SENT VIA EMAIL

AMENDMENT No. 3 to
CONTRACT No. 3 0 0 0 7 0 5 9
FOR
SPRINGWATER WETLANDS RESTORATION DESIGN

This Amendment No. 3 amends Contract 30007059 dated 1st day of October, 2019 by and between Otak, Inc., ("Consultant"), a domestic business corporation of the State of Oregon, and the City of Portland**,** a municipal corporation of the State of Oregon ("City") by and through their duly authorized representatives. This Amendment may refer to Consultant and City individually as a "Party" or collectively as the "Parties."

This Amendment is authorized by City Ordinance No. _____.

The Effective Date of this Amendment is _____**.** The purpose of this Amendment is to add funds, revise the Statement of Work, revise the SUBCONSULTANTS section, revise the Hourly Rates and revise Exhibit B – Project Budget.

The Contract was previously amended as follows:

Amendment 1 dated February 1, 2022, which extended the Term from September 30, 2022 to September 30, 2025, increased the original not-to-exceed amount of the Contract from $999,314 by $27,000 to a new total not-to-exceed amount of $1,026,314, revised the Statement of Work and revised Exhibit B – Project Budget.

Amendment 2 dated December 1, 2022, which extended the Term from September 30, 2025 to September 30, 2026, increased the amended not-to-exceed amount of the Contract from $1,026,314 by $210,734 to a new total not-to-exceed amount of $1,237,048, revised the Statement of Work and revised Exhibit B – Project Budget.

The Parties agree to Amend the Contract as follows:

1. The Contract not-to-exceed amount of $1,237,048 is increased by $205,928 for a new total not-to-exceed amount of **$1,442,976.**

2. The Statement of Work is revised as shown below. New Language is **BOLD and underlined**. Deleted language is indicated in text ~~strikethrough~~. Where there is no BOLD and underline or text strikethrough language shall remain the same.

Amendment 3 Project Understanding

- Revise and rerun hydraulic model to account for design changes related to grading and trail realignment in the Central Wetlands.
- Provide Right of Way description for multi-use path in Central Wetland.
- Deliver extended permit support.
- Refine design approach: scope of work and budget to design budget for the following tasks:
    - Provide plan sets for three phases (vegetation management, mass grading, and planting) of construction instead of the initially planned single set
    - Revise site stabilization and planting plan during Final Design.
    - Revise design for Zenger South access.
    - Modify educational gathering area.
    - Revise civil drawings based on updated Department of Environmental Quality requirements identified in December 2022.
    - Revise special provisions updated as of February 2023.
    - Address refined soil sourcing, handling of contaminated media, and geotechnical recommendations
    - Update earthwork calculations based on clarifications provided after 90% review
- Provide limited technical support for FEMA grant.
- Monitor and manage wildlife during construction (optional).
- Support for public outreach by flood insurance specialist (optional).
- Additional engineering services during construction (optional).
- Post-construction site survey to support the Letter of Map Revision (optional).
- Account for labor cost escalation.
- Decrease budget remaining from completed tasks and reallocate to tasks requiring additional budget.

SECTION 1
PROJECT MANAGEMENT

Task 1.1 – Project Management

- Coordinate tasks and hold responsible to this Contract all sub-consultants listed. Additionally, Consultant will communicate, in writing, to BES PM any changes to sub-consultants promptly and prior to work being adjusted. Consultant will perform additional coordination for contract extension time between September 30, 2022 and September 30, 2026; **Consultant will additionally perform management of project and new subconsultant as part of this contract amendment.**

Task 1.3 Public Outreach

Task is projected to be completed under budget, decrease budget per Exhibit B - Project Budget. Reallocate to Task 1.1.

Task 1.4 Flood Insurance Outreach

This work will require a separate notice to proceed once individual task orders are created to define the specific scope of work provided by the BES PM, including defining the deliverable. Scope of work in a particular task order will be based on the following:

Consultant will provide services for the BES Project team on Flood insurance implications and set up a timeline for community outreach. Services will include the following:

- **Clarifying FEMA's risk rate 2.0 and its impact on Oregon property owners in relation to the Project.**
- **Evaluating the financial impact the Project will have on property owners by running both a NFIP and private flood estimate on impacted properties.**
- **Supporting remapping Fact Sheet content**
- **Working with the BES coordinator to develop an outreach letter to homeowners.**
- **Providing education on FEMA's insurance procedures for homes mapped in, and those mapped out of the floodplain.**
- **Preparing reports for the City's project manager.**
- **Responding to customer and homeowner inquiries prior to the consultation outreach plan.**
- **Responding to emails regarding the project forwarded by the City's project manager.**
- **Developing meeting material for virtual and in-person meetings.**
- **Delivering virtual meetings.**

Deliverables for Task 1.4 Flood Insurance Outreach

Consultant will prepare public in-person speaking engagements, including town hall, community, and FEMA remapping meetings. Fees include, travel time, presentation, responding to follow-up questions, and addressing participant consultations during each event.

Consultant shall provide one-on-one consultation with homeowners by phone or email. A report of each call and email will be provided to the City's Project

Manager attached as Exhibit D. Consultations will include addressing the following scenarios:

- **Mapped Out – Walk homeowner through the communication process with their lender and insurance agent on the updated maps. Provide steps required before they can cancel their insurance.**
- **Newly Mapped In – Provide homeowner education on the floodplain and lender requirements to obtain flood insurance. Provide flood insurance quotes, both Federal and Private, making them aware of options available.**
- **Remain Mapped In – Provide homeowner education on the floodplain and flood insurance changes.**

SECTION 2
RESEARCH AND FIELD INVESTIGATIONS

Task 2.3 - Wetland and Ordinary High Water (OHW) Delineation
Task completed under budget, decrease budget per Exhibit B - Project Budget. Reallocate to Task 4.2.

2.4 - Cultural Resources Assessment
Task completed under budget, decrease budget per Exhibit B - Project Budget. Reallocate to Task 4.2.

2.5 - Utility Coordination
Task is projected to be completed under budget, decrease budget per Exhibit B - Project Budget. Reallocate to Task 4.2.

Task 2.6 - Right-of-Way Engineering (Description & Exhibit)
Prepare a legal description and exhibit map for the springing easement using a metes and bounds format according to the City's standard. Legal description and exhibit map in electronic pdf format submitted to BES.

SECTION 3
ALTERNATIVES ANALYSIS

Task 3.1 - Hydrology and Hydraulics

- Develop a combined 1-D/2-D hybrid hydraulic model to support the project design and to evaluate floodplain impacts.
    - Revise "Post-Project Conditions" 1-D/2-D model for 30%, 60%, **90%** and final engineering designs, **including an additional iteration to incorporate the Central Trail realignment into the design.**

SECTION 4
PERMITTING

Task 4.2 - Environmental Review

To complete this subtask, Subconsultant will:

- Respond to questions and requests for clarification related to large number of public comments generated during Land Use review.
- Create 2 additional figures to support responses.
- Attend 2 additional meetings with City planner to provide clarification.

Task 4.5 - FEMA Grant Application Support

- **Respond to questions and requests for clarification during the FEMA Grant Review Period, up to 16 hours.**
- **Respond to technical questions from public related to floodplain mapping, up to 20 hours.**

SECTION 5
DESIGN

Task 5.4 - Final Design

Add budget to reflect the following changes:

- **Prepare 2 additional plan sets not included in original scope of work for a total of 3 plan sets for 3 phases of construction: Early Tree Removal and Vegetation Management, Mass Grading, and Planting**
- **Revise planting plan, per latest BES input**
- **Modify design for Zenger South access and coordinate changes between 2 plan sets**
- **Modify gathering area design and coordinate associated details between 2 plan sets**
- **Revised CE sheets to reflect latest DEQ requirements identified as of December 2022, and BDS updates effective November 2022.**
- **Revised special provisions based on updated boilerplate documents on the website as of February 6, 2023.**
- **Attend up to 5 additional coordination meetings with City and agencies to discuss geotechnical requirements, tree protection and documentation, PBOT comments, contaminated media disposal and soil sourcing, and direction on Zenger South access and WPA gathering area**
- **Update quantity calculations to reflect contaminated soil measurement and disposal requirements.**

SECTION 6
CONSTRUCTION

Task 6.1 - Advertise for Bid

- Add budget for escalation to current Advertise for Bid task based on attached updated labor rates.
- **Prepare up to one (1) bid addendum.**
- Attend one ~~three~~ **one**-hour pre-bid meeting at the project site lead by BES.

Task 6.2 - Construction Period

- Add budget for escalation to current Construction Period tasks based on attached updated labor rates.

To complete this Task, Consultant will:

- **(Optional) Consultant must receive written authorization from the Owner's Representative to deliver any element of this task. Consultant will determine wildlife management requirements and provide services to monitor and manage wildlife during project construction activities in accordance with permit requirements and applicable laws and regulations, including the following tasks:**

    - **Consultant may provide one migratory bird clearance survey prior to construction, upon request. If nests are found, Consultant will GPS nest location and provide this information to the City.**

    - **Consultant may be on-site for two, 8-hour days per week during construction activities, up to 22 weeks to monitor work area for presence of amphibians and songbirds. If amphibians or turtles are found to be present the consultant shall relocate species following the protocol outlined in "WILDLIFE CAPTURE, HOLDING, TRANSPORT AND RELOCATION PROTOCOLS: SPECIES GROUP AMPHIBIANS" and "WILDLIFE CAPTURE, HOLDING, TRANSPORT AND RELOCATION PROTOCOLS: SPECIES GROUP TURTLES".**

Assumptions for Task 6.2:

- **Wildlife monitoring work is considered optional work.**
- **There is a known population of Northern red-legged frogs on-site; this is an Oregon Department of Fish and Wildlife (ODFW) protected wildlife species and it is unlawful to move this species without a CTHR permit.**
- **The City will perform wildlife monitoring beginning October 2023 and will continue monitoring through the end of construction. Timing of supplemental wildlife construction monitoring by the Consultant will be**

from April 2024 – October 2024. Assumed effort will require 16 hours per week for 22 weeks during this period.

- **Consultant will follow the protocols outlined in Exhibit C.**
- **Consultant will be given at least 2 weeks written notification before the start of construction, to allow scheduling with project team and ODFW.**

Deliverables for Task 6.2

5. **(Optional) One CTHR report to ODFW at completion of construction activities within 30 days of expiration date of the permit.**
6. **(Optional) Migratory Bird surveys prior to construction.**
7. **(Optional) Wildlife monitoring documentation during time spent observing and moving wildlife and clearance surveys.**

Expenses

- **Decrease expense budget for expenses not incurred per Exhibit B. Reallocate to Task 4.2.**

Compensation

- Level of Effort: The Project Budget is attached as Exhibit B.

