required for the category of the created, restored, or enhanced wetland.
2. All buffers shall be measured from the wetland boundary as surveyed in the field pursuant to the requirements of TMC 16.28.080.
3. The width of the wetland buffer zone shall be determined according to wetland category, the functions and special characteristics of the wetland, and the proposed land use.
4. Wetlands of high conservation value, bogs, and forested wetlands shall have the buffers shown in the table below independent of points scored for habitat in the rating system.
5. If a wetland meets more than one of the characteristics listed in Tables 16.28.170(1) to 16.28.170(4), the buffer recommended to protect the wetland is the widest one.

Table 16.28.170(1): Category I Wetland Buffer Widths

(Buffers for wetlands scoring twenty-three points or more for all functions or having the “special characteristics” identified in the rating system)

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use (Apply Most Protective if More Than One Criterion Is Met)	Other Measures Recommended for Protection
Wetlands of high conservation value	Low – 125 ft Moderate – 190 ft High – 250 ft	No additional surface discharges to wetland or its tributaries No septic systems within 300 ft of wetland Restore degraded parts of buffer
Bogs	Low – 125 ft Moderate – 190 ft High – 250 ft	No additional surface discharges to wetland or its tributaries Restore degraded parts of buffer
Forested	Buffer width to be based on score for habitat functions or water quality functions	If forested wetland scores high for habitat, need to maintain connections to other habitat areas Restore degraded parts of buffer
High level of function for habitat (score for habitat 8 – 9 points)	Low – 150 ft Moderate – 225 ft High – 300 ft	Maintain connectivity to other habitat areas Restore degraded parts of buffer
Moderate level of function for habitat (score for habitat 5 – 7 points)	Low – 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time (1)
High level of function for water quality improvement (8 – 9 points) and low for habitat (less than 5 points)	Low – 50 ft Moderate – 75 ft High – 100 ft	No additional discharges of untreated runoff
Not meeting any of the above criteria	Low – 50 ft Moderate – 75 ft High – 100 ft	No recommendations at this time (1)

Table 16.28.170(1) Explanatory Notes:

(1) No information on other measures for protection was available at the time the 2014 Washington State Wetland Rating System for Western Washington was written. The Washington State Department of Ecology will continue to collect new information for future updates of the 2014 rating system.

Table 16.28.170(2): Category II Wetland Buffer Widths

(Buffers for wetlands scoring twenty to twenty-two points for all functions or having the “special characteristics” identified in the rating system)

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use (Apply Most Protective if More Than One Criterion Is Met)	Other Measures Recommended for Protection
High level of function for habitat (score for habitat 8 – 9 points)	Low – 150 ft Moderate – 225 ft High – 300 ft	Maintain connections to other habitat areas
Moderate level of function for habitat (score for habitat 5 – 7 points)	Low – 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time (1)
High level of function for water quality improvement and low for habitat (score for water quality 8 – 9 points; habitat less than 5 points)	Low – 50 ft Moderate – 75 ft High – 100 ft	No additional discharges of untreated runoff
Not meeting above criteria	Low – 50 ft Moderate – 75 ft High – 100 ft	No recommendations at this time (1)

Table 16.28.170(2) Explanatory Notes:

(1) No information on other measures for protection was available at the time the 2014 Washington State Wetland Rating System for Western Washington was written. The Washington State Department of Ecology will continue to collect new information for future updates of the 2014 rating system.

Table 16.28.170(3): Category III Wetland Buffer Widths

(Buffers for wetlands scoring sixteen to nineteen points for all functions)

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use	Other Measures Recommended for Protection
Moderate level of function for habitat (score for habitat 5 – 7 points) If wetland scores 8 – 9 habitat points, use Table 16.28.170(2): Category II Wetland Buffer Widths	Low – 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time (1)
Score for habitat 3 – 4 points	Low – 40 ft Moderate – 60 ft High – 80 ft	No recommendations at this time (1)

Table 16.28.170(3) Explanatory Notes:

(1) No information on other measures for protection was available at the time the 2014 Washington State Wetland Rating System for Western Washington was written. The Washington State Department of Ecology will continue to collect new information for future updates of the 2014 rating system.

Table 16.28.170(4): Category IV Wetland Buffer Widths

(Buffers for wetlands scoring less than sixteen points for all functions)

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use	Other Measures Recommended for Protection
Score for all three functions less than 16 points	Low – 25 ft Moderate – 40 ft High – 50 ft	No recommendations at this time (1)

Table 16.28.170(4) Explanatory Notes:

(1) No information on other measures for protection was available at the time the 2014 Washington State Wetland Rating System for Western Washington was written. The Washington State Department of Ecology will continue to collect new information for future updates of the 2014 rating system.

B. Increased Wetland Buffers Zone Width.

- The recommended buffer widths are based on the assumption that the buffer is vegetated with a native plant community appropriate for the ecoregion or with one that performs similar functions. If the existing buffer is not vegetated, sparsely vegetated, or vegetated with invasive species that do not perform needed functions, the buffer shall either be planted with appropriate species or widened to ensure that adequate functions of the buffer are provided. Generally, improving the vegetation will be more effective than widening the buffer.
- If the buffer for a wetland is based on the score for its ability to improve water quality rather than habitat or other criteria, then the buffer should be increased by fifty percent if the slope is greater than thirty percent.
- If the wetland provides habitat for a species that is particularly sensitive to disturbance, such as a threatened or endangered species, the width of the buffer should be increased to provide adequate protection for the species based on its particular life-history needs.

C. Buffer Width Reduction. The buffer widths recommended for land uses with high-intensity impacts to wetlands can be reduced to those widths recommended for moderate-intensity impacts under the following conditions:

- For wetlands that score moderate or high for habitat (five points or more), the width of the buffer around the wetland can be reduced if both the following criteria are met:

- a. A relatively undisturbed vegetated corridor at least one hundred feet wide is protected between the wetland and any other priority habitats as defined by the Washington State Department of Fish and Wildlife. The corridor must be protected for the entire distance between the wetland and the priority habitat via some type of legal protection such as a conservation easement; and
 - b. Measures to minimize the impacts of different land uses on wetlands, such as the examples summarized in Table 16.28.170(5), are applied.
2. For wetlands that score less than five points for habitat, the buffer width can be reduced to that required for moderate land use impacts if measures to minimize impacts of different land uses on wetlands, such as the examples summarized in Table 16.28.170(5), are applied.

Table 16.28.170(5): Measures to Minimize Impacts to Wetlands

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Lights	Direct lights away from wetland	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland	Manufacturing, residential
Toxic runoff (1)	Route all new runoff away from wetland while ensuring that wetland is not dewatered Establish covenants limiting use of pesticides within 150 ft of wetland Apply integrated pest management	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Stormwater runoff	Retrofit stormwater detention and treatment for roads and existing adjacent development Prevent channelized flow from lawns that directly enters the buffer	Parking lots, roads, manufacturing, residential areas, commercial, landscaping
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns	Impermeable surfaces, lawns, tilling
Pets and human disturbance	Use privacy fencing Plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion Place wetland and its buffer in a separate tract	Residential areas
Dust	Utilize best management practices to control dust	Tilled fields

Table 16.28.170(5) Explanatory Notes:

(1) These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.

- D. **Reductions in Buffer Widths Where Existing Roads or Structures Lie Within the Buffer.** Where a legally established, nonconforming use of the buffer exists, such as a road or structure that lies within the width of buffer recommended for that wetland, proposed actions in the buffer may be permitted as long as they do not increase the degree of nonconformity. This means no significant increase in the impacts to the wetland from activities in the buffer.
- E. **Standard Wetland Buffer Width Averaging.** Standard wetland buffer zones may be modified by averaging buffer widths if it will improve the protection of wetland functions, or if it is the only way to allow for reasonable use of a parcel. Averaging cannot be used in conjunction with the provisions for reductions in buffer widths. Wetland buffer width averaging shall be allowed to improve wetland protection only where a qualified wetlands professional demonstrates all of the following:
 1. The wetland has significant differences in characteristics that affect its habitat functions, such as a wetland with a forested component adjacent to a degraded emergent component or a “dual-rated” wetland with a category I area adjacent to a lower rated area;

2. The buffer is increased adjacent to the higher functioning area of habitat or more sensitive portion of the wetland and decreased adjacent to the lower functioning or less sensitive portion;
 3. The total area contained in the buffer area after averaging is not less than that which would be contained within the standard buffer; and
 4. The buffer at its narrowest point is never less than three-fourths of the required width.
- F. Averaging to allow reasonable use of a parcel may be permitted when all of the following are met:
1. There are no feasible alternatives to the site design that could be accomplished without buffer averaging;
 2. The averaged buffer will not result in degradation of the wetland's functions and values as demonstrated in the critical area report;
 3. The total buffer area after averaging is equal to the area required without averaging; and
 4. The buffer at its narrowest point is never less than three-fourths of the required width.
- G. Except as otherwise specified, wetland buffer zones shall be retained in their natural undisturbed condition. Where buffer disturbance has occurred during construction, revegetation with native vegetation may be required.
- H. Permitted Uses in a Wetland Buffer Zone. Regulated activities shall not be allowed in a buffer zone except for the following:
1. Activities having minimal adverse impacts on buffers and no adverse impacts on regulated wetlands. These may include low-intensity, passive recreational activities such as pervious trails, nonpermanent wildlife watching blinds, short-term scientific or educational activities, and sports fishing or hunting.
 2. With respect to category III and IV wetlands, surface level stormwater management facilities may be allowed in the outer twenty-five percent of the wetland buffer using best management practices; provided the community development director makes all of the following determinations:
 - a. No other location is feasible.
 - b. The location of such facilities will not degrade the functions or values of the wetland.
 3. Stormwater management facilities are not allowed in buffers of category I or II wetlands.
- I. Signs and Fencing of Wetlands.
1. Temporary Markers. The outer perimeter of the wetland or buffer and the limits of those areas to be disturbed pursuant to an approved permit or authorization shall be marked in the field in such a way as to ensure that no unauthorized intrusion will occur and is subject to inspection by the community development director prior to the commencement of permitted activities. This temporary marking shall be maintained throughout construction and shall not be removed until permanent signs, if required, are in place.
 2. Permanent Signs. As a condition of any permit or authorization issued pursuant to these requirements, the community development director may require the applicant to install permanent signs along the boundary of a wetland or buffer. Permanent signs shall be made of an enamel coated metal face and attached to a metal post, or another untreated material of equal durability. Signs must be posted at an interval of one per lot or every fifty feet, whichever is less, and must be maintained by the property owner in perpetuity. The sign shall be worded as follows or with alternative language approved by the community development director:

Protected Wetland Area

Do Not Disturb

Contact Tumwater Community Development 754-4180

Regarding Uses and Restrictions

3. Fencing. The community development director shall determine if fencing is necessary to protect the functions and values of the critical area. If found to be necessary, the community development director shall condition any permit or authorization issued pursuant to these regulations to require the applicant to install a permanent fence at the edge of the wetland buffer, when fencing will prevent future impacts to the wetland. The applicant will be required to install a permanent fence around the wetland or buffer when domestic grazing animals are present or may be introduced on site.

(Ord. O2017-018, Amended, 10/17/2017; Ord. O2012-005, Amended, 03/18/2014; Ord. O2011-002, Amended, 03/01/2011; Ord. O2004-019, Amended, 05/17/2005; Ord. O96-008, Amended, 11/05/1996; Ord. 1278, Added, 08/20/1991)

16.28.180 Avoiding wetland impacts.

- A. Regulated activities shall not be authorized in a regulated wetland or wetland buffer except where it can be demonstrated that the impact is both unavoidable and necessary or that all reasonable economic uses are denied.
- B. With respect to category I wetlands, an applicant must demonstrate that denial of the permit would impose an extraordinary hardship on the part of the applicant brought about by circumstances peculiar to the subject property.
- C. With respect to category II and III wetlands, the following provisions shall apply:
 1. For water-dependent activities, unavoidable and necessary impacts can be demonstrated where there are no practicable alternatives which would not involve a wetland or which would not have less adverse impact on a wetland, and would not have other significant adverse environmental consequences;
 2. Where non-water-dependent activities are proposed, it shall be presumed that adverse impacts are avoidable. This presumption may be rebutted upon a demonstration that:
 - a. The basic project purpose cannot reasonably be accomplished utilizing one or more other sites in the general region that would avoid, or result in less, adverse impact on a regulated wetland;
 - b. A reduction in the size, scope, configuration, or density of the project as proposed and all alternative designs of the project as proposed that would avoid, or result in less, adverse impact on a regulated wetland or its buffer will not accomplish the basic purpose of the project; and
 - c. In cases where the applicant has rejected alternatives to the project as proposed due to constraints such as zoning, deficiencies of infrastructure, or parcel size, the applicant has made reasonable attempt to remove or accommodate such constraints.
- D. With respect to category IV wetlands, unavoidable and necessary impacts can be demonstrated where the proposed activity is the only reasonable alternative which will accomplish the applicant's objectives.
- E. If the city determines that alteration of a wetland and/or wetland buffer is necessary and unavoidable, the city shall set forth in writing its findings with respect to each of the items listed in this section.

(Ord. O2006-026, Amended, 04/03/2007; Ord. O2004-019, Amended, 05/17/2005; Ord. 1278, Added, 08/20/1991)

16.28.190 Reasonable use exception.

- A. After it has been determined by the city pursuant to TMC 16.28.180 that all reasonable economic use has been denied, an exception may be applied for pursuant to this section.
- B. An application for a reasonable use exception shall be made to the city and shall include a critical area report and mitigation plan if necessary, and any other project related documents, such as permit applications to other agencies, special studies and environmental documents. The application must be submitted with payment of the necessary fee as established in the city's fee resolution, as written or hereafter amended. The community development director shall prepare a recommendation to the hearing examiner based on review of the submitted information, a site inspection, and the proposal's ability to comply with reasonable use exception criteria in subsection D of this section.
- C. The hearing examiner shall review the application and conduct a public hearing. The hearing examiner shall approve, approve with conditions, or deny the request based on the proposal's ability to comply with all the reasonable use exception criteria in subsection D of this section.
- D. The criteria for review and approval of reasonable use exceptions are:
 - 1. The application of this title would deny all reasonable use of the property;
 - 2. No other reasonable use consistent with existing zoning of the property has less impact on the critical area;
 - 3. The proposed impact to the critical area is the minimum necessary to allow for reasonable economic use of the property;
 - 4. The inability of the applicant to derive reasonable economic use of the property is not the result of actions by the applicant after the effective date of this title, or its predecessor;
 - 5. The proposal does not pose an unreasonable threat to public health, safety, or welfare on or off the development proposal site; and
 - 6. The proposal is consistent with other applicable regulations and standards.

