

Appendix C: Best Management Practices

Overview

The purpose of this Appendix is to identify:

- 1) Prohibited activities to prevent unauthorized “take”;
- 2) Exempted forms of “take” (Special 4(d) Rule authorized activities);
- 3) Best Management Practices (BMPs) to avoid and minimize impacts for Covered Activities of the Habitat Conservation Plan (HCP); and
- 4) Enhanced BMPs for voluntary implementation to maintain and/or enhance existing habitat values and functions for Covered Species.

These BMPs are intended to reduce impacts to the HCP Covered Species from the Covered Activities. BMPs will be implemented to the maximum extent practicable to avoid and minimize impacts, which in turn will reduce incidental take and the need and cost of offsetting impacts to Covered Species through mitigation. Each BMP is linked to applicable Covered Species via habitat type. Dry prairie/grassland habitats (hereafter prairie habitats) host Olympia, Yelm, and Tenino Pocket Gophers, Taylor’s Checkerspot Butterfly, and Oregon Vesper Sparrow. Wetland/riparian habitat for Oregon Spotted Frog (OSF) is included in the Oregon Spotted Frog Habitat Screen (OSF Habitat Screen).

Mitigation actions associated with development proposals shall adhere to mitigation sequencing as stated in Thurston County Code (TCC) Section 24.01.037. Avoiding habitat (prairie and the OSF Habitat Screen) impacts through up front project planning that reduces an activity’s footprint or relocates the activity, so it does not intersect with habitat, is the preferred mechanism to reduce impacts to the Covered Species. However, where avoiding habitat is not possible and activities will occur, application of the BMPs will result in minimization of impacts by limiting the degree or magnitude of the action to the greatest extent practicable. Any impacts remaining after avoiding and minimizing impacts shall be offset by mitigation.

Due to the variability in when specific BMPs will be applicable and practicable across the County and the breadth of Covered Activities, the impact areas included in Section 4: Impacts Analysis have not been adjusted for projected reductions from avoidance or minimization of impacts through the BMPs. County permit findings will document avoidance and minimization measures achieved by application as part the permitting process, and these will be summarized in the County’s HCP Annual Report.

Thurston County already implements multiple sets of BMPs (e.g., as part of its Regional Road Maintenance Guidelines; RRMG). The HCP BMP minimization measures in this Appendix are intended to work in concert with pre-existing BMPs to which the County is already committed. Should a RRMG BMP implementation have the potential to cause “take” of a Covered Species, alternative methods will be sought, or the action will be mitigated.

Prohibited Activities

- Thurston County, its Departments, and Applicants shall not “...*harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect* Covered Species or attempt to engage in any such conduct” (ESA Section 9; 16 U.S. Code § 1538; 50 CFR § 17.3).
- Thurston County, its Departments, and Applicants shall not import, possess, transport, propagate, release, or introduce any prohibited Level 1, 2, or 3 aquatic invasive species (inclusive of American Bullfrog; *Lithobates catesbeianus*), except for scientific research or display, or pursuant to a State-approved monitoring and control program designed to capture, possess, and destroy prohibited species specimens (W.A.C. 220-640-050, W.A.C. 220-640-100, W.A.C. 220-640-110).

Special Management Areas for Oregon Spotted Frog

The HCP identifies the Oregon Spotted Frog (OSF) Habitat Screen as potential areas where OSF habitat may occur, a portion of which is actually occupied by OSF. A significant area of County-maintained roadside right-of-way is included in the OSF Habitat Screen. Survey of the entire area before County transportation maintenance activities is not practicable (though survey will occur before transportation construction projects). To increase the efficiency of applying the BMPs for Oregon Spotted Frog habitat, the HCP identifies Special Management Areas (SMAs) for Oregon Spotted Frog along specific roads managed by the County in the OSF Habitat Screen. These are stretches of roadside right-of-way that are known to support OSF or are near to and hydrologically connected to currently or recently occupied OSF habitat. Currently identified SMAs are identified in Figure 1. Thurston County will update the map of SMAs over time, adding new locations if necessary.