TASK 6.4: LOMR AS-BUILT SURVEY (OPTIONAL)

Additional Survey Services during construction and project close-out requiring NTP. Consultant must receive written authorization from the Owner's Representative to deliver any element of this task.

The purpose of this optional task is to provide necessary survey to support verification of construction for use in the LOMR application.

To complete this Task, Consultant will:

- **Collect as-built topographic ground elevation and culvert data required to perform hydraulic modeling and complete the forms for the LOMR application.**

- **Coordinate the data collection efforts and prepare a digital terrain model and base map in Civil3D/AutoCAD of the as-built survey data.**

Deliverables for Task 6.4

1. **(Optional) As-built survey (.DWG and PDF files)**

TASK 6.5: ADDITIONAL CONSTRUCTION SERVICES (OPTIONAL)

Additional Construction Services requiring NTP.

The purpose of this optional task is to provide necessary engineering support services during the bidding process and construction, as requested by the City. Consultant must receive written authorization from the Owner's Representative to deliver any element of this task.

To perform this Task, Consultant will:

- **Provide up to 48 hours of labor time to attend additional project meetings, to review additional RFI's and submittals, to develop additional design revisions, and/or to perform additional field observations.**

Deliverables for Task 6.5

1. **(Optional) Additional design changes, as requested and within the hours identified in the scope of work**
2. **(Optional) Attendance at additional Construction Meetings**
3. **(Optional) Additional Submittal reviews, as needed (Heron)**
4. **(Optional) Additional Responses to RFI's (Heron)**
5. **(Optional) Additional Construction Observation, as requested and within the hours identified in the scope of work**

4. The SUBCONSULTANTS section is revised as shown in the table below:

NAME	DMWESB CERTIFICATION TYPE	ROLE ON PROJECT	CURRENT SUBCONTRACT AMOUNT	AMENDMENT 3	REVISED SUBCONTRACT AMOUNT
Cafferata Consulting, LLC.	DBE	Environmental Permitting and Wetland Delineation	$54,843	$14,281	$69,124
Campbell Environmental, LLC.	ESB	Environmental Permitting and Wetland Delineation	$43,101	($3,730)	$39,371
Emerio Design, LLC.	DBE	Transportation Design	$107,036	($13,469)	$93,567
NNA Landscape Architecture, LLC.	DBE	Landscape Architecture	$102,483	$12,017	$114,500
Heritage Research Associates, Inc.	DBE	Cultural Resources	$23,949	($9,263)	$14,686
The Bookin Group	WBE	Land Use Application	$19,982	-	$19,982
Stratoscape Corporation	ESB	Aerial Photography	$6,413	-	$6,413
Hagan Hamilton	None	Flood Insurance Expert	-	$40,000	$40,000

The revised amounts to D/M/W/ESB firms on this Contract is estimated at **$357,643** or **24.78%** of the Contract amount. Sub-Contracting totals include expected escalation costs.

5. The Hourly Rates are increased by **7.6%** for Consultant and it's subconsultants based on the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) West Region Class Size A average inflation rate for 2022 (as determined from the U.S. Bureau of Labor Statistics). The revised Hourly Rates are as shown in the table below:

Otak, Inc.		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Sr. PIC/Sr. PM Civil	$288.44	$310.36
PIC/Sr. PM Civil	$245.01	$263.63
Civil Engineer X	$213.82	$230.07
Civil Engineer IX	$194.89	$209.70
Civil Engineer VIII	$175.96	$189.33
Civil Engineer VII	$160.37	$172.56
Civil Engineer VI	$150.34	$161.77
Civil Engineer V	$142.55	$153.38
Civil Engineer IV	$130.30	$140.20
Civil Engineer III	$115.83	$124.63
Civil Engineer II	$101.35	$109.05
Civil Engineer I	$93.55	$100.66
Engineering Designer V	$126.96	$136.61
Engineering Designer IV	$110.25	$118.63
Engineering Designer III	$99.12	$106.65
Engineering Designer II	$93.55	$100.66
Engineering Designer I	$83.53	$89.88
Engineering Tech VII	$154.80	$166.56
Engineering Tech VI	$133.64	$143.80
Engineering Tech V	$121.39	$130.62
Engineering Tech IV	$98.01	$105.46
Engineering Tech III	$87.98	$94.67
Engineering Tech II	$76.84	$82.68
Engineering Tech I	$67.94	$73.10
PIC/Sr. CM	$220.50	$237.26
Construction Manager VI	$200.46	$215.69
Construction Manager V	$183.75	$197.72
Construction Manager IV	$169.28	$182.15
Construction Manager III	$153.69	$165.37
Construction Manager II	$142.55	$153.38
Construction Manager I	$125.84	$135.40
Field Representative VII	$169.28	$182.15

Field Representative VI	$147.00	$158.17
Field Representative V	$135.87	$146.20
Field Representative IV	$111.36	$119.82
Field Representative III	$102.46	$110.25
Field Representative II	$91.32	$98.26
Field Representative I	$84.64	$91.07
CM Documentation Specialist III	$122.50	$131.81
CM Documentation Specialist II	$108.02	$116.23
CM Documentation Specialist I	$94.66	$101.85
Sr. PIC/Sr. PM LA/Mst Pln	$239.43	$257.63
PIC/Sr. PM LA/Master Plan	$220.50	$237.26
Landscape Architect VII	$177.00	$190.45
Landscape Architect VI	$161.48	$173.75
Landscape Architect V	$141.44	$152.19
Landscape Architect IV	$130.30	$140.20
Landscape Architect III	$118.05	$127.02
Landscape Architect II	$109.14	$117.43
Landscape Architect I	$95.77	$103.05
Landscape Technician III	$100.23	$107.85
Landscape Technician II	$89.09	$95.86
Landscape Technician I	$74.61	$80.28
PIC/Sr. PM Planner	$253.91	$273.21
Sr. PM - Planner II	$185.98	$200.11
Sr. PM - Planner I	$171.51	$184.54
Planner IV	$159.00	$171.08
Planner III	$142.55	$153.38
Planner II	$130.30	$140.20
Planner I	$102.46	$110.25
Planner Associate IV	$134.76	$145.00
Planner Associate III	$103.57	$111.44
Planner Associate II	$91.32	$98.26
Planner Associate I	$74.61	$80.28
Sr. GIS Specialist Planner	$110.25	$118.63
GIS Specialist - Planner	$94.66	$101.85
Planning/GIS Intern	$79.07	$85.08
PIC/Scientist	$226.08	$243.26
Scientist VI	$203.80	$219.29
Scientist V	$158.14	$170.16
Scientist IV	$147.00	$158.17
Scientist III	$129.18	$139.00
Scientist II	$99.12	$106.65
Scientist I	$84.64	$91.07
Environmental Specialist	$130.30	$140.20
PIC/PLS Sr. Manager	$237.21	$255.24
Professional Land Surveyor V	$206.00	$221.66

Professional Land Surveyor IV	$167.05	$179.75
Professional Land Surveyor III	$153.69	$165.37
Professional Land Surveyor II	$135.87	$146.20
Professional Land Surveyor I	$129.18	$139.00
Survey Crew Chief III	$125.84	$135.40
Survey Crew Chief II	$101.35	$109.05
Survey Crew Chief I	$94.66	$101.85
Survey Office Technician III	$105.80	$113.84
Survey Office Technician II	$96.88	$104.24
Survey Office Technician I	$87.98	$94.67
Survey Field Technician III	$83.53	$89.88
Survey Field Technician II	$79.07	$85.08
Survey Field Technician I	$70.16	$75.49
Project Coordinator II	$139.00	$149.56
Project Coordinator I	$120.28	$129.42
Project Coordinator	$120.28	$129.42
Contract Administrator	$119.17	$128.23
Graphics Specialist	$119.17	$128.23
Project Admin. Asst	$83.53	$89.88
Campbell Environmental, LLC.		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Principal in Charge	$133.64	$143.80
Professional Wetland Scientist	$111.36	$119.82
Biologist	$83.53	$89.88
Technical Editor	$72.39	$77.89
Emerio Design, LLC.		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Sr. Project Manager	$231.64	$249.24
Project Manager	$213.82	$230.07
Sr. Project Engineer	$169.28	$182.15
Project Engineer	$138.10	$148.60
Jr. Project Engineer	$121.39	$130.62
Designer	$106.91	$115.04
Jr. Designer	$96.88	$104.24
Jr. CADD Technician	$55.68	$59.91
Sr. Prof. Land Surveyor II	$172.62	$185.74
Senior Survey Technician II	$138.10	$148.60
Senior Survey Technician	$114.70	$123.42
Junior Survey Technician	$69.05	$74.30
Two-Person Field Crew	$189.33	$203.72
Project Assistant	$83.53	$89.88
NNA Landscape Architecture, LLC.		

LABOR CATEGORY	CURRENT HOURLY RATES	REVISED HOURLY RATES
Sr. Landscape Architect	$167.05	$179.75
Landscape Architect	$122.50	$131.81
Landscape Designer	$91.32	$98.26
Heritage Research Associates, Inc.		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Cultural Resources PM	$203.80	$219.29
Project Archaeologist	$161.48	$173.75
Archaeological Crew	$94.66	$101.85
Graphics	$94.66	$101.85
Stratoscape Corporation		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Pilot in Charge	$139.21	$149.79
Visual Observer	$55.68	$59.91
Administrator	$55.68	$59.91
The Bookin Group		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Principal Planner	$144.77	$155.77
Cafferata Consulting, LLC.		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Certified Wildlife Biologist	$115	$123.74
Staff Biologist	$95	$102.22
GIS Specialist	$95	$102.22
Hagan Hamilton		
LABOR CATEGORY	**CURRENT HOURLY RATES**	**REVISED HOURLY RATES**
Flood Insurance Expert	-	$150.00

6. The **Exhibit B - Project Budget** is replaced and updated, attached to and incorporated by reference.

All other terms and conditions of the Contract remain unchanged by this Amendment and in full force and effect.

The remainder of this page is intentionally left blank.

This Amendment may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same instrument. The Parties agree that they may execute this Amendment by electronic means, including the use of electronic signatures.

IN WITNESS WHEREOF, the Parties hereby cause this Amendment to be executed.

OTAK, INC.