(Ord. O2012-005, Amended, 03/18/2014; Ord. O2011-002, Amended, 03/01/2011; Ord. O2006-026, Amended, 04/03/2007; Ord. O2005-023, Amended, 09/06/2005; Ord. O2004-019, Amended, 05/17/2005; Ord. 1278, Added, 08/20/1991)

16.28.210 Acting on the application.

- A. Land Division Conditions for Wetland Permits.
 - 1. Sensitive Area Tracts/Easements. As a condition of any permit issued pursuant to this section, the permit holder shall be required to create a separate sensitive area tract(s)/easement(s) containing the areas determined to be wetland and/or wetland buffer in field investigations performed pursuant to TMC 16.28.080. Sensitive area tracts/easements are legally created tracts/easements containing wetlands and their buffers that shall remain undeveloped as long as wetland functions and values are present. Loss of wetland functions due to human impacts will result in sensitive area tracts/easements being maintained.
 - a. Protection of Sensitive Area Tracts/Easements. The city shall require, as a condition of any permit issued pursuant to this section, that the sensitive area tract or tracts created pursuant to this section be protected by one of the following methods:
 - i. The permit holder shall convey an irrevocable offer to dedicate to the city of Tumwater or other public or nonprofit entity specified by the city an easement for the protection of native vegetation within a wetland and/or its buffer; or

- ii. The permit holder shall establish and record a permanent and irrevocable deed restriction on the property title of all lots containing a sensitive area tract or tracts created as a condition of this permit. Such deed restriction(s) shall prohibit, as long as wetland function exists, the development, alteration, or disturbance of vegetation within the sensitive area except for purposes of habitat enhancement as part of an enhancement project which has received prior written approval from the city of Tumwater, and any other agency with jurisdiction over such activity.
2. The deed restriction shall also contain the following language:
 - a. “Before, beginning, and during the course of any grading, building construction, or other development activity on a lot or development site subject to this deed restriction, the common boundary between the area subject to the deed restriction and the area of development activity must be fenced or otherwise marked to the satisfaction of City of Tumwater.”
 - b. Regardless of the legal method of protection chosen by the city, responsibility for maintaining tracts shall be held by a property owner’s association, adjacent lot owners, the permit applicant or designee, or other appropriate entity as approved by the city.
 - c. The following note shall appear on the face of all plats, short plats, PUDs, or other approved site plans containing separate sensitive area tracts/easements, and shall be recorded on the title of record for all affected lots:

NOTE: All lots adjoining separate sensitive areas identified as Native Vegetation Protection Easements or protected by deed restriction are responsible for maintenance and protection. Maintenance includes insuring that no alterations occur within the separate tract and that all vegetation remains undisturbed unless the express written authorization of the City of Tumwater has been received.

The common boundary between a separate sensitive area tract/easement and the adjacent land must be permanently identified. This identification shall include permanent wood or metal signs on treated or metal posts.

Sign locations and size specifications shall be approved by the city. The city shall require permanent fencing of the sensitive area when there is a substantial likelihood of the presence of domestic grazing animals within the development proposal. The city shall also require as a permit condition that such fencing be provided if, subsequent to approval of the development proposal, domestic grazing animals are in fact introduced.

3. Additional Conditions.
 - a. The location of the outer extent of the wetland buffer and the areas to be disturbed pursuant to an approved permit shall be marked in the field, and such field marking shall be approved by the city prior to the commencement of permitted activities. Such field markings shall be maintained throughout the duration of the permit.
 - b. The city may attach such additional conditions to the granting of a wetland permit as deemed necessary to assure the preservation and protection of affected wetlands and to assure compliance with the purposes and requirements of this chapter.
- B. Bonding.
1. Performance Bonds. The city may require the applicant of a development proposal to post a cash performance bond or other security acceptable to the city in an amount and with surety and conditions sufficient to fulfill the requirements of this section. In addition, the city may secure compliance with other conditions and limitations set forth in the permit. The amount and the conditions of the bond shall be consistent with the purposes of this chapter. In the event of a breach of any condition of any

such bond, the city may institute an action in a court of competent jurisdiction upon such bond and prosecute the same to judgment and execution. The city shall release the bond upon determining that:

- a. All activities, including any required compensatory mitigation, have been completed in compliance with the terms and conditions of the permit and the requirements of this chapter;
- b. Upon the posting by the applicant of a maintenance bond.

Until such written release of the bond, the principal or surety cannot be terminated or canceled.

2. **Maintenance Bonds.** The city may require the holder of a wetland permit issued pursuant to this chapter to post a cash performance bond or other security acceptable to the city in an amount and with surety and conditions sufficient to guarantee that structures, improvements, and mitigation required by the permit or by this chapter perform satisfactorily for a minimum of two years after they have been completed. The city shall release the maintenance bond upon determining that performance standards established for evaluating the effectiveness and success of the structures, improvements, and/or compensatory mitigation have been satisfactorily met for the required period. For compensation projects, the performance standards shall be those contained in the mitigation plan developed and approved during the permit review process to TMC 16.28.220. The maintenance bond applicable to a compensation project shall not be released until the city determines that performance standards established for evaluating the effect and success of the project have been met.
- C. **Other Laws and Regulations.** No permit granted pursuant to this chapter shall remove an applicant's obligation to comply in all respects with the applicable provisions of any other federal, state, or local law or regulation, including but not limited to the acquisition of any other required permit or approval.
- D. **Suspension, Revocation.** In addition to other penalties provided for elsewhere, the city may suspend or revoke a permit if it finds that the applicant or permittee has not complied with any or all of the conditions or limitations set forth in the permit, has exceeded the scope of work set forth in the permit, or has failed to undertake the project in the manner set forth in the approved application.

(Ord. 1278, Added, 08/20/1991)

16.28.220 Compensating for wetlands impacts.

- A. As a condition of any permit allowing alteration of wetland and/or wetland buffers, or as an enforcement action pursuant to TMC 16.28.280, the city shall require that the applicant demonstrate that wetland impact avoidance is not possible and engage in the restoration, creation or enhancement of wetlands and their buffers in order to offset the impacts resulting from the applicant's or violator's actions. Mitigation for alterations to wetlands shall achieve equivalent or greater biologic functions. Mitigation plans shall be consistent with the Washington State Department of Ecology "Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans," 2006, as revised. The applicant shall develop a plan that provides for land acquisition, construction, maintenance and monitoring of replacement wetlands that recreate as nearly as possible the original wetlands in terms of acreage, function, geographic location and setting, and that are larger than the original wetlands. Compensatory mitigation shall be completed prior to wetland destruction, where possible. Mitigation shall result in no net loss of wetlands function and acreage and seeks a net resource gain in wetlands over present conditions with the exception of enforcement actions.
- B. Mitigation actions shall address functions affected by the alteration in order to achieve functional equivalency or improvement, and shall provide similar wetland functions as those lost except when the lost wetland provides minimal functions as determined by a site specific function assessment and the proposed mitigation action(s) will provide equal or greater functions.
- C. Mitigation actions that require compensation mitigation by replacing, enhancing, or substitution shall occur in the following order of preference:
 1. Restoring wetlands on upland sites that were formerly wetlands.

2. Creating wetlands on disturbed upland sites such as those with vegetative cover consisting primarily of nonnative introduced species. This should only be attempted when there is a consistent source of hydrology and it can be shown that the surface and subsurface hydrologic regime is conducive for the wetland community that is being designed.
 3. Enhancing significantly degraded wetlands in combination with restoration or creation. Such enhancement should be part of a mitigation package that includes replacing the impacted area meeting appropriate ratio requirements.
- D. Mitigation actions shall be conducted within the same subdrainage basin and on the same site as the alteration except when all of the following apply:
1. There are no reasonable on-site or in-subdrainage-basin opportunities or on-site and in-subdrainage-basin opportunities do not have a high likelihood of success due to development pressures, adjacent land uses, or on-site buffers or connectivity are inadequate;
 2. Off-site mitigation has a greater likelihood of providing equal or improved wetland functions than the impacted wetland; and
 3. Off-site locations shall be in the same subdrainage basin and the same water resource inventory area unless:
 - a. The impact is located near the boundary of a water resource inventory area;
 - b. Established regional or watershed goals for water quality, flood or conveyance, habitat or other wetland functions have been established and strongly justify location of mitigation at another site; or
 - c. Credits from a state certified wetland mitigation bank are used as mitigation and the use of credits is consistent with the terms of the bank's certification.
- E. Mitigation projects, where feasible, shall be completed prior to activities that will disturb wetlands. In all other cases, mitigation shall be completed immediately following disturbance and prior to use or occupancy of the activity or development. Construction of mitigation projects shall be timed to reduce impacts to existing wildlife and flora. The community development director may authorize a one-time temporary delay, up to one hundred twenty days, in completing minor construction and landscaping when environmental conditions could produce a high probability of failure or significant construction difficulties. The delay shall not create or perpetuate hazardous conditions or environmental damage or degradation, and the delay shall not be injurious to the health, safety and general welfare of the public. The request for temporary delay must include a written justification that documents the environmental constraints that preclude implementation of the mitigation plan. The justification must be verified and approved by the city, and include a financial guarantee.
- F. Surface Area Replacement Ratio. The ratios in Table 16.28.220(6) apply to creation or restoration which is in kind, on site, timed prior to or concurrent with alteration, and has a high probability of success. These ratios do not apply to remedial actions resulting from illegal alterations. The first number specifies the area of wetlands requiring replacement and the second specifies the area of wetlands altered.

The ratios in Table 16.28.220(6) are based on the type of compensatory mitigation proposed, such as restoration, creation, and enhancement. In its Regulatory Guidance Letter 02-02, the U.S. Army Corps of Engineers provided definitions for these types of compensatory mitigation, which the Washington State Department of Ecology used in their Guidance on Buffers and Ratios for Western Washington as part of the Wetlands in Washington State Volume 2 – Protecting and Managing Wetlands in October 2014 and are provided below.

1. **Restoration.** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into two categories:
 - a. **Reestablishment.** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Reestablishment results in a gain in wetland acres (and functions). Activities could include removing fill material, plugging ditches, or breaking drain tiles.
 - b. **Rehabilitation.** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres. Activities could involve breaching a dike to reconnect wetlands to a floodplain or return tidal influence to a wetland.
2. **Creation (Establishment).** The manipulation of the physical, chemical, or biological characteristics present to develop a wetland on an upland or deep-water site where a wetland did not previously exist. Establishment results in a gain in wetland acres. Activities typically involve excavation of upland soils to elevations that will produce a wetland hydroperiod, create hydric soils, and support the growth of hydrophytic plant species.
3. **Enhancement.** The manipulation of the physical, chemical, or biological characteristics of a wetland site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in some wetland functions and can lead to a decline in other wetland functions, but does not result in a gain in wetland acres. Activities typically consist of planting vegetation, controlling non-native or invasive species, modifying site elevations or the proportion of open water to influence hydroperiods, or some combination of these activities.

Table 16.28.220(6): Mitigation Ratios for Projects in Western Washington

Category and Type of Wetland Impacts (1)	Reestablishment or Creation	Rehabilitation (2)	Enhancement (2)
Category I – bogs or wetlands of high conservation value	Not considered possible (3)	6:1	Case-by-case
Category I – mature forested	6:1	12:1	24:1
Category I based on score for functions	4:1	8:1	16:1
All category II	3:1	6:1	12:1
All category III	2:1	4:1	8:1
All category IV	1.5:1	3:1	6:1

Table 16.28.220(6) Explanatory Notes:

(1) Preservation is discussed in subsection J of this section.

(2) These ratios are based on the assumption that the rehabilitation or enhancement actions implemented represent the average degree of improvement possible for the site. Proposals to implement more effective rehabilitation or enhancement actions may result in a lower ratio, while less effective actions may result in a higher ratio. The distinction between rehabilitation and enhancement is not clear-cut. Instead, rehabilitation and enhancement actions span a continuum. Proposals that fall within the gray area between rehabilitation and enhancement will result in a ratio that lies between the ratios for rehabilitation and the ratios for enhancement.

(3) Wetlands of high conservation value and bogs are considered irreplaceable wetlands because they perform some special functions that cannot be replaced through compensatory mitigation. Impacts to such wetlands would therefore result in a net loss of some functions no matter what kind of compensation is proposed.