The Oregon Spotted Frog SMAs are the highest priority areas for implementation of the BMPs during regular transportation maintenance, roadside right-of-way management, Beaver dam management (HCP Appendix E: Beaver Dam Management Plan), and water/wastewater management activities.

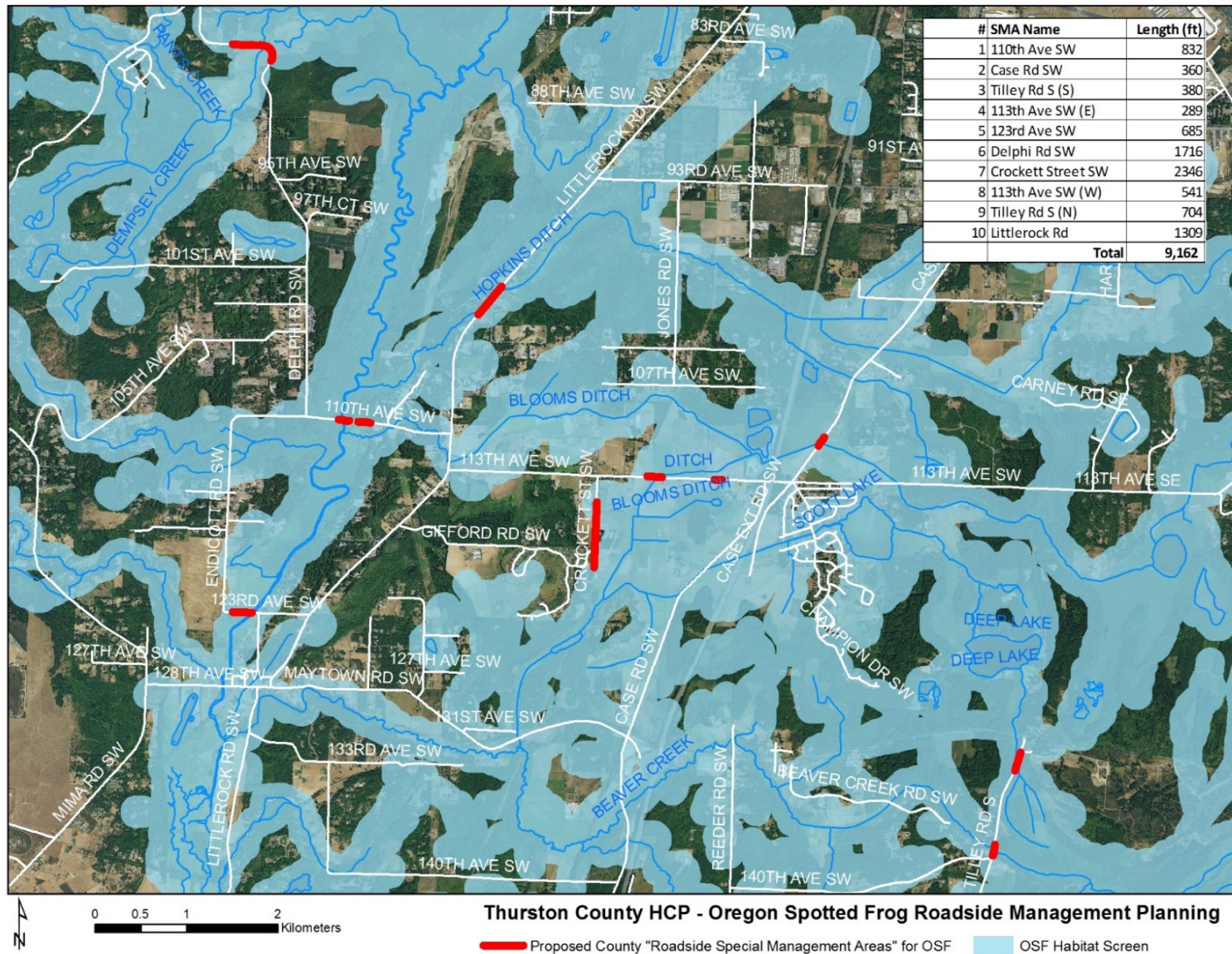


Figure 1. Special Management Areas for Oregon Spotted Frog in the greater Black River watershed of Thurston County where BMP implementation will be prioritized

Exempt Activities for Mazama Pocket Gopher

Special rules under Section 4(d) of the Endangered Species Act apply to the Mazama Pocket Gopher subspecies and their habitat only. Should a site contain other Covered Species and/or their habitat, these exemptions do not apply. All exemptions must also comply with all regulations of Thurston County Code.