_____

Authorized Signature Date

_____

Printed Name and Title

Address: _____

_____

Phone: _____

Prepared by Janie Garcilazo

Sent to Otak, Inc. via email

Contract Number: 30007059 **Amendment Number: 3**

Contract Title: SPRINGWATER WETLANDS RESTORATION DESIGN

CITY OF PORTLAND SIGNATURES

By: _____ Date: _____
Chief Procurement Officer

By: _____ Date: _____
Elected Official

Approved:

By: _____ Date: _____
Office of City Auditor

Approved as to Form:

By: _____ Date: _____
Office of City Attorney

EXHIBIT B
PROJECT BUDGET

EXHIBIT B
PROJECT BUDGET

AREA	BUDGET
Project Management and Administration	
Task 1.1 Project Initiation, Tracking, and Reporting	$93,222
Task 1.2 Project Meetings and Coordination	$97,511
Task 1.3 Public Outreach	$20,841
Task 1.4 Flood Insurance Outreach	$40,950
SECTION 1 SUBTOTAL	**$252,524**
Research and Field Investigations	
2.1 Data Inventory and Gap Analysis	$6,056
2.2 Site Topographic and Bathymetric Mapping	$110,717
2.3 Wetland and OHW delineation	$27,937
2.4 Cultural Resource Assessment	$22,277
2.5 Utility Coordination	$8,597
2.6 Prepare Legal ROW Document for Trail	$2,758
SECTION 2 SUBTOTAL	**$178,342**
Alternatives Analysis	
3.1 Hydrology and Hydraulics	$100,388
3.2 Alternatives Analysis	$79,887
SECTION 3 SUBTOTAL	**$180,275**
Permit Management	
4.1 Joint Permit Application (DSL/USACOE)	$66,861
4.2 Environmental Review	$64,110
4.3 Erosion Control (1200-C) Permit	$1,884
4.4 Conditional Letter of Map Revision	$82,801
4.5 FEMA Grant Application Support	$8,282
SECTION 4 SUBTOTAL	**$223,938**
Design	
5.1 30% Design	$69,618
5.2 60% Design	$77,440
5.3 90% Design	$177,293
5.4 Final Design	$85,405
SECTION 5 SUBTOTAL	**$409,756**
Construction	
6.1 Advertise for Bid	$7,567

AREA	BUDGET
6.2 Construction Period	$51,204
6.2 Required Monitoring and Salvage (Optional)	$56,499
6.3 Letter of Map Revision	$42,712
6.4 LOMR As-built Survey (Optional)	$18,357
6.5 Additional Construction Services (Optional)	$11,043
SECTION 6 SUBTOTAL	**$187,382**
AREA	**BUDGET**
Tasks Subtotal	$1,432,217
Standard Reimbursable Costs	$10,759
TOTAL FUNDING	**$1,442,976**

City of Portland, RFP 0001134 - Springwater Wetlands Restoration Design
Fee Estimate
Otak, Inc.
Otak Project # 19178.000
Amendment 3

		Otak											Cafferata				Heritage	NNA Landscape					Hagan Hamilton Insurance Solutions				Campbell	Emerio	OVERALL	
Task	***Description***	PIC/Sr. PM Civil	Civil Engineer X	Civil Engineer VIII	Civil Engineer V	Scientist V	Professional Land Surveyor V	Survey Crew Chief III	Survey Field Technician III	Project Admin. Asst	***Total Hours***	***Total Budget by Task***	Staff Biologist	***Total Hours***	***Total Budget by Task***	***Total Budget by Task with Markup***	***Total Budget by Task with Markup***	Assoc Landsc Architect Goodyke/Hirst	Landscape Designer Heese	***Total Hours***	***Total Budget by Task***	***Total Budget by Task with Markup***	***Flood Consultant***	***Total Hours***	***Total Budget by Task***	***Total Budget by Task with Markup***	***Total Budget by Task***	***Total Budget by Task with Markup***	***Total Hours***	***Total Budget by Task***
1.0	**Project Management and Administration**																													
	1.1 Project Initiation, Tracking, and Reporting (48 months)																													
	Manage and coordinate project team, additional subconsultant	80								12	92	$22,169																	**92**	**$22,169**
	1.3 Public Outreach											($2,000)																		**($2,000)**
	Lead, attend, document additional Project coordination Meetings																													
	1.4 Flood Insurance Outreach																													
	Hagan Hamilton Public Outreach																						260	260	$39,000	**$40,950**			**260**	**$40,950**
2.0	**Research and Field Investigations**																													
	2.3 Wetland and OHW delineation											($945)															($3,917)			**($4,862)**
	2.4 Cultural Resources Assessment																**($855)**													**($855)**
	2.5 Utility Coordination											($4,787)																		**($4,787)**
	2.6 Right-of-Way Engineering (Description and Exhibit)																													
	Prepare legal description and exhibit						10	4			14	$2,758																	**14**	**$2,758**
3.0	**Alternatives Analysis**																													
	3.1 Hydrology and Hydraulics																													
	Post-project model to test updated surface	2	24		42					1	69	$12,581																		**69**	**$12,581**
4.0	**Permit Management**																													
	4.2 Environmental Review																													
	Respond to question and clarifications during City Review		20	52							72	$14,447																		**72**	**$14,447**
	4.5 FEMA Grant Application Support																													
	Respond to questions and clarifications during FEMA Grant Review Period		16								16	$3,681																		**16**	**$3,681**
	Respond to public questions and comments related to floodplain remapping		20								20	$4,601																		**20**	**$4,601**
5.0	**Design**																													
	5.4 Final Design																													
	Final Plans	4	10	28							42	$8,656						30	60	90	$9,850	**$10,342**								**132**	**$18,999**
	Final Specifications	4	10	12						2	28	$5,807						6		6	$791	**$830**								**34**	**$6,637**
6.0	**Construction**																													
	6.1 Advertise for Bid																													
	Escalation for Advertise for Bid (6% for 2023)											$278									$54	**$57**								**$335**
	Prepare one (1) bid addendum		2	4							6	$1,217																		**6**	**$1,217**
	Modify duration of pre-bid meeting to one hour											($570)																	**($1,516)**		**($2,086)**
	6.2 Construction Period																													
	Escalation for Construction Period (4% for 2023 and 2024)											$2,317									$681	**$715**								**$3,032**
	Wildlife Monitoring and Management (16 hours per week, 22 weeks) (Contingency)												352	352	$35,981	**$37,781**														**352**	**$37,781**
	Wildlife Monitoring and Management Support (Contingency)					110					110	$18,718																		**110**	**$18,718**
	Escalation for Letter of Map Revision (4% for 2023 and 2024)											$3,222																			**$3,222**
	6.4 LOMR As-built Survey (Contingency)						32	50	50		132	$18,357																		**132**	**$18,357**
	6.5 Additional Construction Services (Contingency)		48								48	$11,043																		**48**	**$11,043**
	Total Hours	90	102	96	42	110	42	54	50	15	601		352	352				36	60	96			260	260					**1309**	
	Billing Rate	*$263.63*	*$230.07*	*$189.33*	*$153.38*	*$170.16*	*$221.66*	*$135.40*	*$89.88*	*$89.88*			*$102.22*					*$131.81*	*$98.26*				*$150.00*							
	Total Labor Cost	*$23,727*	*$23,467*	*$18,176*	*$6,442*	*$18,718*	*$9,310*	*$7,312*	*$4,494*	*$1,348*		***$121,552***	*$35,981*		$35,981	**$37,781**	**($855)**	*$4,745*	*$5,896*		$11,375	**$11,944**			$39,000	**$40,950**	**($3,917)**	**($1,516)**		**$205,939**
	Direct Expenses											***($500)***			$267	**$280**	**($276)**								$1,000	$1,050		**($564)**		**($10)**
	Subconsultant Mark-up (5%)														$1,812						$569				$2,000					
	Project Total											**$121,052**				**$38,061**	**($1,131)**					**$11,944**				**$42,000**	**($3,917)**	**($2,080)**		**$205,928**

EXHIBIT C
WILDLIFE MONITORING PROTOCOLS

WILDLIFE CAPTURE, HOLDING, TRANSPORT AND RELOCATION PROTOCOLS

Species Group: AMPHIBIANS

BACKGROUND

There are 31 native amphibian species (newts, salamanders, frogs and toads) in Oregon. The American bullfrog, an introduced non-native species, also occurs in parts of the state and is considered invasive. Many of Oregon's native amphibians are listed as State Sensitive Species as either "Sensitive" or "Sensitive-Critical" in all or a portion of their range (ODFW Sensitive Species List 2016). These species are all classified as "Protected Wildlife" (OAR 635-044-0430). It is unlawful to hunt, trap, pursue, kill, take, catch, angle for, or have in possession, either dead or alive, whole or in part, any species classified as Protected Wildlife except as otherwise authorized by ODFW permit.

Oregon's Species of Greatest Conservation Need (SGCN) are identified in the Oregon Conservation Strategy (ODFW 2016), Oregon's State Wildlife Action Plan. SGCN in Oregon are also known as "Strategy Species".

Oregon's amphibians are grouped into the following categories based on their habitat requirements and life histories:

Amphibians Inhabiting Still or Slow-Moving Waterbodies - *Northwestern salamander, Long-toed salamander, Tiger salamander, Rough-skinned newt, Great Basin spadefoot, Western toad, Woodhouse's toad, Pacific treefrog, Northern red-legged frog, Cascades frog, Columbia spotted frog, Oregon spotted frog[1], Northern leopard frog, American bullfrog[2].*

Amphibians Inhabiting Medium to Fast-Flowing Streams - *Coastal giant salamander, Cope's giant salamander Cascade torrent salamander, Columbia torrent salamander, Southern torrent salamander, Coastal tailed frog, Rocky Mountain tailed frog, Foothill yellow-legged frog.*

Terrestrial Salamanders - *Clouded salamander, Black salamander, Oregon slender salamander, California slender salamander, Ensatina, Dunn's salamander, Larch Mountain salamander, Western red-backed salamander, Del Norte salamander, Siskiyou Mountains salamander.*

[1] Oregon spotted frog is listed as Threatened under the federal Endangered Species Act. Contact the U. S. Fish and Wildlife Service prior to conducting any action that may affect Oregon spotted frog.

[2] The American bullfrog is classified as a "Nonnative Controlled Species" (OAR 635-056-0070) due to their known negative impact on Oregon's native fish and wildlife. No person may import, purchase, sell, barter or exchange, or offer to import, purchase, sell barter or exchange live bullfrogs (viable eggs, hatchlings, tadpoles, juveniles and adults). Individual bullfrogs may be collected from the wild and held indoors in an escape proof aquarium as per OAR 635-044-0500. Release into the wild is prohibited unless the person first obtains a permit from ODFW. Bullfrogs may be legally harvested year-round. There is no catch limit and no angling license is required. See ODFW's guidance document on bullfrog capture and euthanasia for more information.