4. **Increased Replacement Ratio.** The city may increase the ratios under any of the following circumstances:

- a. Uncertainty as to the probable success of the proposed restoration or creation;
 - b. Significant period of time between destruction and replication of wetland functions at the mitigation site;
 - c. Proposed mitigation will result in a lower category wetland or reduced functions relative to the wetland being impacted; or
 - d. The impact was unauthorized.
 5. Decreased Replacement Ratio. The city may decrease these ratios for category II, III, and IV wetlands under the following circumstances:
 - a. Documentation by a qualified wetlands specialist demonstrates that the proposed mitigation actions have a very high likelihood of success based on prior experience;
 - b. Documentation by a qualified wetlands specialist demonstrates that the proposed mitigation actions will provide functions and values that are significantly greater than the wetland being impacted;
 - c. The proposed mitigation actions are conducted in advance of the impact and have been shown to be successful.
 6. In wetlands where several hydrogeomorphic classes are found within one delineated boundary, the areas of the wetlands within each hydrogeomorphic class can be scored and rated separately and the ratios adjusted accordingly, if all of the following apply:
 - a. The wetland does not meet any of the criteria for wetlands with “special characteristics” as defined in the rating system;
 - b. The rating and score for the entire wetland are provided along with the scores and ratings for each area with a different hydrogeomorphic class;
 - c. Impacts to the wetland are all within an area that has a different hydrogeomorphic class from the one used to establish the initial category; and
 - d. The proponents provide adequate hydrologic and geomorphic data to establish that the boundary between hydrogeomorphic classes lies at least fifty feet outside of the footprint of the impacts.
 7. In all cases, a minimum acreage replacement ratio of one-to-one shall be required.
- G. Replacement Ratios for Temporal Impacts and Conversions.
1. When impacts to wetlands are not permanent, the city will require compensation for the temporal loss of wetland functions. Temporal impacts refer to impacts to those functions that will eventually be replaced but cannot achieve similar functionality in a short time.
 2. In addition to restoring the affected wetland to its previous condition, the city will require compensation to account for the risk and temporal loss of wetland functions. The ratios for temporal impacts to forested and scrub-shrub wetlands are one-quarter of the recommended ratios for permanent impacts found in Table 16.28.220(6); provided, that the following measures are satisfied:
 - a. An explanation of how hydric soil, especially deep organic soil, is stored and handled in the areas where the soil profile will be severely disturbed for a fairly significant depth or time;
 - b. Surface and groundwater flow patterns are maintained or can be restored immediately following construction;

- c. A ten-year monitoring and maintenance plan is developed and implemented for the restored forest and scrub-shrub wetlands;
 - d. Disturbed buffers are revegetated and monitored; and
 - e. Where appropriate, the hydroseed mix to be applied on reestablishment areas is identified.
- 3. When impacts are to a native emergent community and there is a potential risk that its reestablishment will be unsuccessful, compensation for temporal loss and the potential risk will be required in addition to restoring the affected wetland and monitoring the site. If the impacts are to wetlands dominated by nonnative vegetation, such as blackberry, reed canarygrass, or pasture grasses, restoration of the affected wetland with native species and monitoring after construction is required.
 - 4. Loss of functions due to the permanent conversion of wetlands from one type to another requires compensation. When wetlands are not completely lost but are converted to another type, such as a forested wetland converted to an emergent or shrub wetland, such as for a utility right-of-way, some functions are lost or reduced.
 - 5. The ratios for conversion of wetlands from one type to another will vary based on the degree of the alteration, but they are generally one-half of the recommended ratios for permanent impacts found in Table 16.28.220(6).

H. Wetlands Enhancement.

- 1. Any applicant proposing to alter wetlands may propose to enhance existing significantly degraded wetlands in order to compensate for wetland losses. Applicants proposing to enhance wetlands must produce a critical area report that identifies how enhancement will increase the functions of the degraded wetland and how this increase will adequately mitigate for the loss of wetland area and function at the impact site. An enhancement proposal must also show whether existing wetland functions will be reduced by the enhancement actions.
- 2. A wetlands enhancement compensation project shall be determined pursuant to this section; provided, that enhancement for one function and value will not degrade another function or value and that acreage replacement ratios shall be in accordance with Table 16.28.220(6).

I. Wetland Type. In-kind compensation shall be provided except where the applicant can demonstrate that:

- 1. The wetland system is already significantly degraded and out-of-kind replacement will result in a wetland with greater functional value;
- 2. Scientific problems such as exotic vegetation and changes in watershed hydrology make implementation of in-kind compensation impossible;
- 3. Out-of-kind replacement will best meet identified regional goals, such as replacement of historically diminished wetland types;
- 4. Where out-of-kind replacement is accepted, greater acreage replacement ratios may be required to compensate for lost functional values.

J. Wetland Preservation as Mitigation. Impacts to wetlands may be mitigated by preservation of wetland areas, in a separate tract or easement when used in combination with other forms of mitigation such as creation, restoration, or enhancement at the preservation site or at a separate location. Preservation may also be used by itself, but more restrictions as outlined below will apply.

Preservation as mitigation is acceptable when done in combination with restoration, creation, or enhancement providing that a minimum of one-to-one acreage replacement is provided by restoration or creation and the criteria below are met:

1. The impact area is small, and impacts are to a category III or IV wetland;
2. Preservation of a high-quality system occurs in the same water resource inventory area or watershed basin as the wetland impact;
3. Acceptable sites for preservation include those that are important due to their landscape position, are rare or limited wetland types, and provide high levels of functions;
4. Preservation sites include buffer areas adequate to protect the habitat and its functions from encroachment and degradation; and
5. Mitigation ratios for preservation in combination with other forms of mitigation shall range from ten-to-one to twenty-to-one, as determined on a case-by-case basis by the city, depending on the quality of the wetlands being mitigated and the quality of the wetlands being preserved. Specific ratios will depend upon the significance of the preservation project and the quality of the wetland resources lost.

K. Cooperative Restoration, Creation or Enhancement Projects.

1. The city may encourage, facilitate, and approve cooperative projects wherein a single applicant or other organization with demonstrated capability may undertake a compensation project with funding from other applicants under the following circumstances:
 - a. Restoration, creation or enhancement at a particular site may be scientifically difficult or impossible; or
 - b. Creation of one or several larger wetlands may be preferable to many small wetlands.
2. Persons proposing cooperative compensation projects shall:
 - a. Submit a joint permit application;
 - b. Demonstrate compliance with all standards;
 - c. Demonstrate the organizational and fiscal capability to act cooperatively; and
 - d. Demonstrate that long-term management can and will be provided.

(Ord. O2017-018, Amended, 10/17/2017; Ord. O2011-002, Amended, 03/01/2011; Ord. O2004-019, Amended, 05/17/2005; Ord. 1278, Added, 08/20/1991)

16.28.230 Mitigation plans.

All wetland restoration, creation and/or enhancement projects required pursuant to this chapter either as a permit condition or as the result of an enforcement action shall follow a mitigation plan prepared by qualified wetland professionals approved by the city. The applicant or violator shall receive written approval of the mitigation plan by the city prior to commencement of any wetland restoration, creation or enhancement activity. Unless the city, in consultation with qualified wetland professionals, determines that based on the size and nature of the development proposal, the nature of the impacted wetland, and the degree of cumulative impacts on the wetland from other development proposals, that the scope and specific requirements of the mitigation plan may be reduced from what is listed below. The mitigation plan shall contain at least the following components:

A. Baseline Information. A written assessment and accompanying maps of the:

1. Impacted wetland including, at a minimum, wetland delineation; existing wetland acreage; vegetative, faunal and hydrologic characteristics; soil and substrate conditions; topographic elevations; and
2. Compensation site, if different from the impacted wetland site, including at a minimum: Existing acreage; vegetative faunal and hydrologic conditions; relationship within watershed and to existing

water bodies; soil and substrate conditions, topographic elevations; existing and proposed adjacent site conditions; buffers; and ownership.

- B. Environmental Goals and Objectives. A written report shall be provided identifying goals and objectives describing:
1. The purposes of the compensation measures including a description of site selection criteria, identification of compensation goals; identification of target evaluation species and resource functions, dates for beginning and completion, and a complete description of the structure and functional relationships sought in the new wetland. The goals and objectives shall be related to the functions and values of the original wetland or if out-of-kind, the type of wetland to be emulated; and
 2. A review of the available literature and/or experience to date in restoring or creating the type of wetland proposed shall be provided. An analysis of the likelihood of success of the compensation project at duplicating the original wetland shall be provided based on the experiences of comparable projects, if any. An analysis of the likelihood or persistence of the created or restored wetland shall be provided based on such factors as surface and ground water supply and flow patterns, dynamics of the wetland ecosystem; sediment or pollutant influx and/or erosion, periodic flooding and drought, etc., presence of invasive flora or fauna, potential human or animal disturbance, and previous comparable projects, if any.
- C. Performance Standards. Specific criteria shall be provided for evaluating whether or not the goals and objectives of the project and for beginning remedial action or contingency measures. Such criteria may include water quality standards, survival rates of planted vegetation, species abundance and diversity targets, habitat diversity indices, or other ecological, geological or hydrological criteria.
- D. Detailed Construction Plans. Written specifications and descriptions of compensation techniques shall be provided including the proposed construction sequence, grading and excavation details, erosion and sediment control features needed for wetland construction and long-term survival, a planting plan specifying plant species, quantities, locations, size, spacing, and density; source of plant materials, propagules, or seeds; water and nutrient requirements for planting; where appropriate, measures to protect plants from predation; specification of substrate stockpiling techniques and planting instructions; descriptions of water control structures and water-level maintenance practices needed to achieve the necessary hydrocycle/hydroperiod characteristics, etc. These written specifications shall be accompanied by detailed site diagrams, scaled cross-sectional drawings, topographic maps showing slope percentage and final grade elevations, and any other drawings appropriate to show construction techniques or anticipated final outcome. The plan shall provide for elevations which are appropriate for the desired habitat type(s) and which provide sufficient tidal prism and circulation data.
- E. Monitoring Program. A program outlining the approach for monitoring construction of the compensation project and for assessing a completed project shall be provided. Monitoring may include, but is not limited to:
1. Establishing vegetation plots to track changes in plant species composition and density over time;
 2. Using photo stations to evaluate vegetation community response;
 3. Sampling surface and subsurface waters to determine pollutant loading, and changes from the natural variability of background conditions (pH, nutrients, heavy metals);
 4. Measuring base flow rates and stormwater runoff to model and evaluate water quality predictions, if appropriate;
 5. Measuring sedimentation rates, if applicable; and
 6. Sampling fish and wildlife populations to determine habitat utilization, species abundance and diversity.

A protocol shall be included outlining how the monitoring data will be evaluated by agencies that are tracking the progress of the compensation project. A monitoring report shall be submitted annually, at a minimum, documenting milestones, successes, problems, and contingency actions of the compensation project. The compensation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than five years.

- F. Contingency Plan. Identification of potential courses of action, and any corrective measures to be taken when monitoring or evaluation indicates project performance standards are not being met.
- G. Permit Conditions. Any compensation project prepared pursuant to this section and approved by the city shall become part of the application for the permit.
- H. Performance Bonds and Demonstration of Competence. A demonstration of financial resources, administrative, supervisory, and technical competence and scientific expertise of sufficient standing to successfully execute the compensation project shall be provided. A compensation project manager shall be named and the qualifications of each team member involved in preparing the mitigation plan and implementing and supervising the project shall be provided, including educational background and areas of expertise, training and experience with comparable projects. In addition, bonds ensuring the fulfillment of the compensation project, monitoring program, and any contingency measure shall be posted pursuant to TMC 16.28.210 in the amount of one hundred twenty percent of the expected cost of compensation.
- I. Regulatory authorities are encouraged to consult with and solicit comments of any federal, state, regional, or local agency, including tribes, having special expertise with respect to any environmental impact prior to approving a mitigation proposal which includes wetlands compensation. The compensation project proponents should provide sufficient information on plan design and implementation in order for such agencies to comment on the overall adequacy of the mitigation proposal.
- J. Compensatory mitigation is not required for regulated activities as follows:
 - 1. For which a permit has been obtained for activities that occur only in the buffer or expanded buffer and which have no adverse impacts to regulated wetlands; or
 - 2. Allowed activities pursuant to TMC 16.28.110 provided such activities utilize best management practices to protect the functions and values of regulated wetlands.

(Ord. 1278, Added, 08/20/1991)

16.28.240 Appeals.

Any administrative decision made in the administration of this chapter is appealable to the city hearing examiner and subsequently to the city council as per provisions of TMC 2.58.090(D) and 2.58.150. Appeal fees are established by city council resolution.

(Ord. 1278, Added, 08/20/1991)

16.28.250 Modification of wetland permits.

A wetland permit holder may request and the city may approve modification of a previously issued wetland permit.

(Ord. 1278, Added, 08/20/1991)

16.28.260 Resubmittal of denied permit applications.

A wetland permit application which has been denied may be modified and resubmitted.

(Ord. 1278, Added, 08/20/1991)

16.28.270 Temporary emergency permit.

- A. Notwithstanding the provisions of this chapter or any other laws to the contrary, the city may issue a temporary emergency wetlands permit if:

1. The city determines that an unacceptable threat to life or severe loss of property will occur if an emergency permit is not granted; and
 2. The anticipated threat or loss may occur before a permit can be issued or modified under the procedures otherwise required by this act and other applicable laws.
- B. Any emergency permit granted shall incorporate, to the greatest extent practicable and feasible but not inconsistent with the emergency situation, the standards and criteria required for nonemergency activities under this chapter and shall:
1. Be limited in duration to the time required to complete the authorized emergency activity, not to exceed ninety days; and
 2. Require, within this ninety-day period, the restoration of any wetland altered as a result of the emergency activity, except that if more than the ninety days from the issuance of the emergency permit is required to complete restoration, the emergency permit may be extended to complete this restoration.
- C. The emergency permit may be terminated at any time without process upon a determination by the city that the action was not or is no longer necessary to protect human health or the environment.

(Ord. 1278, Added, 08/20/1991)

16.28.280 Enforcement.

The city shall have authority to enforce this chapter, any rule or regulation adopted, and any permit or order issued pursuant to this chapter, against any violation or threatened violation thereof. The city is authorized to issue violation notices and administrative orders, levy fines, and/or institute legal actions in court. Recourse to any single remedy shall not preclude recourse to any of the other remedies. Each violation of this chapter, or any rule or regulation adopted, or any permit, permit condition, or order issued pursuant to this chapter, shall be a separate offense, and, in the case of continuing violations, each day's continuance shall be deemed to be a separate and distinct offense. All costs, fees, and expenses in connection with enforcement actions may be recovered as damages against the violator.