Single Family Residential Property Activities

- Harvest, control, or other management of noxious weeds and invasive plants through mowing, herbicide and fungicide application, fumigation, or burning. Use of herbicides, fungicides, fumigation, and burning must occur in such a way that nontarget plants are avoided to the maximum extent practicable;
- Single-family, residential landowners/managers may site, install, place, and/or build storage sheds, carports, or dog kennels, provided these are less than 120 square feet (sq ft) (11.15 square meters (sq m) in size; and
- Single-family, residential landowners/managers may site and install fencing, garden plots, or play equipment.

Agriculture Activities

For the purposes of this exemption, farm means any facility, including land, buildings, watercourses, and appurtenances, used in the commercial production of crops, nursery or orchard stock, the propagation and raising of nursery or orchard stock, livestock or poultry, or livestock or poultry products.

- Agricultural Activities which do not disturb the soil surface are allowed, such as haying, baling, and some orchard and berry plant management activities. Disturbances to soils should generally not exceed a 12 inch (in) (30.5 centimeter (cm)) depth. Allowed activities include:
 - Grazing; routine installation, management, and maintenance of stock water facilities (such as stock ponds, berms, troughs, and tanks; pipelines and watering systems to maintain water supplies);
 - Routine maintenance or construction of fencing;
 - Maintenance of livestock management facilities (such as corrals, sheds, and other ranch outbuildings);
 - Repair and maintenance of unimproved agricultural roads (this exemption does not include improvement, upgrade, or construction of new roads);
 - Planting, harvest, fertilization, harrowing, tilling, or rotation of crops; placement of mineral supplements, plant nutrients, or soil amendments;
 - Harvest, control, or other management of noxious weeds and invasive plants through mowing, disking, herbicide and fungicide application, fumigation, or burning; and
 - Occasional deep tillage (Deep tillage for reduction of compaction, usually at depths of 18 to 36 in (45.7 to 91.4 cm), may be conducted between September 1 and February 28, but only once in 10 years.).

Standard BMPS - Avoidance and Minimization

The following BMPs are the recommended best available practicable means to avoid and minimize impacts to Covered Species and their habitats. All BMPs must be implemented to the maximum extent practicable during the Covered Activities.

Prairie Habitat

The following BMPs address planning, permitting, construction, and maintenance where Covered Activities could or may have unavoidable impacts to Covered Species in prairie habitat.

Siting and Locating Activities

- Avoid impacts by locating development in areas with not habitat or within previously disturbed areas;
- Avoid impacting more-preferred Mazama Pocket Gopher soils;
- Align roadway/driveways close to access point for the lot/parcel;
- Use existing points of entry, roads, and/or travel paths where they provide the necessary site access;
- Cluster multiple structures and development activities (e.g., staging areas and access points);
- Configure development activities in Covered Species habitat to maximize patches of undisturbed habitat and avoid configurations that leave overly-narrow bands of habitat (maximize the width-to-length ratio);
- Where allowed by code create cluster developments when subdividing land; and
- Design and maintain adequate habitat connectivity to adjacent undeveloped or preserved lands.

Construction Minimization

- Establish, demarcate, and observe “no work zones” on the project site that will not be affected by proposed construction project. The “no work zone” must be delineated on-site with temporary fencing barrier. The development envelope, shall contain all clearing and grading limits, encompass related activities, including site access/points of entry, staging of equipment, stockpiling of materials, and utility installations. The “no work zone(s)” and clearing and grading limits must be clearly identified on the approved site plans;
- Develop temporary erosion and sediment control plan using all known available and reasonable methods of treatment, prevention, and control of sediment;
- Develop a Stormwater Pollution Prevention Plan (SWPPP) where required pursuant to Thurston County Code Title 15 and as described in Thurston County [Drainage Design and Erosion Control Manual](#) (DDECM). Where more than 7,000 sq ft (650 sq m) of soil will be disturbed, prepare a spill prevention, control, and countermeasures plan;
- Use the lightest equipment feasible and minimize passes and tracking of equipment over Covered Species habitat to lessen soil damage, compaction, and/or rutting;