Identification of Suitable Amphibians Habitat

Suitable amphibian habitat includes both aquatic and terrestrial habitats. Most amphibians spend a part of their life on land. Many amphibians forage and overwinter on land, hiding under leaf litter, amongst vegetation, and under downed wood/logs. Except for those salamander species that are fully terrestrial (i.e., lay eggs on land) all amphibian species require water for breeding and egg-laying. Areas where amphibians are most likely to be encountered should be identified and delineated on a project map and/or on the ground. Defer to an ODFW wildlife biologist or other qualified biologist on areas where amphibians may be encountered within the project area, especially breeding sites. Special consideration should be given to special status species (Sensitive Species and Strategy Species) are known or suspected to be present.

Amphibian Identification

A qualified wildlife biologist or other person proficient in amphibian identification (including eggs and larvae) should be present on-site and available during project implementation. Amphibian identification materials (see **Section A**) should be provided to all project staff including equipment operators with the potential to encounter amphibians.

Project Timing

When amphibians are known or suspected to be present, or when suitable amphibian habitat (aquatic or terrestrial) has been identified at or near a project site, ODFW's Amphibian Capture, Holding, Transport and Relocation Protocol (this document) should be incorporated into the project to prevent or minimize negative impacts to amphibians from the project. The Amphibian Capture, Holding, Transport and Relocation Protocol should be in effect during the entire project period and in any season, as amphibians may be encountered at any time of the year in Oregon.

The general annual activity cycle of native amphibians is as follows:

- Early Winter / Early Spring – Beginning in early winter, some species (long-toed salamander, red-legged frog) begin emerging from overwintering sites, gathering at breeding sites, and laying eggs. The first Northwestern salamanders lay their eggs and Pacific treefrogs begin chorusing. Some Cascades frogs and Oregon and Spotted frogs lay their eggs. Amphibians may bask on logs, rocks, banks or floating vegetation, especially on sunny spring days and when water temperatures are cool. Some very early eggs hatch. Some early breeders make over-land movements to foraging habitat and aestivating sites.

- Mid Spring / Late Spring– Fully terrestrial salamanders are active and lay their eggs. Most terrestrial salamander females guard their eggs. Many Northwestern salamanders and the first rough-skinned newts move to breeding pond and lay their eggs. Early eggs hatch. The giant salamanders, which have been active throughout winter in stream, begin breeding in mid-spring. Most tiger salamanders, Pacific treefrogs, and western toads lay

their eggs and eggs hatch. Western toad eggs hatch quickly. Most red-legged frog and Cascades frog eggs and the early Oregon spotted frog eggs hatch. Most spotted frogs breed in mid-spring. Great Basin spadefoot and Woodhouse' toads emerge from overwintering sites and lay their eggs which hatch in a few days. Tadpoles are growing and early salamander larvae metamorphose. Foothill yellow-legged frogs breed as stream flows lessen. Torrent salamanders begin breeding. American bullfrogs become active as water temperatures warm.

- Early Summer / Late Summer - All salamander larvae are active and growing. Aquatic salamander larvae metamorphose. Many rough-skinned newts, treefrogs and American bullfrog are laying their eggs. Most frogs and toads have metamorphosed; froglets and toadlets are commonly encountered as they disperse from breeding areas. Some adult frogs and toads move to permanent streams or moist uplands sites. The last American bullfrogs lay their eggs which hatch in a few days. Tailed frogs tadpoles that are several years old metamorphose.

- Early Fall / Late Fall – Many rough-skinned newts, tiger salamanders and late Northwestern salamanders metamorphose. Cope's giant and coastal giant salamanders probably breed at this time. Late tadpoles of many frog species metamorphose. Many tailed frogs probably mate at this time. All salamanders are active on the surface in response to fall rains. As temperatures drop to near freezing, salamanders overwinter in the ground. Larvae that have not yet metamorphosed overwinter in mud or water of permanent ponds. Many fully terrestrial salamanders mate at this time. Some red-legged frogs, Cascades frogs, long-toed salamanders and spotted frogs move from overwintering sites to breeding ponds.

  ** Note: Timing of emergence, courtship, egg-laying and metamorphosis are influenced by weather conditions (air temperature and precipitation), hydrologic conditions, elevation, and site-specific micro-habitat characteristics.

See **Section B** for additional information for each amphibian species.

Techniques for Locating and Capturing Amphibians

Since amphibians use both aquatic and terrestrial habitats, they may be found on land and in the water. The following methods are most useful in locating and capturing amphibians:

Visual Search / Encounter Survey - Presence of amphibians and their eggs can be verified using visual searches / encounter survey methods (i.e., naked eye). Reasonable efforts should be made to capture all amphibians encountered that are perceived to be in jeopardy of being harmed by the project activities. Amphibians may be observed basking in the sun on logs, rocks or other surfaces; or they sometimes can be seen swimming close to the water's surface. Larvae tend to gather in the warmest available water. Egg masses can be detected when walking the shorelines and shallow sections of suitable breeding habitats. Amphibians, especially adult frogs and toads, are often found on land near eggs or near the edges of aquatic breeding habitats. When a threat is perceived, some amphibians remain still while others quickly move away from the threat, often escaping into nearby water, hiding in vegetation, or burying themselves in the bottom substrate of a pond or other waterbody. Amphibians on land include adult amphibians (males or female) making over-land dispersal movements in search

of suitable breeding habitat, hiding cover or for foraging. Juvenile amphibians also can be found on land and will often move together in groups in search of food and hiding cover.

Surveys for amphibians conducted at various times of day are the most effective method for locating and capturing amphibians. Amphibians are generally most active in the spring and in the fall so these are the best times to encounter them. Searches/surveys should begin about 2-3 weeks prior to construction (depending on the size of the impact area). Visual surveys and capture should occur over a period of about a week, or more, to increase chances of finding all amphibians present in the impact area. The time of day and the weather at the time of the search and on preceding days will influence the surveyor's ability to detect amphibians. Visual searches should not be conducted during heavy wind, high winds or overcast conditions. Surveys generally should not be conducted during periods of cold weather or at night. Visual surveys can be conducted by boat, float tube, or snorkeling.

In some cases, ponds or other waterbodies may need to be partially or completely de-watered (drained) before or during construction. Some amphibians will leave the waterbody as water levels decrease while others, including larval forms, will remain in the water. It may be easier to capture amphibians as they move out of the water and as pool size decreases and animals are congregated. Be aware of changes in water temperature and effects on amphibians, in particular larval stages which are prone to over-heating and low dissolved oxygen conditions. Conduct a Visual Search for amphibians in the substrate of a drained waterbody to find and capture any remaining amphibians.

Thorough ground searches should be conducted to locate amphibians on land. Conduct a walk-through of the areas identified as potential amphibian habitat, looking for amphibians on land. Look below you and around you. Walk slowly. Do not take pets or young children with you as it is important to be quiet and focused on the task at hand. Try to walk in a somewhat fixed direction or pattern along a route parallel to the water's edge or other land feature, covering all suitable habitats. A qualified biologist or other person trained to locate and identify amphibian breeding sites should search for suitable breeding habitat within the project impact area.

All mobile life stages of amphibians should be captured with a dip net that is deep enough (about 12 inches deep) so that captured amphibians cannot climb or jump out. Adult and juvenile life forms may also be hand-captured if necessary. Amphibian eggs / egg masses should be collected gently by hand or by long-handled spoons to avoid disintegration of the eggs/egg masses. See **Amphibian Handling** below for more procedural information.

Auditory Survey - Breeding males of some frog and toads species can be identified and located by their calls. However, most breeding frogs and toads in Oregon do not have audible vocalizations. Breeding males tend to be most vocal at night; therefore auditory surveys should be conducted during his timeframe. Auditory surveys should be used to complement other types of amphibian survey methods.

Night Survey - Salamanders, frogs and toads tend to be more active at night. Night-time surveys for these species can be conducted with the aid of a flashlight and are usually done in conjunction with other survey methods.

Drift Fence and Pit Fall Trap - Sites where high densities of amphibians are known to occur or are predicted based on habitat suitability, or sites with poor survey conditions should be encircled by drift fences to the extent feasible. Contact ODFW for more information on this procedure. The most common type of drift fence is a 3-foot high fabric fence with pre-attached stakes, the type commonly used at construction sites to prevent siltation into nearby waterbodies. The fence should be stretched between the impact and no-impact zones with the bottom 2-3 inches of the fence lying flat on the ground and inward toward the project construction area. This flap should then be covered by a layer of soil to prevent amphibians from squeezing underneath. Generally, use of pitfall traps should be restricted to research studies because they can result in high mortality of both target species and non-target species if not properly used. Pitfall traps can be set on the inside of the drift fence and/or at the open ends of the fence if the fence is not able to completely enclose the work area. Contact ODFW for more information on use of pitfall traps.

Aquatic Funnel Trap - Generally, use of aquatic funnel traps should be restricted to research studies because they can result in high mortality of both target species and non-target species if not properly used. Small aquatic funnel traps (e.g., minnow traps, "pop-bottle" traps) can be baited (note: bait is not necessary for some species) and deployed in areas with standing water to capture amphibians. Larvae tend to be more likely to enter funnel traps compared to adult amphibian life forms, with a few exceptions (e.g., rough-skinned newt). Funnel traps can be used in conjunction with drift fences set in the waterbody to help direct amphibians to the trap entrance. Use of aquatic funnel traps (and any other trap type) should be coordinated closely with ODFW to minimize potential harm to both targeted and non-targeted species. Contact ODFW for more information on use of aquatic funnel traps.

Electroshocking (Electrofishing) - Electroshocking is an effective technique to survey for fish and is sometimes used during fish salvage/rescue operations. It can also be used to detect and capture amphibians, both stream-dwelling and still-water species. Amphibians not buried in the substrate will be stunned and can then be scooped up with a dip net.

Altering Water Levels & Searching Excavated Material - If working in an aquatic system where water levels can be manipulated, lowering of the water (pool area) can help facilitate capture of amphibians. For projects involving excavation and removal of material from the bottom of an existing pond or other waterbodies, a search for amphibians buried (hiding) in excavated material should be made during the excavation process and any amphibian found gently removed from excavated debris excavated materials should be carefully deposited in an un-impacted area near the project and spread thin to facilitate location and capture of amphibians.

Amphibian Eggs and Larvae

During aquatic searches for amphibians, egg masses and larvae (e.g., tadpoles) may be found or observed. During ground searches or earth-moving activities terrestrial salamander eggs (usually with a guarding female nearby) may be encountered. If possible, amphibian eggs/egg masses should be allowed to hatch and larvae should be allowed to metamorphose to juvenile life form. Eggs/egg masses located during the visual survey should be marked and avoided. Brightly colored flagging is an ideal method of marking amphibian eggs/egg masses. If amphibian eggs/egg masses and/or larvae (native species only) are encountered and cannot be avoided and are determined to be at risk from the project, they should be collected and the project manager should contact ODFW immediately for instruction. ODFW will likely

instruct the project manager to relocate the eggs and/or larvae to the nearest known area of suitable breeding habitat outside the project area.