- A. Enforcement actions shall include:
1. Civil Penalties, Administrative Orders and Actions for Damages and Restoration.
 - a. The city may bring appropriate actions at law or equity, including actions for injunctive relief, to ensure that no uses are made of a regulated wetland or its buffers which are inconsistent with this chapter or an applicable wetlands protection program.
 - b. The city may serve upon a person a cease and desist order if an activity being undertaken on regulated wetlands or its buffer is in violation of this chapter. Whenever any person violates this chapter or any permit issued to implement this chapter, the city may issue an order reasonably appropriate to cease such violation and to mitigate any environmental damage resulting therefrom.
 - i. Content of Order. The order shall set forth and contain:
 - (A) A description of the specific nature, extent, and time of violation and the damage or potential damage;
 - (B) A notice that the violation or the potential violation cease and desist or, in appropriate cases, the specific corrective action to be taken within a given time. A civil penalty may be issued with the order;
 - (C) Effective Date. The cease and desist order issued under this section shall become effective immediately upon receipt by the person to whom the order is directed; and

- (D) Compliance. Failure to comply with the terms of a cease and desist order can result in enforcement actions including, but not limited to, the issuance of a civil penalty.
- B. Any person who undertakes any activity within a regulated wetland or its buffer without first obtaining a permit required by this chapter, except as allowed in TMC 16.28.110, or any person who violates one or more conditions of any permit required by this chapter or of any order issued pursuant to subsection (A)(1)(b) of this section shall incur a penalty allowed per violation. In the case of a continuing violation, each permit violation and each day of activity without a required permit shall be a separate and distinct violation. The penalty shall constitute a misdemeanor.
- C. Aiding or Abetting. Any person who, through an act of commission or omission procures, aids or abets in the violation shall be considered to have committed a violation for the purposes of the penalty.
- D. Notice of Penalty. Civil penalties imposed under this section shall be imposed by a notice in writing, either by certified mail with return receipt requested or by personal service, to the person incurring the same from the department and/or the city or from both jointly. The notice shall describe the violation, approximate the date(s) of violation, and shall order the acts constituting the violation to cease and desist, or, in appropriate cases, require necessary corrective action within a specific time.
- E. Application for Remission or Mitigation. Any person incurring a civil penalty may apply in writing within thirty days of receipt of the penalty to the city for remission or mitigation of such penalty. Upon receipt of the application, the city may remit or mitigate the penalty only upon a demonstration of extraordinary circumstances, such as the presence of information or factors not considered in setting the original penalty.
- F. Orders and civil penalties issued pursuant to this subsection may be appealed as provided for in TMC 16.28.240.
- G. Criminal penalties may be imposed on any person who willfully or negligently violates this chapter or who knowingly makes a false statement, representation, or certification in any application, record or other document filed or required to be maintained under this chapter or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device, record or methodology required to be maintained pursuant to this chapter or pursuant to a wetland permit.

(Ord. O2011-007, Amended, 07/19/2011; Ord. 1278, Added, 08/20/1991)

16.28.290 Existing legal nonconforming structures, uses, and activities.

A regulated structure, use or activity that legally existed or was approved prior to the passage of this chapter but which is not in conformity with the provisions of this chapter may be continued subject to the following:

- A. No such structure, use or activity shall be expanded, changed, enlarged or altered in any way that increases the extent of its nonconformity without a permit issued pursuant to the provisions of this chapter;
- B. Except for cases of discontinuance as part of normal agricultural practices, if a nonconforming activity is discontinued for twelve consecutive months, any resumption of the activity shall conform to this chapter;
- C. If a nonconforming structure, use or activity is destroyed by human activities or an act of God, it shall not be resumed except in conformity with the provisions of this chapter;
- D. Structures, uses or activities or adjunct thereof that are or become nuisances shall not be entitled to continue as nonconforming activities.

(Ord. 1278, Added, 08/20/1991)

16.28.300 Judicial review.

Any decision or order issued by the city pursuant to this chapter, including decisions concerning denial, approval, or conditional approval of a wetland permit, may be appealed to the city hearing examiner, according to the provisions of TMC 16.28.240 and TMC Chapter 2.58.

Judicial review, following exhaustion of administrative remedies, is commenced according to the provisions of Chapter 36.70C RCW, as written or hereafter amended.

(Ord. O2005-023, Amended, 09/06/2005; Ord. 1278, Added, 08/20/1991)

16.28.310 Amendments.

These regulations and the National Wetlands Inventory or subsequent Thurston County Wetlands Inventory may from time to time be amended in accordance with the procedures and requirements in the general statutes and as new information concerning wetland location, soils, hydrology, flooding, or wetland plants and wildlife become available.

(Ord. 1278, Added, 08/20/1991)

16.28.320 Severability.

If any clause, sentence, paragraph, section or part of this chapter or the application thereof to any person or circumstances shall be adjudged by any court of competent jurisdiction to be invalid, such order or judgement shall be confined in its operation to the controversy in which it was rendered and shall not affect or invalidate the remainder of any part thereof to any other person or circumstances and to this end the provisions of each clause, sentence, paragraph, section or part of this chapter are declared to be severable.

(Ord. 1278, Added, 08/20/1991)

16.28.330 Nonregulatory incentive program.

Reserved.

(Ord. 1278, Added, 08/20/1991)

Chapter 16.32

FISH AND WILDLIFE HABITAT PROTECTION

Sections:

- 16.32.010 Short title.
- 16.32.020 Purpose.
- 16.32.025 Relationship to shoreline master program.
- 16.32.028 Coordination with adjacent jurisdictions.
- 16.32.030 Definitions.
- 16.32.040 Approval required.
- 16.32.045 Qualified professional habitat biologist.
- 16.32.050 Habitats defined and protected.
- 16.32.055 Habitats and species of local importance – Listing and delisting important habitats and species.
- 16.32.060 Habitat areas – Buffers.
- 16.32.065 Riparian habitat areas – Buffers.
- 16.32.070 Habitat areas – Allowed uses and activities.
- 16.32.090 Habitat areas – Protection plan.
- 16.32.095 Existing legal nonconforming structures, uses, and activities.
- 16.32.097 Reasonable use exception.
- 16.32.098 Exceptions – Infrastructure.
- 16.32.100 Violation – Penalty.
- 16.32.110 Severability.

16.32.010 Short title.

This chapter shall be known and may be cited as the “fish and wildlife habitat protection ordinance” of the city of Tumwater.

(Ord. 1283, Added, 08/20/1991)

16.32.020 Purpose.

It is the policy of the city of Tumwater that the preservation of fish and wildlife habitat is critical to the protection of suitable environments for animal species and in providing a natural beauty and healthy quality of life for Tumwater and its citizens. The conservation of habitat means active land management for maintaining species within their preferred habitats and accustomed geographic distribution. In this way, isolated subpopulations are not created which are more susceptible to predation, dislocation and inadequate food supplies. Habitat protection does not require that all individuals of all species are protected, but does demand that land use planning be sensitive to the priority of saving and protecting animal-rich environments.

(Ord. 1283, Added, 08/20/1991)

16.32.025 Relationship to shoreline master program.

If there are any conflicts between the shoreline master program and the fish and wildlife habitat protection standards which apply in shoreline jurisdiction, the requirements of the shoreline master program apply.

(Ord. O2012-005, Added, 03/18/2014)

16.32.028 Coordination with adjacent jurisdictions.

Designation and protection should be coordinated with adjacent jurisdictions when habitat areas cross boundaries. See WAC 365-190-130 for specific habitat conservation areas, and factors to consider for their designation and protection such as coordination when habitat areas cross jurisdictional boundaries or provide regional benefits, or retention of large blocks of habitat.

(Ord. O2016-024, Added, 03/21/2017)

16.32.030 Definitions.

- A. “Allowed uses and activities” means any authorized land use or activity allowed alone or in conjunction with another use.
- B. “Anadromous fish” means fish that spawn and rear in freshwater and mature in the marine (salt water) environment.
- C. “Areas with which endangered, threatened and sensitive species have a primary association” are defined as seasonal ranges and habitats with which federal- and state-listed endangered, threatened and sensitive species have a primary association and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term.
- D. “Buffer” is defined as an area of land used or created for the purpose of insulating or separating a structure or land use from a fish and/or wildlife habitat area in such a manner as to reduce or mitigate any adverse impacts of the developed area.
- E. “Infrastructure” means facilities such as water and sewer transmission lines or pipes and their appurtenances, telephone, fiber optic cable, gas and electrical transmission and distribution facilities, and streets and roads.
- F. “Lakes, ponds, streams, and rivers planted with game fish” are defined to include game fish planted in these water bodies under the auspices of a federal, state, local, or tribal program or which support priority fish species as identified by the Department of Wildlife.
- G. “Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish and wildlife habitat” are defined as naturally occurring ponds not including ponds deliberately designed and created from dry sites, such as canals, detention facilities, wastewater treatment facilities, farm ponds, temporary construction ponds (of less than three years’ duration) and landscape amenities. However, naturally occurring ponds may include those artificial ponds intentionally created from dry areas in order to mitigate conversion of ponds, if permitted by a regulatory authority.
- H. “Nonconforming use or structure” means a building or use, lawfully existing on the effective date of the ordinance codified in this chapter, which does not conform with the regulations of TMC Chapter 16.32.
- I. “Priority habitat, local” or “local priority habitat” means a seasonal range or habitat element with which a species has a primary association, and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term. These might include areas of high relative density or species richness, breeding habitat, winter range and movement corridors. These might also include habitats that are of limited availability or high vulnerability to alteration, such as cliffs, talus and wetlands.
- J. “Priority habitat, state” or “state priority habitat” means a seasonal range or habitat element, so identified by the Washington State Department of Wildlife, with which a given species has a primary association, and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term. These might include areas of high relative diversity or species richness, breeding habitat, winter range and movement corridors. These might also include habitats that are of limited availability or high vulnerability to alteration.
- K. “Priority species, local” or “local priority species” means those species that may not be endangered or threatened from a statewide perspective, but are of local concern due to their population status or their sensitivity to habitat manipulation and have been designated as such.
- L. “Priority species, state” or “state priority species” means those species that are so identified by the Washington State Department of Wildlife due to their population status and their sensitivity to habitat manipulation. Priority species include those which are state-listed endangered, threatened and sensitive species.

- M. “Residential density” means the permissible number of dwelling units that may be developed on a specific amount of land area measured in number of dwelling units per acre.
- N. “Qualified professional” means a person with experience and training in the applicable critical area. A qualified professional for habitats must have obtained a B.S. or B.A. or equivalent degree in biology, and at least two years of work experience related to the subject species or habitat.
- O. “Riparian habitat” means areas adjacent to aquatic systems with flowing water that contain elements of both aquatic and terrestrial ecosystems that mutually influence each other. The width of these areas extends to that portion of the terrestrial landscape that directly influences the aquatic ecosystem by providing shade, fine or large woody material, nutrients, organic and inorganic debris, terrestrial insects, or habitat for riparian-associated wildlife.
- P. “Sensitive species” means wildlife species native to the state of Washington that are vulnerable or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats.
- Q. “Site” means any lot, tract, parcel, large lot holding, either owned or leased, intended to be developed.
- R. “Species” means any group of animals classified as a species or subspecies as commonly accepted by the scientific community.
- S. “Species, endangered” means any fish or wildlife species that is threatened with extinction throughout all or a significant portion of its range and is listed by the state or federal government as an endangered species.
- T. “Species, threatened” means any fish or wildlife species that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range without cooperative management or removal of threats, and is listed by the state or federal government as a threatened species.
- U. “Waters of the state” are defined in WAC Title 222, the Forest Practice Rules and Regulations; further defined as the classification system established in WAC 222-16-030 and 222-16-031 as exists now or hereafter amended.

(Ord. O2012-005, Amended, 03/18/2014; Ord. O2008-011, Amended, 09/02/2008; Ord. O2006-026, Amended, 04/03/2007; Ord. O2004-019, Amended, 05/17/2005; Ord. 1283, Added, 08/20/1991)

16.32.040 Approval required.

No person, corporation, or other legal entity shall engage in construction on a site which supports a protected fish and wildlife habitat area as defined by this chapter without having received approval for proper protection or mitigation by the city through the environmental review process and/or applicable discretionary permit(s) and construction permit(s).

(Ord. 1283, Added, 08/20/1991)

16.32.045 Qualified professional habitat biologist.

It is expected that applications will require a qualified professional pursuant to TMC 16.32.030(M) to provide the information necessary to fulfill the requirements of this chapter. It shall be the responsibility of the applicant to acquire the services of a qualified professional.

(Ord. O2005-023, Amended, 09/06/2005; Ord. O2004-019, Added, 05/17/2005)

16.32.050 Habitats defined and protected.

The following habitats are defined and protected:

- A. The following fish and wildlife habitat areas are to be protected within the city of Tumwater:

1. Areas with which state or federally designated endangered, threatened, and sensitive species have a primary association. The U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the State Department of Fish and Wildlife should be consulted as appropriate;
 2. Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish and wildlife habitats, including artificial ponds intentionally created from dry areas in order to mitigate impacts to ponds. Naturally occurring ponds do not include ponds deliberately designed and created from dry sites, such as canals, detention facilities, wastewater treatment facilities, farm ponds, temporary construction ponds, and landscape amenities;
 3. Lakes, ponds, streams, and rivers with naturally occurring populations, and waters planted with game fish planted by a governmental or tribal entity;
 4. Waters of the state as classified in Chapter 222-16 WAC;
 5. Areas of rare plant species and high quality ecosystems as identified by the Washington State Department of Natural Resources through the Natural Heritage Program.
- B. Endangered, threatened, and sensitive habitats and species as identified by the Washington State Department of Fish and Wildlife and the habitat primarily associated with those species.
- C. Locally significant habitats and species that have been designated as per the criteria in TMC 16.32.055.
- D. All areas within Tumwater meeting one or more of the criteria in subsections A, B and C of this section are subject to the provisions of this title and shall be managed consistent with the best available science, such as the “Washington State Department of Fish and Wildlife’s Management Recommendations for Priority Habitat and Species” as written or hereafter amended.
- E. “Fish and wildlife habitat conservation areas” does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company.