It is acceptable to interrupt any non-native amphibian (e.g., American bullfrog) found breeding or laying eggs. Non-native amphibians should be captured if possible and egg masses collected. See ODFW's guidance document for more information on bullfrogs including options for captured bullfrogs.

Amphibian Handling

Amphibians on land should generally be approached slowly, although swiftness is also necessary to capture many species of amphibians, especially frogs, whether it is by dip net or hand capture method. If capturing by hand and if time allows, put on a clean, unused pair of disposable powderless vinyl exam gloves and gently grab the amphibian around the body or scoop up with cupped hands. If not swabbing for potential disease, un-gloved hands are acceptable if they are clean and free from any obvious chemicals or other potentially harmful substance such as sun screen, insect repellent, or hand lotion. Hands should be sterilized with 70% alcohol hand sanitizer. Allow several minutes for the sanitizing solution to dry on hands. When arriving at a survey/capture site, thoroughly and vigorously scrub hands with water from the site before handling amphibians. Amphibians have fragile and absorptive skin that needs to stay clean and moist.

Egg Masses - Handling of eggs/egg masses should be done by hand or using a long-handled solid spoon to minimize disintegration caused by netting. Most egg masses will be attached to some type of vegetation, for example, emergent aquatic vegetation or the slender stem of an over-hanging riparian shrub. To collect attached egg masses, use scissors or small pruning shears to clip the vegetation below the egg mass (and above if necessary) to free it, allowing it to be collected by hand. Some eggs are laid singularly on or attached to leaf litter in still water or in strings under and attached to rocks in flowing water. When collecting eggs/egg masses by hand, hands should be free from obvious chemicals or other potentially harmful substances.

Amphibian Holding & Transport

Captured amphibians are to be placed carefully in a clean, escape-proof plastic container suitable for the size and number of amphibians collected. Recommended container dimensions are 16" deep x 16" wide x 24" long. A medium sized cooler can serve as a holding/transport container. A 5-gallon bucket is another option. A deep container is the best way to prevent escape, and with frogs and toads a container with a tight fitting lid is necessary to prevent escape. Air holes can be made in the lid, although this is not deemed necessary for temporary holding as there is plenty of air in the container itself. Multiple amphibians may be placed in a single container, but different species should be housed in separate containers. House small amphibians separate from large amphibians to prevent predation / cannibalism. For aquatic amphibians, a small amount of water (about ½ to 1-inch, depending on the species and the size of the amphibian(s) should be put in the container to provide moisture and prevent dehydration, but not result in drowning. Water should be from the aquatic waterbody from which the amphibian originated. Terrestrial salamanders and eggs (usually found with guarding female nearby) should be housed in a container filled with a portion of substrate (soil, leaf litter) in which the salamander / nest was found.

Egg masses and aquatic larvae should be housed in a container similar to that used to hold aquatic amphibian adults and juveniles. Ample water from the point of origin should be provided. Ideally salamander larvae would be housed separate from frog tadpoles to prevent

predation. Hiding material can be added to the container to mitigate higher risk of predation in a small, confined space. Amphibians should be held in containers separate from reptiles and fish, also to prevent predation.

Protect from overheating which can occur in minutes in a closed bucket in the sun. During holding and transport, amphibians and amphibian eggs should be kept at ambient air temperature and out of the direct sunlight. Amphibians and their eggs should not be handled, moved, or transported more than necessary. Ideally amphibians and their eggs would be held in holding/transportation containers for no more than 30 minutes to minimize stress and overheating. Warmer ambient temperatures may indicate the need for a shorter holding period and additional measures to prevent mortality (e.g., use of chiller and aeration system).

Final Disposition of Captured Amphibians and Collected Egg Masses

Final disposition (e.g., relocation/release) of captured amphibians and collected eggs is informed by whether the amphibian is a native or non-native species.

Release of Native Amphibians - All native amphibians and their eggs/egg masses are to be released at the location(s) designated by ODFW in the Wildlife Capture, Holding, Transport and Relocation (CHTR) Permit unless otherwise directed by ODFW. For amphibians and egg masses to be released into aquatic habitat, water temperatures at the release location ideally should be no more than 9 to 10° F different from the water temperature at point of capture. Upon release, amphibians should be observed for a couple of minutes to confirm recovery from capture, holding and transport.

Collected egg masses should be gently placed in suitable aquatic habitat at the release site designated by ODFW. Suitable habitat is characterized by standing or very slow-moving shallow water (approximately 6 inches to 18 inches deep), a partially sunny exposure, and cool water. Egg masses should be placed in the water in an area where it can receive some solar radiation to aid in metamorphosis; this often in along the northern or eastern edge of an aquatic area.

Any native amphibian and amphibian eggs/egg masses captured/collected may be temporarily held for the purpose of gathering biological data (e.g., species, life stage, gender, weight, length, number, etc.), but is to be immediately transported and released thereafter, unharmed and at the location designated by ODFW in the Wildlife CHTR Permit. Collection of biological data is not required unless conditioned by the Permit. Final disposition is determined by ODFW and according to Permit conditions.

Non-Native Amphibians - All non-native amphibians (e.g., American bullfrog) and their eggs collected are to be placed in an escape-proof container and transferred to ODFW within 24 hours of collection unless otherwise authorized in the Wildlife CHTR Permit. Options for bullfrogs are described in a separate ODFW guidance document.

Required Reporting

All amphibians captured, eggs collected, and incidental mortalities (if any) are to be recorded on a form provided by ODFW. Information to be recorded includes: capture date and time, species captured, life stage (i.e., adult, juvenile, larvae, egg/egg mass), capture location, release site location, and any mortalities. Biological data on amphibians captured is considered optional unless conditioned by the Wildlife CHTR Permit. Relevant field

observations can be included on the required report. Digital photographs can be submitted with the report. The report is to be submitted to ODFW within 30 days of the permit expiration date.

Procedures to Avoid Transmission of Diseases and Parasites

Transmission of disease and parasites are real threats facing Oregon's native amphibians and amphibians around the world. To minimize the risk and transmission of disease and parasites implementation of the following measures is recommended:

At all times, handle an amphibian (native or non-native) as if it has a contagious disease or hosts parasites. Native amphibians and non-native amphibians should not be placed in the same container. During handling, hands should be clean and /or wear a new pair of disposable powderless vinyl gloves between sites that are not "water-connected" or that amphibians likely do not freely move between. If a glove is torn while handling an amphibian put on a new glove over the old one. Place used gloves and disposable supplies (e.g., surveyors tape or flagging, etc.) in a plastic trash bag and dispose of offsite. All tools that contact amphibians should be disinfected prior to and after used in accordance with procedures described below.

Disinfection of Capture and Holding Equipment and Containers - All tools and equipment (e.g., dip net) coming into contact with amphibians and their eggs/egg masses from different waterbodies (i.e., not hydrologically connected) should be disinfected. Recommended disinfecting solution is 0.175-percent sodium hypochlorite (bleach). 0.175-percent sodium hypochlorite bleach is a 1:10 dilution of 5 percent household bleach to water. Before disinfecting, first remove any organic debris (e.g., dirt, feces, etc.) by rinsing the area with water or brushing off the area with paper towels or a scrub brush. Saturate the equipment and work surface with the solution and allow to air dry. When measuring amphibians, use only metal or plastic rulers; never use a wooden ruler, which is too porous and cannot be properly disinfected. See the U.S. Geological Survey's *Hygiene Protocol for Control of Disease Transmission Between Amphibian Study Sites* (2016).

Clothing Disinfection Procedures - Do not allow an amphibian or their eggs/egg masses to contact clothing. If it does, change clothes before handling another amphibian or egg/ egg mass. Contaminated clothes should be washed before worn again while handling amphibians. Keep a change of clothes on-hand and change clothes, including shoes, before leaving the site. As an alternative, wear disposable jumpsuits or gowns and disposable paper or plastic shoe covers.

Vehicles & Heavy Equipment - If vehicles or equipment use will occur in more than one area of suitable amphibian habitat ensure that all equipment is clean and dry or disinfected before it moves to another location. Known presence/absence of disease in an area should be used to inform and modify as deemed necessary procedures to prevent/minimize risk of disease transmission.

SECTION A. SPECIES IDENTIFICATION TOOLS

Corkran, C. and C. Thom. 2006. Amphibians of Oregon, Washington and British Columbia. Lone Pine Publishing. 176 pp.

ODFW. Frogs are Cool! Facts for Kids.
http://www.dfw.state.or.us/species/docs/FrogsFlyer.pdf

ODFW. Oregon Wildlife Species – Salamanders and Newts
https://myodfw.com/wildlife-viewing/species/salamanders-and-newts

ODFW. Oregon Wildlife Species – Frogs and Toads
https://myodfw.com/wildlife-viewing/species/frogs-and-toads

SECTION B. ADDITIONAL SPECIES INFORMATION

SPECIES	OVIPOSITION SITES & AQUATIC HABITATS	TERRESTRIAL HABITATS & SPECIES HABITS
Northwestern Salamander	Wetlands, ponds, lakes, and slow-moving parts of streams.	Forests, riparian. Subterranean when not breeding. Nocturnal.
Long-toed Salamander	Seasonal and permanent wetlands, ponds, ditches and slow-moving parts of streams.	Grasslands, shrub-steppe, forest. Subterranean when not breeding. Nocturnal.
Tiger Salamander	Lakes, ponds and ditches.	Shrub-steppe, grasslands forest. Subterranean when not breeding. Nocturnal.
Cope's Giant Salamander	Streams with rock or gravel substrate.	Moist riparian forests. Occasionally found in ponds, high elevation lakes, deep water. Nocturnal.
Coastal Giant Salamander	Streams with rock or gravel substrate.	Moist riparian forests. Occasionally found in ponds, high elevation lakes, deep water. Nocturnal.
Rough-skinned Newt	Ponds, lakes, wetlands and slow-moving parts of streams.	Primarily forests, also grasslands.
Columbia Torrent Salamander	Cold, fast-flowing, clear, headwater streams, seeps, and waterfall splash zones in forested areas.	Moist forests and talus slopes near streams.
Southern Torrent Salamander	Cold, fast-flowing, clear, headwater streams, seeps, and waterfall splash zones in forested areas.	Moist forests and talus slopes near streams.
Cascade Torrent Salamander	Cold, fast-flowing, clear, headwater streams, seeps, and waterfall splash zones in forested areas.	Moist forests and talus slopes near streams.
Coastal Tailed Frog	Fast, cold streams with cobble or gravel substrate.	Forests. Occasionally found in high elevation ponds and lakes. Nocturnal.
Rocky Mountain Tailed Frog	Fast, cold streams with cobble or gravel substrate.	Forests. Occasionally found in high elevation ponds and lakes. Nocturnal.
Great Basin Spadefoot Toad	Seasonal and permanent ponds, wetlands, ditches and slow-moving parts of streams.	Shrub-steppe and grasslands. Nocturnal.
Western Toad	Wetlands, lakes, springs, ponds, stock ponds, and slow-moving parts of streams.	Forests, grasslands and along streams.
Woodhouse's Toad	Permanent and seasonal waters, lakes, ponds, and slow-moving parts of streams.	Shrub-steppe and grasslands. Adults nocturnal and crepuscular; juveniles are diurnal.
Pacific Treefrog	Permanent and seasonal wetlands, ponds, ditches, slow-moving parts of streams, and backyard water features.	Forests, woodlands, grasslands, shrub-steppe, and some residential and agricultural areas.
Northern Red-legged Frog	Permanent and seasonal wetlands, ponds, lakes, slow-moving parts of streams, and some backyard water features.	Forests, riparian areas, and along streams. Have been found up to 2 miles from water.
Foothill Yellow-legged Frog	Streams and rivers.	Forests and woodlands; usually near water.