(Ord. O2016-024, Amended, 03/21/2017; Ord. O2006-026, Amended, 04/03/2007; Ord. O2004-019, Amended, 05/17/2005; Ord. 1283, Added, 08/20/1991)

16.32.055 Habitats and species of local importance – Listing and delisting important habitats and species.

- A. Locally significant species are those which are not state listed as threatened, endangered or sensitive, but which live in Tumwater, and the species is of special importance to the citizens of Tumwater for cultural or historical reasons, or the city is a critically significant portion of their range. Tumwater is a critically significant portion of the range of a species when any of the following conditions apply:
1. The species would be extirpated from the state of Washington if it is eliminated from Tumwater; or
 2. The species’ population would be divided into nonviable populations if it is eliminated from Tumwater, where the isolated populations are critical to the survival of the species; or
 3. The species is listed as a state monitor or candidate species and Tumwater is a significant portion of the range of the species and significant reduction or elimination of the species from Tumwater would result in changing the status of the species to that of state endangered, threatened, or sensitive.
- B. Locally significant habitats are those habitats in which significant species live, or which are of special importance to the citizens of Tumwater because they have been determined to contribute to the variety of habitats or diversity of species.
- C. The process for listing or delisting an important habitat or species in Tumwater shall be an amendment to this section. This action may be initiated by request of the State Department of Fish and Wildlife, the Squaxin Island Tribe, or city staff. Any such request shall be in writing and shall include:

1. The common and scientific names for species under consideration;
2. Habitat location on a map (scale one to twenty-four thousand);
3. The reasons for the request, including:
 - a. Declining or increasing population,
 - b. Sensitivity to habitat manipulation;
4. Habitat management recommendations, including potential uses and restrictions of the habitat areas, seasonally sensitive areas, and other guidelines necessary for the protection of the nominated species;
5. Other supporting documentation, including an analysis which weighs the nonenvironmental impacts of the proposal, addressing economics and land use, against the benefits of the proposed listing;
6. The written request and supporting data may be evaluated by a qualified wildlife biologist or equivalent professional selected by the city;
7. In addition to the above, the city shall consider the following factors when evaluating the request:
 - a. The specificity and scientific validity of the information about the nominated species needs and behaviors;
 - b. The sufficiency of habitat areas currently available to sustain the species over time; and
 - c. The versatility of the proposed habitat area to sustain species other than the one being nominated for local species of importance designation.

(Ord. O2006-026, Added, 04/03/2007)

16.32.060 Habitat areas – Buffers.

To retain and protect adequate urban wildlife habitats, buffers will be established on a case-by-case basis to be defined by a habitat protection plan prepared by a qualified professional. Buffers shall consist of an undisturbed area of native vegetation or areas identified for restoration established to protect the integrity, functions, and values of the affected habitat. Required buffer widths shall reflect the sensitivity of the habitat and type and intensity of human activity proposed to be conducted nearby and shall be consistent with the management recommendations issued by the Washington State Department of Fish and Wildlife. If management recommendations are not available, the consultant shall use best available science to delineate buffers for Department of Fish and Wildlife review.

(Ord. O2004-019, Amended, 05/17/2005; Ord. 1283, Added, 08/20/1991)

16.32.065 Riparian habitat areas – Buffers.

Recommended riparian habitat area widths are shown in the table below. A riparian habitat shall have the width recommended, unless a greater width is required pursuant to subsection A of this section, or a lesser width is allowed pursuant to subsection B of this section. Widths shall be measured outward in each direction, from the ordinary high water mark or the top of the bank if the ordinary high water mark cannot be identified. Riparian areas should be sufficiently wide to achieve the full range of riparian and aquatic ecosystem functions. Such functions include but are not limited to protection of instream fish habitat through control of temperature and sedimentation in streams; preservation of fish and wildlife habitat; and connection of riparian habitat to other habitats.

Table 1: Riparian Habitat Areas

Stream Type	Recommended RHA Widths
Type 1 and 2; or shorelines of the state, or shorelines of statewide significance	250 feet
Type 3; or other perennial or fish bearing streams, 5 – 20 feet wide	200 feet
Type 3; or other perennial or fish bearing streams, < 5 feet wide	100 feet
Type 4 and 5	50 feet

- A. Increased Riparian Habitat Area Widths. The recommended riparian habitat area widths as shown in Table 1 shall be increased as follows:
1. When the community development director determines, using best available science, that the recommended width is insufficient to prevent habitat degradation and to protect the structure and functions of the habitat area;
 2. When the one-hundred-year floodplain exceeds the recommended riparian habitat area width, the riparian habitat area shall be extended to the outer edge of the one-hundred-year floodplain;
 3. When the habitat area is within a channel migration zone, the riparian habitat area width shall be as recommended in Table 1, or the distance of the channel migration zone, whichever is greater;
 4. When the habitat area is in an area of high blowdown potential, the riparian habitat area width shall be expanded an additional fifty feet on the windward side;
 5. When the habitat area is within an erosion or landslide hazard area or buffer, the riparian habitat area width shall be as recommended in Table 1, or the distance of the erosion or landslide area, whichever is greater.
- B. B. Riparian Habitat Area Width Averaging. In degraded areas along type 1 through 3 streams where forest cover has been removed, the community development director may reduce the width of riparian habitat areas twenty-five percent in exchange for habitat restoration if:
1. It is determined that the reduction in habitat width, coupled with the proposed restoration, would result in better stream/riparian habitat functions than the standard riparian habitat area without such restoration. This determination shall be made in consultation with Washington State Department of Fish and Wildlife based on a comparative analysis of the existing and enhanced riparian habitat submitted by the applicant. This comparative analysis, prepared by a qualified biologist, shall address stream habitat, water quality and all riparian habitat functions (i.e., large woody debris recruitment; stream shading/leaf litter inputs; filtration of sediments and pollution; nutrient regulation; erosion control/bank stabilization; regulation of stream flow/moderation of stormwater impacts; providing cover, refuge, foraging and breeding habitat for wildlife; wildlife travel corridors; and micro-climate effects); and
 2. The degradation was not caused while the property was in the applicant's ownership or within the previous seven years, whichever is greater. This does not apply to habitat damage from lawful land use prior to June 17, 2005; and
 3. The applicant submits a performance surety consistent with standards in this section. This does not apply to projects performed by a public agency.
 - a. Surety. Applicants for proposals involving restoration of degraded wildlife habitat areas or installation of vegetative filter strips as a condition of permit approval shall submit to the city a performance bond approved by the city in the amount equal to one hundred twenty-five percent of

the cost to purchase and install the plants and other materials used in those components of the project. Prior to making a demand under the bond, the community development department shall notify the applicant in writing and give them at least thirty days to replace the materials. The community development department shall accept the enhancement/restoration project if the plantings have survived for five years following installation.

4. Components of restoration projects that qualify for riparian habitat area width reduction include, but are not limited to:
 - a. Planting field grown conifer trees at least two feet in height within the riparian habitat area of a type 1 through 3 stream or a type 4 stream draining to a type 1 through 3 stream that lacks sufficient conifer trees to shade the stream and/or provide eventual sources of large woody debris. The trees shall be planted between October 1 and April 1. The applicant shall provide a watering plan indicating how the trees will be watered during the first two years following planting to ensure survival.
 - b. Replacing invasive or nonnative plant species with native vegetation that occurs in the riparian corridor.
 - c. Replacing rip-rap, concrete, tires or similar armoring along a type 1 through 3 stream with more productive habitat; for example, anchored logs or some appropriate form of “bioengineering” consistent with the latest edition of the Washington State Department of Fish and Wildlife’s Integrated Stream Bank Protection Guidelines as written or hereafter amended.
 - d. Planting appropriate vegetation to increase root density along stream banks that are eroding or are vulnerable to erosion, as determined by the approval authority. Such vegetation shall be planted between October 1 and April 1. The applicant shall provide a watering plan indicating how the plants will be watered during the first two years following planting to ensure survival.
 - e. Where the stream is vulnerable to pollution and/or sedimentation from existing uses, installing an approved vegetative filter strip along the outer twenty-five to fifty feet of the riparian habitat area, to significantly mitigate sediment and pollution from adjacent upland development. The applicant shall provide a watering and maintenance plan that ensures long-term survival and effective performance.
 - f. Off channel habitat restoration or enhancement.
 - g. Installing rot free, conifer tree trunks with root balls (e.g., red cedar, Douglas fir, or other trees slow to decompose), and/or large rocks in the streambed in appropriate locations of reaches of type 1 through 3 streams that lack such structure, as determined by the approval authority in consultation with the Washington State Department of Fish and Wildlife. The approval authority may require review of the proposed project by a qualified engineer to assure that it will function as intended without posing undue risks for structures or property.

Logs placed in streams between sixteen and thirty-two feet wide shall be at least twenty-two inches in diameter. Trees placed in streams wider than thirty-two feet shall be at least twenty-six inches in diameter.

Large woody debris shall not be installed in the following locations unless it is anchored:

- i. Channels that have a history of and high potential for debris torrents and other mass wasting activity;
- ii. Immediately above culverts or bridges;
- iii. Confined channels where the width of the valley floor is less than twice the bankfull width (Source: Forest Practices Board Manual, Section 26, “Guidelines for Large Woody Debris Placement Strategies”); or

- iv. In streams with significant upstream inputs of logs (e.g., the Deschutes River) in areas that are prone to log jams that threaten structures or roads.

(For guidance on tree selection and placement, see the Forest Practices Board Manual, dated August 2001 or as hereafter amended, Section 26, "Guidelines for Large Woody Debris Placement Strategies.")
 - h. Removal of roads within the riparian habitat area and revegetation of the former road beds with appropriate native vegetation. Soil amendment may be required to facilitate plant growth and drainage in compacted roadbeds.
 - i. Removal of structures within the riparian habitat area and revegetation of the building site with appropriate native vegetation. Soil amendment may be required on the compacted building site to enable plant survival and to facilitate drainage.
 - j. Removal or replacement of inadequate culverts or other barriers to fish migration.
- C. Isolated Riparian Areas. If topographic breaks (e.g., bluffs) or a legally established road, railroad or other lineal facility or barrier (not including logging roads) functionally isolates a portion of the riparian area, the approval authority may allow the riparian habitat area width to be reduced to the minimum extent needed to exclude the isolated area established prior to the effective date of these regulations if:
- 1. It does not perform any biological, geological or hydrological functions related to the undisturbed portions of the riparian habitat area or stream; and
 - 2. It does not provide protection of the riparian habitat area.
- D. Riparian Habitat Mitigation. Mitigation of adverse impacts to riparian habitat areas shall result in equivalent functions and values on a per function basis, be located as near the alteration as feasible, and be located in the same subdrainage basin as the habitat impacted.
- E. Alternative Mitigation for Riparian Habitat Areas. The performance standards set forth in this subsection may be modified at the city's discretion if the applicant demonstrates that greater habitat functions, on a per function basis, can be obtained in the affected subdrainage basin as a result of alternative mitigation measures.

(Amended during 2011 reformat; O2011-002, Amended, 03/01/2011; Ord. O2006-026, Amended, 04/03/2007; Ord. O2004-019, Added, 05/17/2005)

16.32.070 Habitat areas – Allowed uses and activities.

The following activities may be permitted within a riparian habitat area, pond, lake, water of the state, or associated buffer when the activity complies with the provisions set forth in the city of Tumwater shoreline regulations and wetland protection standards, if applicable, and subject to the standards of this section. The standards that provide the most protection to protected habitat and species shall apply.

- A. Clearing and Grading. When clearing and grading are permitted as part of an authorized activity or as otherwise allowed in these standards, the following shall apply:
 - 1. Grading is allowed only during the dry season, which is typically regarded as beginning on May 1 and ending on October 31 of each year. This period may be extended or shortened by the community development director on a case-by-case basis, determined by weather conditions, soil types and topography.
 - 2. Filling or modification of a wetland or wetland buffer is permitted only if it is conducted as part of an approved wetland alteration.
 - 3. The soil duff layer shall remain undisturbed to the maximum extent possible. Where feasible, any soil disturbed shall be redistributed to other areas of the project area.

4. The moisture holding capacity of the topsoil layer shall be maintained by minimizing soil compaction or reestablishing natural soil structure and infiltrative capacity on all areas of the project area not covered by impervious surfaces.
 5. Erosion and sediment control that meets or exceeds the standards set forth in the Drainage Design and Control Manual for the Thurston Region, as exists now or hereafter amended, shall be provided.
- B. Fish hatcheries, associated appurtenances, and related interpretive centers are permitted in accordance with an approved critical area report that demonstrates the following:
1. Natural shoreline processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, shoreline substrate within one-fourth mile of the project area.
 2. The aquaculture facilities will not degrade fish or wildlife habitat conservation areas or associated wetlands.
 3. Adequate mitigation measures ensure that there is no net loss of the functions or values of riparian habitat as a result of the proposed aquaculture facilities.
- C. Vegetation management within an authorized lake management district and with a vegetation management plan approved by the city is permitted in accordance with an approved critical area report that demonstrates the following:
1. Natural shoreline processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, shoreline substrate within one-fourth mile of the project area.
 2. The vegetation management will not degrade fish or wildlife habitat conservation areas or associated wetlands.
 3. A minimum of forty percent of the native vegetation must be retained within the area proposed for treatment.
 4. Adequate mitigation measures ensure that there is no net loss of the functions or values of riparian habitat as a result of the proposed vegetation management activities.
- D. Shoreline Erosion Control Measures. New, replacement, or substantially improved shoreline erosion control measures may be permitted in accordance with an approved critical area report that demonstrates the following:
1. Natural shoreline processes will be maintained. The project will not result in increased beach erosion or alterations to, or loss of, shoreline substrate within one-fourth mile of the project area.
 2. The shoreline erosion control measures will not degrade fish or wildlife habitat conservation areas or associated wetlands.
 3. Adequate mitigation measures ensure that there is no net loss of the functions or values of riparian habitat as a result of the proposed shoreline erosion control measures.
 4. The proposed shoreline erosion control measures do not result in alteration of intertidal migration corridors.
- E. Stream Bank Stabilization. Stream bank stabilization to protect new structures from future channel migration is not permitted except when such stabilization is achieved through bioengineering or soft armoring techniques in accordance with an approved critical area report. An engineered plan and mitigation plan are also required.
- F. Launching Ramps – Public or Private. Launching ramps may be permitted in accordance with an approved critical area report that has demonstrated the following:

1. The project will not result in increased beach erosion or alterations to, or loss of, shoreline substrate within one-fourth mile of the site;
 2. The ramp will not adversely impact critical fish or wildlife habitat areas or associated wetlands; and
 3. Adequate mitigation measures ensure that there is no net loss of the functions or values of riparian habitat as a result of the ramp.
- G. Docks. Repair and maintenance of an existing dock or pier may be permitted in accordance with an approved critical area report subject to the following:
1. There is no increase of shade for predator species or eelgrass;
 2. There is no expansion in over water coverage;
 3. There is no new spanning of waters between three and thirteen feet deep;
 4. There is no increase in the size and number of pilings; and
 5. There is no use of toxic materials (such as creosote) that come in contact with the water.
 - a. New docks on lakes and ponds may be allowed, provided there is no use of toxic materials and in accordance with an approved critical area report.
- H. Roads, Trails, Bridges, and Rights-of-Way. Construction of trails, roadways, roadway expansions and minor road bridging may be permitted in accordance with an approved critical area report subject to the following standards:
1. There is no other feasible alternative route with less impact on the environment;
 2. The crossing minimizes interruption of downstream movement of wood and gravel;
 3. Roads in riparian habitat areas or their buffers shall not run parallel to the water body;
 4. Trails may be located within the riparian area or buffer to provide public access for viewing wildlife and other recreational activities, provided they are located and designed to minimize impacts on the riparian habitat;
 5. Crossings, where necessary, shall only occur as near to perpendicular with the water body as possible;
 6. Mitigation for impacts is provided pursuant to a mitigation plan of an approved critical area report;
 7. Stream crossing structures (bridges and culverts) are designed according to the Washington State Department of Fish and Wildlife "Fish Passage Design at Road Culverts," 2003, as written or hereafter amended, and the National Marine Fisheries Service "Guidelines for Salmonid Passage at Stream Crossings," 2000; and
 8. Trails and associated viewing platforms shall not be made of continuous impervious materials.
- I. Utility Facilities. New utility lines and facilities may be permitted to cross watercourses in accordance with an approved critical area report, if they comply with the following standards:
1. Fish and wildlife habitat areas shall be avoided to the maximum extent possible;
 2. Installation shall be accomplished by boring beneath the scour depth and hyporheic zone of the water body and channel migration zone, where feasible;
 3. The utilities shall cross at an angle less than thirty degrees of the centerline of the channel in streams or perpendicular to the channel centerline whenever boring under the channel is not feasible;

4. Crossings shall be contained within the footprint of an existing road or utility crossing where possible;
 5. The utility route shall avoid paralleling the stream or following a down-valley course near the channel; and
 6. The utility installation shall not increase or decrease the natural rate of shore migration or channel migration.
- J. Public Flood Protection Measures. New public flood protection measures and expansion of existing ones may be permitted, subject to review and approval of a critical area report and the approval of a federal biological assessment by the federal agency responsible for reviewing actions related to a federally listed species.
- K. Instream Structures. Instream structures, such as, but not limited to, high flow bypasses, sediment ponds, instream ponds, retention and detention facilities, tide gates, dams, and weirs, shall be allowed only as part of an approved watershed basin restoration project approved by the city and upon acquisition of any required state or federal permits. The structure shall be designed to avoid modifying flows and water quality in ways that may adversely affect habitat conservation areas.
- L. Stormwater Conveyance Facilities. Conveyance structures may be permitted in accordance with an approved critical area report subject to the following standards:
1. No other feasible alternatives with less impact exist;
 2. Mitigation for impacts is provided;
 3. Stormwater conveyance facilities shall incorporate fish habitat features; and
 4. Vegetation shall be maintained and, if necessary, added adjacent to all open channels and ponds to retard erosion, filter out sediments, and shade the water.
- M. On-Site Sewage Systems and Wells. New on-site sewage systems and individual wells may be permitted in accordance with an approved critical area report only if accessory to an approved residential structure for which it is not feasible to connect to a public sanitary sewer system. Repairs to failing on-site sewage systems associated with an existing structure shall be accomplished by utilizing one of the following methods that result in the least impact:
1. Connection to an available public sanitary sewer system;
 2. Replacement with a new on-site sewage system located in a portion of the site that has already been disturbed by development and is located landward as far as possible, provided the proposed sewage system is in compliance with Thurston County health department regulations; or
 3. Repair to the existing on-site septic system.
- N. Activities within the improved right-of-way including but not limited to construction of new utility facilities or improvements or upgrades to existing utility facilities that take place within existing improved right-of-way or existing impervious surface.
- O. Operation, Maintenance or Repair. Operation, maintenance, or repair of existing structures, infrastructure improvements, utilities, public or private roads, dikes, levees, or drainage systems, if the activity does not further alter or increase impact to, or encroach further within, the critical area or buffer and there is no increased risk to life or property as a result of the proposed operation, maintenance, or repair. Operation and maintenance includes vegetation management performed in accordance with best management practices that is part of ongoing maintenance of structures, infrastructure, or utilities; provided, that such management actions are part of a regular ongoing maintenance, do not expand further into the critical area, are not the result of an expansion of the structure or utility; and do not directly impact endangered species.

- P. Minor Utility Projects. Utility projects which have minor or short duration impacts to critical areas, as determined by the community development director in accordance with the criteria below, and which do not significantly impact the functions or values of a critical area(s); provided, that such projects are constructed with best management practices and additional restoration measures are provided. Minor activities shall not result in the transport of sediment or increased stormwater. Such allowed minor utility projects shall meet the following criteria:
1. There is no practical alternative to the proposed activity with less impact on critical areas;
 2. The activity involves the placement of a utility pole, street signs, anchor, or vault or other small component of a utility facility;
 3. The activity involves disturbance of no more than seventy-five square feet.
- Q. Emergencies. Those activities necessary to prevent an immediate risk of damage to private property and that require remedial or preventative action in a timeframe too short to allow for compliance with the requirements of this chapter. Emergency actions that create an impact to a critical area or its buffer shall use all reasonable methods to address the emergency; in addition, they must have the least possible impact to the critical area or its buffer. The person or agency undertaking such action shall notify the city within one working day following commencement of the emergency activity. Within thirty days, the community development director shall determine if the action taken was within the scope of the emergency actions allowed in this subsection. If the community development director determines that the action taken was beyond the scope of an allowed emergency action, then inspection and remedial action would be required. If remedial action is required and not completed, then enforcement provisions would apply.
- R. Allow the removal of beaver dams as long as the proponent has obtained hydraulic project approval from the Washington State Department of Fish and Wildlife.

(Ord. O2016-024, Amended, 03/21/2017; Ord. O2012-005, Amended, 03/18/2014; Amended during 2011 reformat; O2011-002, Amended, 03/01/2011; Ord. O2008-011, Amended, 09/02/2008; Ord. O2006-026, Amended, 04/03/2007; Ord. O2004-019, Amended, 05/17/2005; Ord. 1283, Added, 08/20/1991)

16.32.090 Habitat areas – Protection plan.

When a protected habitat is located on a site to be developed, a habitat protection plan will be submitted by the permit applicant. The habitat protection plan shall contain the following information as a minimum and will be subsequently used as part of the environmental review process and is a condition of approval for discretionary permit(s) and/or construction permits:

A report which contains:

- A. A description of the nature, density and intensity of the proposed development in sufficient detail to allow analysis of such land use change upon the protected fish or wildlife habitat.
- B. The applicant's analysis of the effect of the proposed development, activity or land use change upon the fish and/or wildlife species.
- C. A plan by the applicant which shall explain how he will mitigate any adverse impacts to protected fish or wildlife habitats created by the proposed development.

A map(s) prepared at an easily readable scale, showing:

1. The location of the proposed development site.
 2. The relationship of the development to the adjacent habitat area.
 3. The nature and density of the proposed development or land use change.
- D. Proposed building locations and arrangements.

- E. A legend which includes:
1. A complete and accurate legal description as prescribed by the development application form. The description shall include the total acreage of the parcel;
 2. Title, scale and north arrows; and
 3. Date, including revision dates if applicable.
- F. Existing structures and landscape features including the name and location of all watercourses, ponds and other bodies of water.

Possible mitigation measures may include, but are not limited to:

1. Establishment of buffer zones;
2. Buffer zone enhancement by planting indigenous plant species;
3. Preservation of critically important plants and trees;
4. Limitation of access to habitat area; and
5. Seasonal restriction of construction activities.

(Ord. O2006-026, Amended, 04/03/2007; Ord. 1283, Added, 08/20/1991)

16.32.095 Existing legal nonconforming structures, uses, and activities.

A regulated structure, use or activity that legally existed or was approved prior to the passage of this chapter but which is not in conformity with the provisions of this chapter may be continued subject to the following:

- A. No such structure, use or activity shall be expanded, changed, enlarged or altered in any way that increases the amount of impervious surface without a permit issued pursuant to the provisions of this chapter.
- B. Structures, uses and activities may be utilized, improved, and/or reconstructed if it can be demonstrated by a qualified professional using best available science that no net loss of ecological function of the riparian area or buffer will occur. No such nonconforming structure, use or activity may be enlarged, increased, extended, or moved in any way to occupy a greater amount of land than occupied such use prior to the adoption of this chapter except as provided in subsection C of this section.
- C. Structures, uses and activities may be expanded, altered, and/or relocated (including impervious surface) if it can be demonstrated by a qualified professional using best available science that impacts to the critical area can be reduced over current levels.
- D. A nonconforming use or structure may be changed to another nonconforming use or structure subject to the standards in subsections (D)(1) and (2) of this section. If a change in zone designation is granted, an existing nonconforming structure shall be allowed to continue subject to the following standards in subsections (D)(1) and (2) of this section:
1. The development is twenty-five feet or more from the ordinary high water mark of the shoreline; and
 2. No net loss of ecological function of the riparian area or buffer occurs.
- E. Structures, uses or activities that are or become nuisances shall not be entitled to continue as nonconforming activities.

(Ord. O2008-011, Amended, 09/02/2008; Ord. O2006-026, Amended, 04/03/2007; Ord. O2004-019, Added, 05/17/2005)

16.32.097 Reasonable use exception.

- A. After it has been determined by the city that all reasonable economic use has been denied, an exception may be applied for pursuant to this section.
- B. An application for a reasonable use exception shall be made to the city and shall include a critical area report and mitigation plan if necessary, and any other project related documents, such as permit applications to other agencies, special studies and environmental documents. The application must be submitted with payment of the necessary fee as established in the city's fee resolution, as written or hereafter amended. The community development director shall prepare a recommendation to the hearing examiner based on review of the submitted information, a site inspection, and the proposal's ability to comply with reasonable use exception criteria in subsection D of this section.
- C. The hearing examiner shall review the application and conduct a public hearing. The hearing examiner shall approve, approve with conditions, or deny the request based on the proposal's ability to comply with all the reasonable use exception criteria in subsection D of this section.
- D. Criteria for review and approval of reasonable use exceptions follow:
 - 1. The application of this title would deny all reasonable use of the property;
 - 2. No other reasonable use consistent with existing zoning of the property has less impact on the critical area;
 - 3. The proposed impact to the critical area is the minimum necessary to allow for reasonable economic use of the property;
 - 4. The inability of the applicant to derive reasonable economic use of the property is not the result of actions by the applicant after the effective date of this title, or its predecessor;
 - 5. The proposal does not pose an unreasonable threat to public health, safety, or welfare on or off the development proposal site;
 - 6. The proposal is consistent with other applicable regulations and standards.

(Ord. O2012-005, Amended, 03/18/2014; Ord. O2011-002, Amended, 03/01/2011; Ord. O2005-023, Amended, 09/06/2005; Ord. 2004-019, Added, 05/17/2005)

16.32.098 Exceptions – Infrastructure.

- A. If the application of this title would prohibit a development proposal by a public agency, public utility, or a private entity installing public or private infrastructure that is in compliance with the comprehensive transportation, capital facilities or utility plans of Tumwater, the agency or utility may apply for an exception pursuant to this section.
- B. Exception Request and Review Process. An application for an infrastructure exception shall be made to the city and shall include a critical area identification form; critical area report, including mitigation plan, if necessary; and any other related project documents such as permit applications to other agencies, special studies, and environmental documents prepared pursuant to the State Environmental Policy Act (Chapter 43.21C RCW). The community development director shall prepare a recommendation to the hearing examiner based on review of the submitted information, a site inspection, and the proposal's ability to comply with infrastructure exception review criteria in subsection D of this section.
- C. Hearing Examiner Review. The hearing examiner shall review the application and the community development director's recommendation, and conduct a public hearing. The hearing examiner shall approve, approve with conditions, or deny the request based on the proposal's ability to comply with all of the infrastructure exception review criteria in subsection D of this section.
- D. Infrastructure Exception Review Criteria. The criteria for review and approval of infrastructure exceptions follow:

1. There is no other practical alternative to the proposed development with less impact on critical areas;
 2. The application of this title would unreasonably restrict the ability to provide utility services to the public;
 3. The proposal does not pose an unreasonable threat to the public health, safety, or welfare on or off the development proposal site;
 4. The proposal attempts to protect and mitigate impacts to the critical area functions and values consistent with other applicable regulations and standards.
- E. Burden of Proof. The burden of proof shall be on the applicant to bring forth evidence in support of the application and to provide sufficient information on which any decision has to be made on the application.