SPECIES	OVIPOSITION SITES & AQUATIC HABITATS	TERRESTRIAL HABITATS & SPECIES HABITS
Cascades Frog	Permanent and seasonal ponds, lakes, potholes, wet meadows, bogs, and fens. Above 2,400 feet elevation.	Streams; usually near water.
Columbia Spotted Frog	Permanent and seasonal wetlands, lakes, ponds, stream overflow pools, sloughs, and beaver ponds.	Streams; usually near water.
Oregon Spotted Frog	Permanent and seasonal emergent wetlands and springs associated with lakes, and/or streams.	Streams; usually near water.
Northern Leopard Frog	Permanent and seasonal ponds, lakes, stream overflow pools, sloughs.	Streams, riparian areas, meadows.
American Bullfrog (introduced)	Permanent waters, ponds, lakes, wetlands, and slow-moving parts of streams.	Usually near water.
Clouded Salamander	Forests with decaying logs, rock crevices.	Fully terrestrial. Female guard eggs.
Black Salamander	Forests, woodlands, moist talus, and streamside areas with decaying downed logs, rock crevices.	Fully terrestrial. Female guards eggs.
Ensatina	Moist forests, woodlands, and some residential agricultural areas with decaying logs, piles of firewood, or scrap man-made materials.	Fully terrestrial. Female guards eggs.
Oregon Slender Salamander	Forests (usually mature) with decaying logs; moist talus and lava fields.	Fully terrestrial. Female guards eggs.
California Slender Salamander	Humid coastal forests with decaying logs, rocks.	Fully terrestrial.
Dunn's Salamander	Rocky edges of forested streams, moist to wet talus, rocky seeps.	Fully terrestrial. Female guards eggs.
Larch Mountain Salamander	Talus slopes in or near mature forest with decaying logs; rocky areas.	Fully terrestrial. Little known about nesting.
Western Red-backed Salamander	Forests, woodlands, moist talus; springs near streams.	Fully terrestrial. Female guards eggs.
Del Norte Salamander	Forests, woodlands, and moist talus with decaying logs, rocks.	Fully terrestrial. Female guards eggs.
Siskiyou Mountains Salamander	Deep talus and rock outcrops in or near forests; decaying logs near talus.	Fully terrestrial. Little known about nesting.

Sources:

Olson, D.H., W.P. Leonard, R. B. Bury. 1997. Sampling Amphibians in Lentic Habitats: Methods and Approaches for the Pacific Northwest. Northwest Fauna 4, Society for Northwestern Vertebrate Biology, Olympia, WA.

Corkran, C. and C. Thom. 2006. Amphibians of Oregon, Washington and British Columbia. Lone Pine Publishing. 176 pp.

WILDLIFE CAPTURE, HOLDING, TRANSPORT AND RELOCATION PROTOCOLS

Species Group: TURTLES

BACKGROUND

Oregon has two species of native turtles, the western pond turtle and the western painted turtle. Both turtle species are listed as State Sensitive Species as "Sensitive-Critical" and are classified as "Protected Wildlife" (OAR 635-044-0430). It is unlawful to hunt, trap, pursue, kill, take, catch, angle for, or have in possession, either dead or alive, whole or in part, any species classified as Protected Wildlife except as otherwise authorized by ODFW permit.

Two non-native turtle species are known to occur and reproduce successfully in the wild in Oregon – the red-eared slider turtle and the common snapping turtle. Both are considered invasive species and have been categorized as "Nonnative Prohibited Wildlife" (OAR 635-056-0050) as they have negative impacts on our native fish and wildlife and habitats. It is unlawful to be in possession of or release into the wild any live Nonnative Prohibited Wildlife species except as authorized by ODFW permit.

Oregon's Native Turtle BMPs

To facilitate better protection and conservation of Oregon's native turtles and their habitats, ODFW and its native turtle conservation partners developed a comprehensive document entitled "*Guidance for Conserving Oregon's Native Turtles including Best Management Practices*" (ODFW 2015). It includes and expounds upon some of the information provided below, for example identification of suitable turtle habitat. The document is available at: https://www.dfw.state.or.us/wildlife/living_with/docs/ODFW_Turtle_BMPs_March_2015.pdf

Identification of Suitable Turtle Habitat

Suitable turtle habitat includes both aquatic and terrestrial habitats. Defer to an ODFW wildlife biologist or other qualified biologist on areas where turtles may be encountered within the project area, including nesting sites. Areas where turtles are most likely to be encountered should be identified and delineated on a project map and / or on the ground.

Turtle Identification

A qualified wildlife biologist or other person proficient in turtle identification (native and non-native) and identification of turtle nests and eggs should be present on-site and available during project implementation. Turtle identification materials (see **Section A** below) should be provided to all project staff with the potential to encounter turtles.

Project Timing

When turtles (native or non-native) are known or suspected to be present or when suitable turtle habitat (aquatic or terrestrial) has been identified at or near a project site, ODFW's Turtle Capture, Holding, Transport and Relocation (CHTR) Protocol (this document) should be incorporated into the project to prevent or minimize negative impacts to turtles from the

project. The Turtle CHTR Protocol should be in effect during the entire project period and in any season, as turtles may be encountered at any time of the year in Oregon.

The general annual activity cycle of western pond and western painted turtles is as follows:

- Spring - In the early spring (typically March), turtles emerge from hibernation sites and move to wetlands to forage for food. Turtles begin basking on logs, rocks, banks or floating vegetation, especially on sunny spring days and when water temperatures are cool. Courtship and mating activities occur from March into June.

- Summer - Throughout June and July, most sexually mature female turtles leave the water to nest. Nesting occurs in dry upland areas having sparse vegetation and that receive plenty of sun. Most nesting activity occurs between dusk and dawn hours when light levels are low. Females excavate the nest chamber with their hind legs and eggs are deposited into the cavity. When egg-laying is complete, the female turtle covers the eggs with dirt and conceals the nest from potential predators. The female turtle then vacates the nesting habitat and in most cases returns to the water. The eggs are incubated by the summer sun. During mid to late summer (after nesting), turtles may have a period of reduced foraging and basking activity or dormancy called aestivation that occurs in wetlands and forests, and other upland habitats near the wetland habitat utilized earlier that year. During periods of very warm summer weather, turtles do not spend much time basking.

- Fall - Eggs hatch in September and October (in about 75 days) in warm sunny weather, or as much as 125 days in cooler weather or shadier conditions. If the eggs don't get enough warmth they may not hatch at all. The fully formed hatchling turtles survive on the yolk sac which they slowly absorb as they grow. Some hatchlings emerge from their nests in the fall, although most overwinter in their natal nests and emerge in the spring. After emergence, hatchlings typically make short movements near the nest just below the surface of the ground for nearly a year. Some move to aquatic habitats and seek cover. Courtship and mating can occur in the fall. Turtles move to hibernation habitats in mid-fall.

- Winter - Turtles are generally inactive during the winter months as they hibernate. Western painted turtles prefer to overwinter at the bottom of muddy ponds and off-channel sloughs. Most western pond turtles overwinter on land under the top layer of soil and leaf litter or under other thick ground vegetation.

See **Section B** below for additional pertinent information for each turtle species.

Methods for Locating and Capturing Turtles

Since turtles use both aquatic and terrestrial habitats, they may be found on land and in the water. Presence of turtles in water can be verified using visual survey methods (i.e., naked eye, binoculars, spotting scope). Turtles may be observed basking in the sun on logs, rocks or other surfaces; or they sometimes can be seen swimming close to the water's surface. When a threat is perceived, basking turtles often slip quietly into the water.

Turtles on land include adult turtles (males or female) making over-land dispersal movements, gravid females in search of suitable nesting habitat, and hatchling turtles that have left the nest

chamber and are moving to aquatic rearing habitat. Hatchling turtles may spend up to a year at or near the nest site, and may be encountered on the surface of the ground or near the surface under leaf litter and other vegetation. Hatchling turtles are very difficult to find, even to the trained eye.

For projects involving excavation and removal of material from the bottom of an existing pond, a search for turtles buried (hiding) in excavated material should be made during the excavation process and any turtles found removed from excavated debris.

Ground Search Methods - Thorough ground searches should be conducted to locate turtles on land. Conduct a walk-through of the areas identified as potential turtle habitat, looking for turtles on land. Peer ahead to areas of suitable habitat with both naked eye and binoculars. Look below you and around you. Walk slowly. Do not take pets or young children with you as it is important to be quiet and focused on the task at hand. Try to walk in a somewhat fixed direction or pattern along a route parallel to the water's edge or other land feature, covering all suitable habitats. A qualified biologist or other person trained to locate and identify turtle nests should search for turtle nests in areas of suitable habitats within the project impact area. Reasonable efforts should be made to capture all turtles encountered that are perceived to be in jeopardy of being harmed by project activities. Turtles can be caught by hand while they are on the land. A net or other tool may be used to capture turtles on land if hand capture is undesirable.

Live Trapping – While turtles in water can sometimes be captured by hand or with a dip net, live-trapping is the preferred and most common method of capturing turtles in lentic aquatic habitats. Live traps designed to catch turtles (e.g., hoop net, funnel trap) are deployed, baited, and checked regularly. Basking traps may also be used and do not require baiting. If working in an aquatic system where water levels can be manipulated, lowering of the water (pool area) can help facilitate capture of turtles. Live trapping is to be coordinated closely with ODFW to determine best trap type(s), trap placement, and protocols for trap set/check, turtle processing (e.g., data collection, marking, photographing) and capture of non-target animals.