(Ord. O2012-005, Amended, 03/18/2014; Ord. O2011-002, Amended, 03/01/2011; Ord. O2006-026, Added, 04/03/2007)

16.32.100 Violation – Penalty.

- A. Remedies Not Exclusive. Each violation of the provisions of this chapter shall be a separate offense and will subject the violator to civil and/or criminal penalties. In the case of a continuing violation, each day's continuance shall be a separate and distinct offense. The mayor of the city of Tumwater, through his or her designee(s), has authority to enforce this chapter against any violation or threatened violation thereof through issue of administrative orders, penalty notices, levying fines and/or the institution of actions at law or in equity including injunctive relief, in order to ensure that no uses are made of regulated wetlands or their buffers which are inconsistent with this chapter or an applicable wetlands protection program. In addition, the city attorney is authorized to commence criminal prosecution for violations under this chapter. Recourse to any single remedy will not preclude recourse to other legal remedies available.
- B. Enforcement Actions. Enforcement of the provisions of this chapter is delegated to the director of community development. If the director of community development or his or her designee determines that any development action is not in compliance with approved development plans, or is in violation of this chapter, the director or designee may:
1. Issue a cease and desist order to halt such activity. The order shall become effective immediately upon receipt by the person to whom it is issued, and/or to his/her agent on site. The order shall set forth the following terms and conditions:
 - a. A description of the specific nature, extent and time of violation and the damage or potential damage; and
 - b. The specific corrective action to be taken within a given time, and the penalties for failure to comply.
 2. Issue a restoration order for complete or partial restoration of the critical area by the owner and/or the person responsible for the violation within a given time, and the penalties for failure to comply.
 3. Issue a civil penalty notice.
 4. Request that the city attorney commence a criminal prosecution, and seek any civil or equitable relief to enjoin any act or practices and to abate any conditions which constitute or will constitute a violation of this chapter.
- C. Civil Penalties.
1. Content. The notice of civil penalty shall include the following information:
 - a. The name and address of the person responsible for the violation; and

- b. The street address or a description sufficient for identification of the building, structure, premises, or land upon or within which the violation has occurred or is occurring; and
 - c. A description of the violation and a reference to the provision(s) of the city of Tumwater code section that has been violated; and
 - d. The required corrective action and a date and time by which the correction must be completed; and
 - e. Notice of an opportunity for an appeal hearing before the hearing examiner; and
 - f. A statement indicating that no monetary penalty will be assessed if the director or his or her designee approves the completed, required corrective action at least forty-eight hours prior to the end date for compliance in the restoration order; and
 - g. A statement that a monetary penalty in an amount per day for each violation as specified herein will be assessed against the person whom the notice of civil penalty is directed.
2. Service of Notice. The director or his or her designee shall serve the notice of civil penalty upon the person to whom it is directed, either personally or by mailing by both regular mail and certified mail, a copy of the notice of civil penalty to such person at their last known address. If the person to whom it is directed cannot after due diligence be personally served within Thurston County and if an address for mailed service cannot after due diligence be ascertained, notice shall be served by posting a copy of the notice conspicuously on the affected property or structure. Proof of service shall be made by a written declaration under penalty of perjury executed by the person effecting the service, declaring the time and date of service, the manner by which the service was made, and if by posting, the facts showing that due diligence was used in attempting to serve the person personally or by mail.
- D. Monetary Penalties. The maximum monetary penalty for each separate violation per day or portion thereof shall be as follows:
 1. First day of each violation – \$100.00;
 2. Second day of each violation – \$200.00;
 3. Third day of each violation – \$300.00;
 4. Fourth day of each violation – \$400.00;
 5. Each additional day of each violation beyond four days – \$500.00 per day.
- E. Collection of Monetary Penalty. The monetary penalty constitutes a personal obligation of the person to whom the notice of civil penalty is directed. The city is authorized to take appropriate action to collect the monetary penalty.
- F. Criminal Penalties. Any person, firm, or corporation who knowingly violates or knowingly fails to comply with any term or provision of this chapter shall be charged with a misdemeanor. Each day a violation occurs shall be a separate offense. In the event of a continuing violation or failure to comply, the second and subsequent days shall constitute a gross misdemeanor. Continuing violation shall mean a violation which is committed within one year of the initial violation, and which arises out of the same facts as the initial violation.
- G. Appeal of Administrative Orders and Penalties. Any person issued a cease and desist order, restoration order and/or incurring a civil penalty may appeal the same by filing, in writing, within ten days of receipt of the order/penalty notice, a notice of appeal and paying the appeal fee. The appeal must set forth in a concise statement: (1) the reason for the appeal, (2) the name and address of the appellant and his/her interest(s) in the property or proposed development affected by such order/penalty, (3) must contain a reference to the specific code section(s) that support the appellant's argument, (4) must specify the reason(s) why the appellant believes the order or penalty to be erroneous, and (5) must specify the relief sought. The appellant

will have the burden of proof to show the order or penalty is erroneous. Upon receipt of the appeal notice by the community development office, the director or designee will schedule a hearing before the hearing examiner, who is authorized to remit or mitigate the penalty only upon a demonstration of extraordinary circumstances, such as the presence of information or factors not considered, or not known and not reasonably capable of being known in setting the original penalty. The hearing examiner's powers on appeal are set forth in TMC Chapter 2.58. Any person appealing the issuance of an administrative order or civil penalty notice shall abide by the terms of that order or notice during the pendency of an appeal to the hearing examiner. The hearing examiner's decision may be further appealed according to the provisions of TMC Chapter 2.58.

(Ord. O2011-002, Amended, 03/01/2011; Ord. O2005-023, Amended, 09/06/2005; Ord. O2004-019, Amended, 05/17/2005; Ord. 1283, Added, 08/20/1991)

16.32.110 Severability.

If any section, paragraph, subsection, clause or phrase of this chapter is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of the chapter.

(Ord. 1283, Added, 08/20/1991)

Appendix F

Streaked Horn Lark Memorandum



Memorandum

To:	Marty Acker, USFWS Zach Radmer, USFWS
From:	Todd Jones, Project Manager, ICF
Date:	October 2022
Re:	Bush Prairie Habitat Conservation Plan: Conservation Strategy for Streaked Horned Lark at the Olympia Regional Airport

Introduction

The City of Tumwater (City) and Port of Olympia (Port) are drafting the Bush Prairie Habitat Conservation Plan (HCP), which will serve as the basis for an application for an Endangered Species Act (ESA) incidental take permit (ITP) from the U.S. Fish and Wildlife Service (USFWS). The ITP will cover development activities in the City, including Port-owned properties, as well as any effects on covered species from infrastructure activities at the Olympia Regional Airport (Airport) and ongoing management on Airport lands.

Streaked Horned Lark

The streaked horned lark, one of the species proposed for coverage under the HCP, is a small songbird endemic to the Pacific Northwest. The streaked horned lark was listed as a threatened species in 2013, pursuant to the ESA of 1973, as amended. Streaked horned larks are birds of wide-open spaces. Habitat used by the lark is generally flat, with substantial areas of bare ground and sparse low-statured vegetation. A combination of loss of habitat due to commercial, residential, and agricultural development, as well as the interruption of these natural processes due to flood control dams, fire suppression, and reduction of sediment transport by dams has resulted in a decline in the extent of suitable habitat for the lark. Subsequently, airports make an ideal landscape setting (relatively flat and treeless, often on historical prairies or grasslands) and often provide suitable habitat as a result of the management regime implemented to deter hazardous wildlife.

The only known occurrence of streaked horned lark in the Bush Prairie HCP permit area is at the Airport (Washington Department of Fish and Wildlife 2016).

Memorandum of Understanding

In October 2019, the Federal Aviation Administration (FAA) and USFWS finalized a memorandum of understanding (MOU) regarding streaked horned lark recovery in Oregon and Washington. The MOU formalizes the partnership between the USFWS and the FAA. The MOU will assist the agencies in fulfilling their common goals of filling gaps in the current knowledge base for the lark's recovery

and identifying, protecting, and managing non-airport recovery sites for the lark, thereby improving the status of the lark and reducing the importance of airports as habitat for the subspecies. Establishing off-airport recovery sites for the lark may take years or even decades. The MOU states (p. 3) that “the recovery approach for lark populations on airports will be to maintain the current populations until alternate off-airports sites can be established.”

The Airport serves an important role for streaked horned lark in the Bush Prairie HCP permit area. However, FAA policy prevents the Airport’s commitment to any process, procedure, or agreement that would lead to an increase in streaked horned lark populations or the enhancement or creation of streaked horned lark habitat within the boundaries of the Airport property. This policy also constrains Airport-sponsored activities on sites adjacent to the Airport property where the species could interfere with current and future departure and arrival airspace. This FAA policy applies not only to activities conducted on airports that have a federal nexus but also to any other activities conducted on an airport due to the potential conflict with their federal grant assurances, and the FAA’s mission to promote safe operations.

Given the FAA’s federal grant assurance policies and the MOU between USFWS and the FAA, the Airport has limited options available to minimize or mitigate for the effects of development on the Airport. The only option available is a strategy aimed at maintaining, but not increasing, the lark population on the Airport during the interim period.

Conservation Strategy for Streaked Horned Lark

Since the streaked horned lark is a covered species under the Bush Prairie HCP, there will be a concerted effort over the next 30 years (ITP term) to identify and protect off-airport land that could support nesting streaked horned larks. In the HCP, there is an acknowledgement of the role that the Airport currently plays in providing habitat for streaked horned lark, but also an acknowledgement that providing the Airport with greater operational flexibility will require developing a different long-term strategy for this covered species. This objective of the HCP is generally aligned with the MOU between the USFWS and FAA. However, the transition from only having habitat at the Airport, to also having protected habitat off-airport, will require time and funding to complete. To facilitate that transition, the need for the Airport to maintain the population will continue, while other protected lands are found, acquired, and managed for the species.

The streaked horned lark conservation strategy described in the HCP includes a combination of continued management of grassland areas and monitoring at the Airport to ensure that the current population is maintained, some short-term habitat loss at the Airport to generate land acquisition funds under the HCP, and the acquisition of mitigation lands off-airport.

Maintain Short Grassland Condition at the Airport

The Port currently manages 1,572 acres of Airport lands. Management of these lands must comply with FAA Grant Assurances (Amended in 79 FR 18755) to maintain the airfield safety area and meet other operational needs of a regional general aviation airport. Of these 1,572 acres, approximately 389 acres are undeveloped and managed by the Port to maintain aircraft safety, which results in a short grassland condition allowing for consistent visibility in the active airport operational areas

and minimizes hazards to aircraft safety. These grasslands are also managed to prevent ponding water so as not to attract concentrations of waterfowl or shorebirds, which could increase risks of bird strikes.

However, the Airport's grassland management regime has maintained conditions within the vegetated portion of the airfield safety area that are highly suitable for and support ground-nesting birds including streaked horned lark. As long as the Airport remains active, the Port is expected to maintain this level and type of management within the vegetated portion of the airfield safety area, which is likely to continue to support nesting streaked horned larks, depending on airfield best management practices (BMPs), until alternative off-airport conservation sites can be established. BMPs that will be followed by the Port until off-airport mitigation is established are described in Attachment A. Only after new sites have been established and colonized by larks, will it be appropriate to implement practices to make this airfield safety area less attractive to larks. As part of the conservation strategy associated with this HCP, the Port, with the authorization from the FAA, commits to continue to maintain a low grassland condition¹ in the airfield safety area (389 acres) and maintain the number of larks in the Airport population until such a time that mitigation is achieved elsewhere. This is codified in the HCP as Conservation Action #3.

Monitoring Streaked Horned Larks at the Airport

In order to determine whether the streaked horned lark population at the Airport is being maintained during the transition period, the HCP will fund, and the Airport will permit, annual surveys during the nesting season. The timing, frequency, and type of surveys to be used will be determined through coordination between the Port and USFWS. Whether the nesting population is being maintained will be determined using a trendline analysis over rolling three-year periods. The number of streaked horned larks detected on the Airport during the survey period will be the metric tracked. Surveys to support that analysis will include annual abundance surveys as described in Pearson et al. 2016.

Streaked Horned Lark HCP Mitigation

Implementation of covered activities at the Airport will result in effects on the species that may be detrimental to the only occupied site in the permit area. Therefore, care must be taken early in the permit term to ensure that too much habitat is not removed before sufficient mitigation habitat can be acquired to mitigate any effects of habitat loss. Because the Airport is currently the only known location of streaked horned lark in the permit area, offsetting the impact of loss of habitat will need to be accomplished through the protection and management of mitigation lands that are large enough (at least 150 contiguous acres) to attract and support nesting larks. It is assumed that attracting streaked horned lark to a new nesting area will take time. This will be challenging because habitat loss at the Airport will precede the ability to obtain mitigation credit. Receiving mitigation credit and subsequent increased operational flexibility will not be realized until a suitable site is protected and performance standards are achieved.

¹ Mowing typically occurs May through October due to limited accessibility because of wet conditions during the rest of the year and to align with the growing season for vegetation.

Habitat Transition Strategy

Because of the unique circumstances of having only one known population of streaked horned larks in the permit area, a special provision is provided to the City and Port in the HCP, allowing ample time to collect HCP fees on streaked horned lark habitat. These funds can then be used to acquire Reserve System lands suitable for streaked horned lark mitigation. In order to collect these funds, some impacts will need to occur prior to having a mitigation site that is large enough to meet the species habitat criteria (>150 acres) and is occupied. To accommodate these challenges, the City and Port are allowed to accrue up to 100 acres of habitat loss in streaked horned lark habitat before having a suitable streaked horned lark mitigation site as part of the Reserve System.

Development of the initial 100 acres of streaked horned lark habitat will occur within the 294-acre *Interim Agreement Period/Potential Development Areas* shown in Figure 1. During this interim period, the Airport will use a program of monitoring and BMPs to maintain the number of larks (based on a 3-year average) at the Airport. The baseline for the number of larks at the airport will be decided by the average results survey efforts from 2021 and 2022, as well as upcoming surveys in 2023 all conducted by the Washington Department of Fish and Wildlife (see Success Criteria below). If a streaked horned lark mitigation site is acquired, occupied, and meeting performance standards, the 100-acre cap on habitat loss will be lifted and the program to maintain the number of larks in the Airport population can be terminated. If the City and Port reach 100 acres of permanent habitat loss and a streaked horned lark mitigation site has not been acquired, then no more permanent streaked horned lark habitat loss will be permitted until an adequate mitigation site(s) have been acquired and the program to maintain the number of larks in the Airport population must be continued.

To assist the City and Port, in accordance with the MOU and draft Recovery Plan, the FAA could provide funding early in implementation to assist with acquisition of new conservation sites for streaked horned larks off the Airport, as well as contributing to studies to identify suitable non-airport conservation sites, identifying effective colonization techniques.