Turtle Nests and Hatchlings

During ground searches, female turtles in the act of nesting or laying eggs may be encountered or completed turtle nests may be found. If possible, native turtle species found nesting should be allowed to complete the nesting process undisturbed. The nest should then be marked and avoided. Brightly colored flagging is an ideal method of marking turtle nests, although a pile of rocks or upright stick can suffice. If nesting turtles (native species only) or completed nests cannot be avoided and are deemed at risk by the project, the project manager should contact ODFW for instruction.

Turtle nests and hatchlings are very cryptic and are often difficult to see, making them even more vulnerable to disturbance. Ground-disturbing activities may uncover and reveal turtle nests with eggs or hatchlings. If turtle eggs or hatchlings are encountered and are determined to be in harm's way, they should be collected and the project manager should contact ODFW immediately for instruction. ODFW may instruct the project manager to transfer the eggs or hatchlings to an ODFW-licensed wildlife rehabilitation facility specializing in turtle care. Alternatively, a new nest chamber may be dug in a safe area and eggs placed inside (by ODFW staff or other trained person), or hatchlings may be relocated to suitable habitat nearby.

It is acceptable to interrupt any non-native turtles found nesting. The non-native turtle should be captured, placed in an escape-proof container, and the nest excavated to collect all eggs. All non-native turtle hatchlings should also be captured and contained. All turtles and eggs are to be transferred to ODFW.

Turtle Handling

Turtles on land should generally be approached slowly at first and then quickly as they are quite fast on land contrary to popular belief. If time allows, put on a clean, unused pair of powderless nitrile, latex or vinyl gloves and grasp the turtle at its bridge (connection between the carapace [top shell] and plastron [bottom shell]) with both hands, holding it firmly with its plastron parallel to, and facing the ground.

** Important Safety Notes:

1. All turtles have powerful jaws and sharp beak-like mouths that can inflict a painful bite in self defense. Extreme caution should be used when handling a snapping turtle as they have very long necks that can extend to both sides and above. When handling a snapping turtle, place your hands toward the rear of the turtle near the hind legs and out of reach from the turtle's head.

2. Any turtle has the potential to carry and shed the *Salmonella* bacteria. For safety, is it recommended you treat all turtles as if they are carriers of *Salmonella*. Always wash your hands thoroughly with soap and water after touching or handling a turtle. Disinfect anything that has come in contact with the turtle.

Turtle Holding & Transport

Captured turtles are to be placed carefully in a clean, escape-proof plastic container. Recommended minimum container dimensions are 16" deep x 16" wide x 24" long. A deep container and a container with a locking lid are the best ways to prevent escape. Air holes can be made in the lid, although this is not deemed necessary for temporary holding as there is plenty of air in the container itself. Multiple turtles (2 or more, depending on size of turtles and container) may be placed in a single container since they are social creatures. A 5-gallon bucket may be adequate.

When temporarily holding multiple turtles in a single container, turtles should be approximately the same size; turtles of the same size generally will get along. If a turtle is particularly aggressive toward another turtle (e.g., biting), separate aggressor from other turtles. Do not offer or put any food in the container. It is normal behavior for turtles to crawl on top of each other. A turtle may flip over, but usually it can right itself without assistance. If you notice that a turtle is unable to right itself, assist. Turtles should be kept at ambient air temperature and out of the direct sunlight. Protect from overheating as turtles are much more able to withstand cool temperature than warm temperatures. A small amount of water (about ½ to 1-inch, or enough to reach the turtle's bottom shell) can be put in the container. Use water from the waterbody from which the turtle originated; regular tap water is also acceptable. Very small turtles should be kept moist at all times as they are susceptible to dehydration / desiccation. Put hatchlings in a container with moist organic matter or a small amount of water. Turtle eggs should be put in a container (e.g., a 5-gallon bucket) and covered with a few inches of original nesting substrate to keep them moist. Turtles and eggs should not be handled more than necessary.

Final Disposition of Captured Turtles and Collected Eggs

Final disposition of captured turtles and collected eggs is informed by whether the turtle is a native or non-native species.

Native Turtles - Any western pond turtle or western painted turtle captured may be temporarily held for the purpose of marking and/or collection of biological data, but is to be released immediately thereafter, unharmed and at the location(s) designated by ODFW in the Wildlife CHTR Permit. Biological data (e.g., sex, length, weight, general health) on each turtle captured is to be recorded on a standardized turtle data form provided by ODFW. ODFW will provide instruction on data collection techniques, and photographing and marking (notching) each turtle. Unique notch numbers and instructions will be provided. Disposition of any native turtle nest, egg(s) or hatchling found is to be determined by ODFW and according to conditions outlined in the Wildlife CHTR Permit.

Non-Native Turtles - All captured non-native turtles (e.g., red-eared slider, snapping turtle) are to be placed in an escape-proof container. Non-native turtle eggs found are to be collected and placed in a zip-lock bag or other suitable container. All non-native turtles and eggs are to be transferred to ODFW within 24 hours of collection unless otherwise authorized in the Wildlife CHTR Permit.

Required Reporting

All turtles captured, eggs collected, and incidental mortalities (if any) are to be recorded on the Wildlife CHTR Permit annual report form provided by ODFW. Information to be recorded includes: capture date and time, species captured, life stage (i.e., adult, sub-adult, juvenile, hatchling, egg), capture location, and release site location or transfer. Biological data collected on individual turtles captured is to be recorded on the turtle data form provided by ODFW. Turtle data forms are to be submitted with the annual report form. Digital photographs of each native turtle captured are to be submitted. Photographs are to be high resolution, at least 1 MB. Reports and photos are to be submitted to ODFW within 30 days of the permit expiration date.

Other Considerations

Additional considerations applicable to the Wildlife CHTR Permit are as follows:

Procedures to Avoid Transmission of Diseases and Parasites - At all times, handle a turtle (native or non-native) as if it has a contagious disease or parasites. Place native turtles and non-native turtles in separate containers. During handling, wear a new pair of disposable nitrile, vinyl or latex gloves per non-connected waterbody. If a glove is torn while handling a turtle, which is likely when its toenail scrapes the glove, put on a new glove over the old one. Used gloves and disposable supplies (e.g., surveyors tape or flagging, etc.) ought to be placed in a plastic trash bag and disposed of off-site. All tools that contact turtles should be disinfected in accordance with procedures described below. Use of bare hands is also acceptable if hands are clean, sanitized with 70% alcohol sanitizing solution, and washed between different sites.

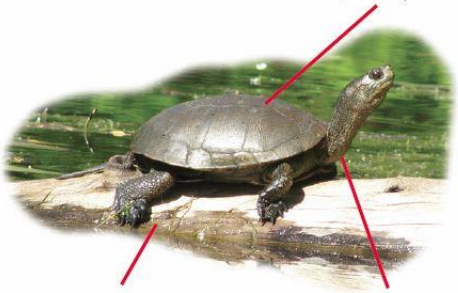
- **Clothing Disinfection Procedures** - Do not allow a turtle to contact clothing. If it does, ideally change clothes before handling another turtle. Contaminated clothes should be washed before worn again while handling turtles. Keep a change of clothes on-hand and change clothes, including shoes, before leaving the site. As an alternative, wear disposable jumpsuits or gowns and disposable paper or plastic shoe covers.

- **Disinfecting Tools and Equipment** - All equipment and work surfaces after contact with each turtle, any equipment (e.g., ruler) that comes in contact with a turtle should be disinfected. Recommended disinfecting solution is 0.175-percent sodium hypochlorite (bleach). A 0.175-percent sodium hypochlorite bleach is a 1:10 dilution of 5 percent household bleach to water. Before disinfecting, first remove any organic debris (e.g., dirt, feces, etc.) by rinsing the area with water or brushing off the area with paper towels or a scrub brush. Saturate the equipment and work surface with the solution and allow to air dry. When measuring turtles, use only metal or plastic rulers; never use a wooden ruler, which is too porous and cannot be properly disinfected.

SECTION A. SPECIES IDENTIFICATION TOOLS

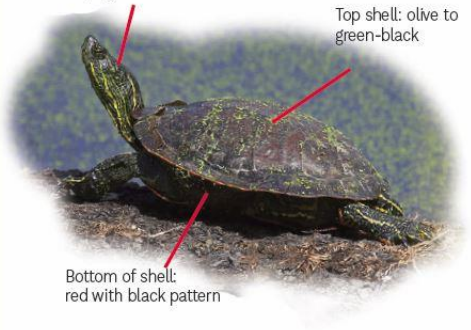
Oregon Native Turtles

Western Pond



- Found in ponds, lakes, rivers
- Digs nests in sunny dry soil, sparse vegetation
- Rests and over-winters in upland forest

Western Painted



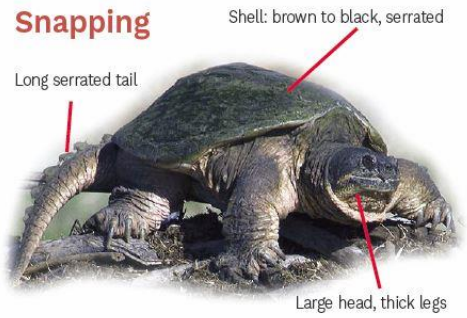
- Prefers slow moving water, ponds, sloughs
- Digs nests in sunny dry soil, sparse vegetation
- Over-winters in mud in pond bottoms

It is illegal to remove these species from the wild, possess, transport or sell them.

the OREGON CONSERVATION STRATEGY

Oregon Non-Native Turtles

Snapping



- Native to eastern U.S.
- Can grow to 20 in. length
- Eats a variety of native fish and wildlife

Red-eared slider

- Native to eastern U.S.
- Competes with native turtles for food, basking and nest sites

It is illegal in Oregon to buy, sell, possess or release these invasive, non-native species.

Please report turtle sightings:
www.oregonturtles.com
Oregon Department of Fish and Wildlife

SECTION B. ADDITIONAL SPECIES INFORMATION

Native Species: WESTERN POND TURTLE (*Actinemys marmorata*)

Management Status: U. S. Fish and Wildlife Service - Species of Concern. U. S. Forest Service, Region 6 (OR & WA) – Sensitive Species. U. S. Bureau of Land Management (OR & WA) - Sensitive Species. Oregon – State Sensitive-Critical Species, Species of Greatest Conservation Need in ODFW's State Wildlife Action Plan. Washington – State Endangered Species; Species of Greatest Conservation Need in WDFW's State Wildlife Action Plan. California: Species of Special Concern, Species of Greatest Conservation Need in CDFW's State Wildlife Action Plan. Natural Heritage Global Rank: G3G4 (not immediately imperiled); State Rank: CA S3 (rare, uncommon or threatened), OR S2 (imperiled), and WA S1 (critically imperiled).