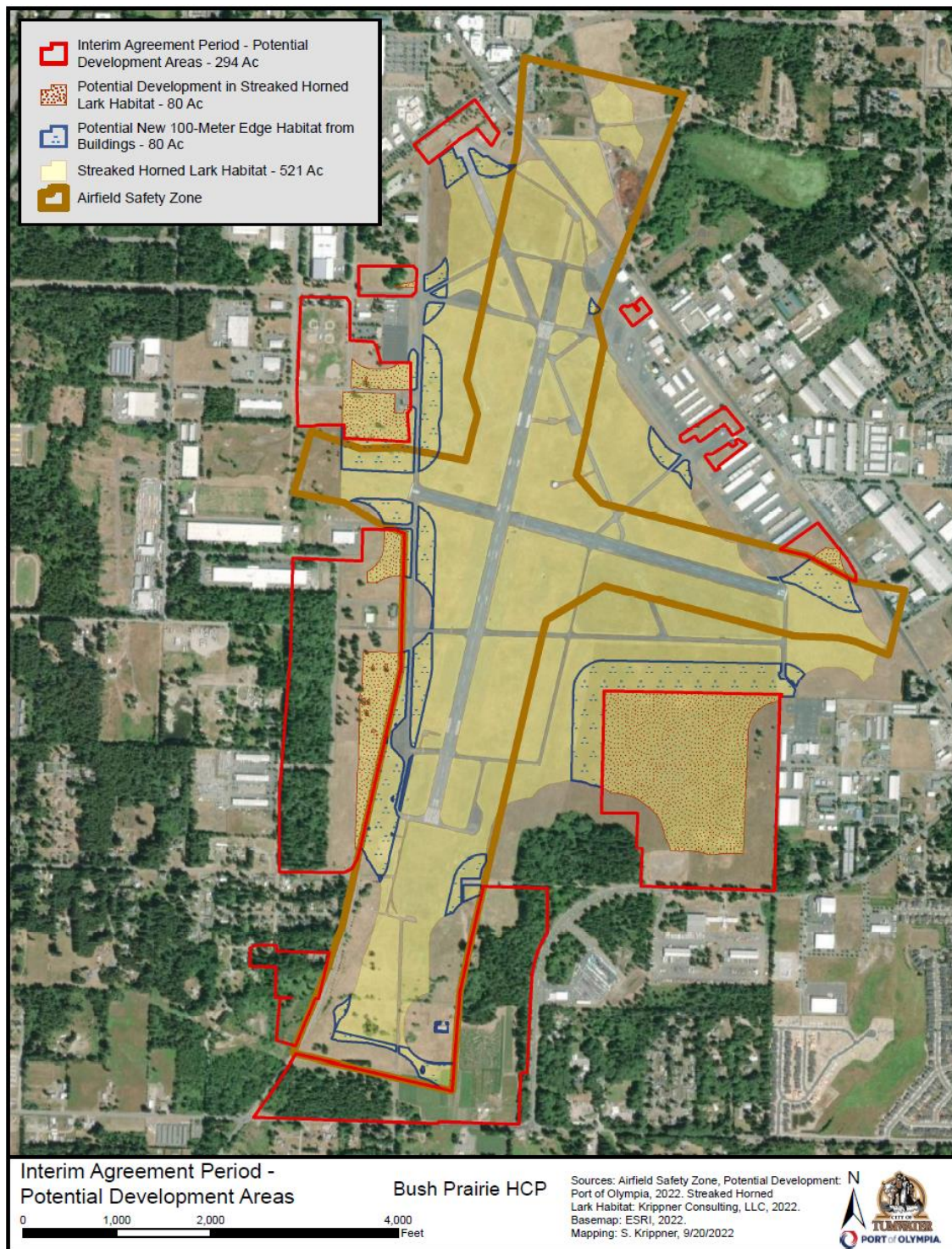


Figure 1. Area within which 100 acres of development within streaked horned lark habitat (“potential development areas”) may occur prior to development of an off-site streaked horned lark mitigation site.

Success Criteria

Success criteria for maintain streaked horned larks at the airport will be based on the average of survey results conducted by the Washington Department of Fish and Wildlife from the years 2021 and 2022, and upcoming surveys in 2023. The average number of larks detected during surveys from these 3-years will be used to determine the baseline number of streaked horned larks at the airport. Once this baseline has been established, a running 3-year average will be used to determine whether or not the airport is sustaining this baseline average number of larks. The baseline number of larks will be maintained until suitable occupied offsite land in the Permit Area of Streaked Horned Lark Conservation Only has been acquired. Once occupied habitat has been acquired, the Port no longer needs to maintain the established baseline for the number of larks at the airport and the limit of 100-acres of development will be lifted.

Conclusion

Allowing for some limited loss of streaked horned lark habitat from covered activities at the Airport, prior to securing mitigation properties and documenting species occurrence, will generate necessary funding from HCP conservation fees to facilitate habitat acquisition off-airport. In order to allow some loss of habitat, and to avoid a violation of the stay-ahead provision, the Airport will use a program of monitoring and BMPs to maintain the number of larks in the Airport population. This unique transition strategy aligns with the MOU signed by the USFWS and FAA to create species recovery opportunities off airport that will ultimately provide flexibility to Airports to meet ESA requirements to protect federally listed species.

Literature Cited

Pearson, S.F., M. Linders, I. Keren, H. Anderson, R. Moore, G. Slater, and A. Kreager. 2016. Survey protocols and strategies for assessing streaked horned lark site occupancy status, population abundance, and trends. Wildlife Science Division, Washington Department of Fish and Wildlife, Olympia, Washington.

Attachment A

Olympia Regional Airport Best Management Practices for Protection of Streaked Horned Lark

Olympia Regional Airport Best Management Practices for Protection of Streaked Horned Lark

October 2022

The following best management practices will be followed during the interim period at the Airport.

Avoidance, Minimization, and Activity Sequencing

Avoid personnel and vehicle activities in known lark nesting areas from March 15 to August 31 annually.

Dissuasion

Coordinate approved dissuasion activity/procedures in advance of any anticipated project activity planned from March 15 to August 31 annually. Examples include vertical visual obstructions (orange snow fence, construction barriers, increased grass height) or grading/ground clearing to eliminate vegetation.

Hazard Minimization

Avoid hard structures within 100 meters of known nesting habitat. Examples include temporary buildings, walls, tree lines, large machinery, or other tall structures that block direct line of sight.

Post-Project Vegetation

Provide post-project "prairie-seed mix" for revegetating areas after the completion of a project to restore habitat. This procedure has historically been followed for Airport projects. Standard "prairie-seed mix" designation is made during the planning and approval phase of projects.

Airfield Mowing

Evaluate future equipment procurement that maximizes mowing span and minimizes tire width.

Maximize pavement surfaces for transit to and from mowing areas. Avoid mowing known nesting areas from March 15 to August 31 annually. Continue to mow Airport grass areas consistent with FAA operational safety requirements.

Rodent and Insect Control

Rodent and insect control is not currently practiced on open airfield surfaces. Any future rodent or insect control will be in accordance with the Port of Olympia Integrated Pest Management Program and EPA guidelines.

Weed Control

All weed or grass control around runway and taxiway lighting and signage will be in accordance with the Port of Olympia Integrated Pest Management Program and EPA guidelines and will be conducted on foot or with vehicles on paved surfaces to the maximum extent possible.

Nuisance/Hazardous Wildlife Movement and Control

Apparatus-fired noise makers/flares are used to relocate flocks of birds and geese from critical operations areas and to herd coyotes and deer away from runway and taxiways. To the maximum extent possible, vehicle transits associated with these activities will utilize paved surfaces. Chemicals are not used for this purpose.

Helicopter Activity

To the extent possible, helicopters shall avoid known nesting areas from March 15 to August 31 annually. Airport operations will coordinate with the Airport's air traffic control tower staff and local flight training providers regarding these areas.

Surveys and Compliance Monitoring

Surveys and compliance monitoring will be in accordance with provisions as outlined in the HCP.

Oregon Spotted Frog Screening Process

Bush Prairie HCP – Oregon Spotted Frog Screening Process

1. When a permit application is submitted, the City will identify projects which lie within the Oregon spotted frog Habitat Screen using desktop GIS analysis as well as aerial photos.
2. Using application materials, photos, and GIS system, the City will determine whether the project requires an onsite Oregon spotted frog screening.
3. If a project cannot be excluded by desk-top analysis, a site visit will be conducted by the project applicant and verified by the City:
 - a. Whether the property supports suitable Oregon spotted frog habitat using the field screening protocol as described below. Screening is to be conducted during the period in winter and early spring defined as the survey window with the best chance of identifying suitable wetland habitat (defined as January 1st – April 15th but see Step 2 below) and,
 - b. If the property contains wetland; if so, a wetland delineation, conducted by a qualified consultant, will be required (TMC, Title 16, Chapter 16.28, Wetland Protection Standards).
4. Wetland rating documentation will be completed using the Washington State Wetland Rating System for Western Washington.
5. A critical area report shall be submitted which contains information required in TMC Chapter 16.28. If avoidance is not feasible, a reasonable use exception and mitigation will be required (TMC, Chapter 16.28, Section 16.28.190).
6. If Oregon spotted frog site screening verifies suitable Oregon spotted frog habitat and impacts to the habitat is unavoidable, compensatory mitigation, such as restoration, creation, or enhancement would be required (ratio's for compensatory mitigation are defined Table 16.28.220(6) of TMC, Chapter 16.28)

NOTE: Where applicable, Oregon spotted frog habitat determination will occur concurrently with an assessment for wetlands.

Oregon Spotted Frog Habitat Suitability Screen

Step 1: Desktop GIS Evaluation

The City or their contractors will review proposed project information, aerial photos, maps, and GIS resources. If the following condition can be verified, the project area is NOT considered Oregon spotted frog habitat for the purposes of the HCP, and no further review is needed for the species:

- a. The entire project site is forested with >75% canopy cover of deciduous or evergreen tree species.

If the above condition is NOT present, continue with Step 2 of the field evaluation.

Step 2: Field Evaluation

Conduct visits to evaluate the project site and included project areas for suitable Oregon spotted frog habitat from January 1 – April 15. This period is defined when fall and winter precipitation events cause inundation of seasonal wetlands that Oregon spotted frog use for breeding. Therefore, identification of all habitat types is most likely to be possible during this time. This evaluation period may be adjusted by the City through adaptive management over the permit term of the HCP and with approval by USFWS, if necessary to improve the chances of identifying Oregon spotted frog habitat.

The project applicant will assess conditions on the project site and specifically within the project area to determine if Oregon spotted frog habitat (breeding, rearing summer, or winter) is present. All habitat types do not need to be present within the project site for the area to be considered suitable habitat for Oregon spotted frog. (See Oregon spotted frog species account in Section 2.6, *Covered Species Accounts*, for details on how the HCP defines suitable habitat.)

Site Evaluation Questions

If the answer to either of the following questions (b and c) is YES, there is NOT suitable habitat onsite, and no further review is needed for this species. If the answers to both questions are NO, Oregon spotted frog habitat may be present - continue to the next section (Items d – i).

- b. Is all aquatic habitat on the project site a flowing stream with inorganic substrates (i.e., gravel cobble) in a forest with >75% canopy cover of deciduous or evergreen tree species and/or > 75% forest associated or woody wetland vegetation? **YES/NO DESCRIBE**
- c. Is all aquatic habitat on the parcel inundated < 30 days and not hydrologically connected (above surface) to other persistent water (present > 30 days)? **YES/NO DESCRIBE**

Evaluation Questions for Breeding and Rearing Habitat

If the answer to any of the questions below is YES, is the site supports suitable Oregon spotted frog habitat, with conditions suitable for breeding and rearing:

- d. Does the project site contain shallow water with extensive (> 1,000 sq. ft.) areas < 12 inches deep? **YES/NO**
- e. Are these shallows inundated for at least 5 weeks during late winter/early spring, starting as early as February? **YES/NO**
- f. Is the vegetation covering the project site or in these shallows dominated by (constituting > 50% of existing vegetative cover) emergent wetland vegetation? **YES/NO DESCRIBE**
- g. Do these shallows have > 10% vegetative coverage of substrate, primarily (> 50%) in submergent and emergent growth forms? **YES/NO DESCRIBE**

- h. Do these shallows have low (< 75%) surface and above-water canopy closure in the form of woody stemmed shrubs and trees, excepting the margins (within 50 ft of open expanses) of deciduous forest stands where leaf-out occurs after egg-laying¹? **YES/NO DESCRIBE**
- i. Do any or all these shallows remain hydrologically connected to summer-season habitat by still- or slow-moving surface waters until post hatching (June 30th) in an average year? **YES/NO DESCRIBE**

Evaluation Questions for Suitable Summer Habitat

If the habitat element below is present, the site supports suitable habitat for Oregon spotted frog for summer occupancy:

- j. Does the project site contain perennial lentic pools (standing water), ditches, canals, or slow-moving rivers, or other wetted areas that have emergent, floating, or submergent wetland vegetation in shrub-tree form)? **YES/NO DESCRIBE**

Evaluation Questions for Suitable Winter Habitat

If one or more of the habitat elements below is present on the site, the site supports suitable habitat for Oregon spotted frog for winter occupancy:

- k. Does the project site contain any ponded, pooled, or channeled areas of either lotic (flowing) or lentic (standing) water that exceeds 6" in depth? **YES/NO DESCRIBE**
- l. Does the project site contain any ponded, pooled, or channeled areas of either lotic or lentic water that have some combination of aquatic bed, emergent, and scrub shrub vegetation present and are intermixed with unconsolidated bottom habitat? **YES/NO DESCRIBE**
- m. Does the project site contain any ponded, pooled, or channeled areas of either lotic or lentic water that are not scoured by winter storm-related flows during an average year, but are inundated from at least October through March? **YES/NO DESCRIBE**

¹ Note that in some watersheds, occupied breeding habitat has been planted with trees and shrubs as wetland mitigation/enhancement. These habitats may continue to be occupied but may not meet all the criteria in this screen.