Range: The western pond turtle's range extends from northwestern Baja California, Mexico, north to Puget Sound in Washington. It is restricted to areas west of the Sierra Nevada and Cascade Mountains with a few exceptions. In Oregon, the western pond turtle occupies regions primarily west of the Cascades with suitable habitat, at elevations below approximately 1800 m or 6,000 feet (Nussbaum et al. 1983, ORNHIC database 2008). The largest populations in Oregon are found in the Willamette, Umpqua, Rogue, and Klamath River drainages.

Specific Habitat: The western pond turtle requires both aquatic and terrestrial habitats. It uses permanent and seasonal aquatic habitats including rivers, sloughs, lakes, reservoirs, ponds, and irrigation canals. The species moves onto land for nesting, overwintering, dispersal, and basking. Overwinter sites typically include terrestrial refugia, burial in the substrate of aquatic habitats, or in undercut banks along streams. Nesting typically occurs within 200 m of aquatic habitat in areas with compact soil, sparse vegetation, and good solar exposure.

Threats: Major factors cited as limiting western pond turtle populations include loss of aquatic habitats, elevated nest and hatchling predation, reduced availability of nest habitat, and road mortality. Predation of nests may be above historical levels in human-altered landscapes due to greater abundance of medium-sized predators. Predation of hatchlings by introduced bullfrogs (*Lithobates catesbeianus*), smallmouth bass (*Micropterus dolomieui*), and largemouth bass (*Micropterus salmoides*) is thought to be significant although evidence for this is lacking. Road mortality is an important threat particularly in urban and recreational areas. Release of pet turtles to natural areas is a growing threat and may result in increased competition and disease transmission. In addition, removal of western pond turtles by the public for pets may cause local declines. Connectivity between aquatic and upland habitats increasingly becomes a concern as urban and agricultural development continues to fragment landscapes. Agricultural and vegetation management activities can result in nest destruction and mortality to adult females. Recreational activities within or adjacent to aquatic and nest habitats are an important concern in some parts of the species' range. Accidental catch of turtles while fishing also occurs. Illegal shooting of western pond turtles may occur in some areas. Research and survey work can affect western pond turtles by disrupting behavior, increasing the risk of disease transmission, and potentially influencing predator behavior.

Management Considerations: Western pond turtles occur on lands managed by public agencies at many jurisdictional levels including City, County, State, and Federal levels. Western pond turtles occur predominately on lands in private ownership in the Willamette Valley Ecoregion. Management approaches and actions will need to take into account the diversity of land allocation patterns. Because of the broad distribution of western pond turtles on private lands, management will need to focus on non-federal lands in some regions by engaging private landowners and watershed councils. Because both aquatic and upland habitats are required by western pond turtles, management by more than one public agency or landowner is likely to affect a given population or even an individual turtle. Despite these challenges, management actions that can contribute to the conservation of western pond turtles are numerous. Conservation actions to improve conditions for western pond turtles in Oregon include improving aquatic and terrestrial habitats, reducing road mortality, managing recreation near turtle-use areas, controlling non-native turtles, eliminating future releases of pet turtles, and in some areas may include reducing nest and hatchling predation.

Native Species: WESTERN PAINTED TURTLE (*Chrysemys picta bellii*)

Management Status: U. S. Forest Service, Region 6 (OR & WA) - Sensitive Species. U. S. Bureau of Land Management (OR) - Sensitive Species. Oregon – State Sensitive-Critical Species, Species of Greatest Conservation Need in ODFW's State Wildlife Action Plan. Natural Heritage Global Rank: G5 (Demonstrably widespread); State Rank: OR S2 (imperiled) and WA S5 (Demonstrably widespread).

Range: The painted turtle is the most widespread native turtle species in North America, occurring from the Atlantic to the Pacific coasts. Its range includes most of the eastern and central United States. The subspecies *C. picta bellii*, the western painted turtle, occupies the largest portion of the species range, from western Ontario to British Columbia and south into the central United States. In Oregon, western painted turtles are narrowly distributed along the northern portion of the state. They are found in north-central and north-eastern Oregon, primarily in the Columbia River Basin, and in the northern portion of the Willamette River Basin, primarily north of Salem. Painted and pond turtles co-occur in aquatic habitats in the northwest portion of Oregon, especially in the Willamette River basin north of Salem, but as far south as the mainstem McKenzie River east of Eugene.

Specific Habitat: Aquatic and terrestrial habitats are required for western painted turtles. Their aquatic habitat is typically slow-moving and shallow water, including streams, canals, sloughs, small lakes, and ponds. They appear to select water bodies with surface or emergent vegetation and a muddy substrate. Terrestrial habitat is used primarily for nesting, but occasionally for overwintering and overland movements among aquatic habitats. Nest habitat is composed of sparsely vegetated areas with southern exposure near aquatic habitat, usually within 50 m. A broad array of substrates is used for nesting, including recent fill. Overwintering is often in shallow aquatic environments but also occurs in terrestrial habitats. Little is known of habitat use by hatchlings, but evidence suggests they tend to use shallower aquatic habitats. In Oregon, western painted and western pond turtles use similar habitat. The primary difference appears to be the painted turtle's greater dependence on aquatic habitat for overwintering and selection of slower, more stagnant aquatic habitats.

Threats: Threats to western painted turtles in Oregon are very similar to western pond turtles and are often landscape-specific. Factors most often cited as limiting western painted turtle populations include loss of wetland and upland habitats, and elevated nest and hatchling predation. Elevated hatchling predation has been purported to be from introduced fish and bullfrogs, but evidence is lacking to support this hypothesis. Predation on nests is believed to be elevated in urban environments due to greater abundance of mid-sized predators that have adapted to human disturbance such as raccoons, skunks and coyotes, but there has been little quantification of these threats. Reduced nest site availability is a concern as well, particularly in urban environments. Because a large portion of the western painted turtle population in Oregon is in or near urban areas, threats are tied to factors associated with large human populations. This includes road mortality and limited connectivity between nesting, overwintering, aquatic, and dispersal habitat, competition from introduced turtle species, human disturbance from increased recreational use of aquatic systems, and indirect effects of pesticide use. Indirect effects of research activities in some populations are a concern. Although wetland systems are often protected, the adjacent upland areas that are crucial for reproduction are frequently not protected. An important and increasing threat is the loss of genetic uniqueness because of release of pet painted turtles. Most of these threats are associated with the reduction in habitat and increased human access in the western portion of the painted turtle's range in Oregon.

Management Considerations: Conservation actions to improve conditions for western painted turtles in Oregon include improving aquatic and terrestrial habitats especially in managed waterways such as the Columbia Slough, increasing connectivity among populations, and reducing loss of adults by decreasing road mortality and reducing illegal removal by the public. Improving or creating nest habitat, hatchling habitat, and basking structures in some aquatic habitats, and managing recreation near turtle-use areas are feasible management actions.

Populations of introduced and invasive species, especially the red-eared slider and more recently the common snapping turtle, need to be managed. Furthermore, eliminating the release of pet painted turtles is vital to maintain genetic integrity of the populations in Oregon. Education on introductions and translocations is critical to reduce or eliminate the frequency of these often well-intended activities by the public. Further, if the threat of the capture and removal of western painted turtles from their native habitats in the Portland metropolitan areas is as high as local natural resource professionals fear, instituting a volunteer citizen "watch" may be very useful. Because of long-term survey and research efforts that have been occurring at some vulnerable populations, we recommend the development of a larger-scale research and survey strategy, designed to avoid or minimize possible impacts on turtle populations from all of the survey and research activities.

Development of a conservation plan for painted turtles in the Portland metropolitan region would facilitate the coordination of effective conservation actions across numerous jurisdictions. Because western painted turtles occur largely on private lands and designated open spaces managed by public agencies, management will need to focus on non-federal lands, and engage private landowners and local municipalities.

Non-Native Invasive Species: RED-EARED SLIDER (*Trachemys scripta elegans)*

Native Range: Eastern United States

Ecology: Found in ponds, lakes and slow moving or still backwaters of rivers. Diet consists of plants, insects, snails, tadpoles, crayfish, worms and fish.

Status: Prohibited in Oregon (OAR 635-056). Large reproducing populations are found throughout the Willamette Valley and in other areas of the state. Originated from illegally released pets.

Impact: Compete with native turtles for food and nesting, basking and cover habitat. Red-eared sliders can transmit parasites and diseases to our native turtles. Grow bigger and lay more eggs than Oregon's naïve turtles. Earlier nesting activity may affect nest predator cue response.

For more information see:

ODFW Invasive Species Fact Sheet – Red-eared Slider
http://www.dfw.state.or.us/conservationstrategy/invasive_species/docs/red-eared_slider_fact_sheet.pdf

Non-Native Invasive Species: COMMON SNAPPING TURTLE (*Chelydra serpentina)*

Native Range: Eastern United States

Ecology: Found in ponds, lakes, sloughs or slow moving rivers, preferring water bodies with muddy bottoms. Diet is comprised of aquatic vegetation, amphibians, crayfish, worms, birds, small mammals, carrion and other turtles. Snapping turtles will eat about anything that will fit between their jaws.

Status: Prohibited in Oregon (OAR 635-056). Included on the Oregon Invasive Species Council's list of 100 Worst / Most Dangerous Invaders. Populations found throughout the Willamette Valley and in other areas of the state. Originated from illegally released pets.

Impact: In Oregon, snapping turtles compete with native turtles for food, nesting and cover habitat. Snapping turtles can transmit parasites and diseases to our native turtles. Direct predation on native fish and wildlife.

For more information see:

ODFW Invasive Species Fact Sheet – Common Snapping Turtle
http://www.dfw.state.or.us/conservationstrategy/invasive_species/docs/snapping_turtles_fact_sheet.pdf

Last updated November 2018

EXHIBIT D
REMAPPING CONSULTATION REPORT TEMPLATE

Property Owners Outreach Report Examples:

123 Main street : Reviewed the map changes with XXX and their structure will be removed when the final maps are completed.

> Recommendation: Explained to the client in detail the steps they need to take to cancel their flood policy and followed up with a step-by-step instruction via email. Advised that water has no boundaries, and they have the option of replacing their high-risk policy with a low-risk flood policy.
> They are currently paying $1300 as a result of the map change; they would be saving $39,000 in flood premiums on a 30 year mortgage

123 Main Street: Based on the new maps Mr. XXX would have to purchase flood insurance.

> Recommendations: Explained to the client the 45 day time line before the lender will force places coverage. Provided a flood insurance quote for the client under the NFIP newly mapped program and also a private flood insurance company so that they could make an informed decision. Let them know there are options online as well. Recommended they start with the Federal program but with the annual rate increases they may want to move to private flood insurance in a few year
>
> NFIP newly Mapped rate $740
> Private flood $890