- Mow and/or selectively apply herbicide¹ to remove and control noxious weeds and invasive/non-native/nuisance vegetation in late February/early March (if/when weather and soil moisture conditions allow), and in the late August/early September after native plants have senesced. Preferably also after butterflies and other pollinators have entered diapause (generally by August 1). Techniques that minimize soil disturbance are preferred. Herbicides may only be used according to their label constraints;
- Side-cast native soil material alongside trenches and other excavations, and stockpile and later use these materials to backfill trenches and excavations. Backfill native soil material, with only a minimal amount of light grading, to re-establish original ground contours; and
- In habitat for Taylor's Checkerspot Butterfly, delay vegetation mowing until after nectar species have finished flowering and seed production. This date should be determined by when butterflies are in diapause (generally by August 1).

Oregon Spotted Frog Habitat Screen

The following BMPs address planning, permitting, construction, and maintenance where Covered Activities would or may have unavoidable impacts to perennial or intermittent waters, wetlands, and/or wetland buffers, that support and provide habitat for the Oregon Spotted Frog.

Siting and Locating Activities

- Avoid impacts by locating development in areas with no Oregon Spotted Frog habitat or within previously disturbed areas;
- Cluster development activities (e.g., staging areas and access points) to minimize the area of the parcel(s), and the amount of Covered Species habitat, that would be affected by the activities;
- Where allowed by code, create cluster developments when subdividing land.
- Avoid staging within 200 ft (61 m) of occupied (or potentially occupied) Covered Species habitat as identified during survey (perennial or intermittent waters, wetlands, wetland buffers, and/or seasonally-flooded areas), unless site-specific review indicates that no impacts are likely to occur due to topography or other factors;
- Design and maintain adequate habitat connectivity to adjacent undeveloped or preserved lands;
- Configure development footprint of remaining Covered Species habitat to maximize patches of undisturbed habitat and avoid configurations that leave overly-narrow bands of habitat (maximize the width-to-length ratio);
- Locate development close to access point for the lot/parcel; and
- Align new road or utility corridors to avoid wetland and their buffers.

¹ Herbicides will only be used according to their label constraints and Federal Insecticide, Fungicide, and Rodenticide Act label approved uses, guidelines and in accordance with Washington regulations. The commercial use of chemical control of noxious vegetation requires registration with WSDA (RCW 15.58 and RCW 17.21) and for all aquatic areas requires a NPDES Aquatic Invasive Species permit (RCW 90.48).

- Avoid crossing wetted streams or wetlands with vehicles and heavy equipment unless as part of an emergency action. Demonstrate that there is no practicable alternative to the new crossing. Additional crossing co-located with existing crossings shall be presumed to be the least harmful alternative. The expansion of existing crossings shall be presumed to be the less harmful of to the resource than the construction of new crossings;
- Minimize temporary roads and travel paths within 300 ft (91 m) of streams or wetlands;
- When traversing a wetland or its buffer is determined to be necessary demonstrate that:
 - Wetland/buffer crossed at their narrowest point;
 - Access has used existing points of entry, roads, and/or travel paths;
 - Crossing widths kept to the minimum necessary. Reduce or eliminate road shoulders and/or sidewalks at wetland crossings if safety is not compromised;
 - Permeable fill material or culverts used between wetlands to maintain hydrologic connectivity; and
 - Culverts sized correctly for best hydrologic connectivity;
- Avoid and minimize draining of wetlands or seasonally-flooded areas, and avoid diverting or interrupting surface hydrology, unless as part of habitat restoration;
- Avoid creating barriers or placement of stormwater ponds between Oregon Spotted Frog breeding habitats and Oregon Spotted Frog rearing, overwintering, and non-breeding habitats (e.g., avoid draining or dewatering wetlands, seasonally-flooded areas, and perennial or intermittent waters; and, avoid impacts to aquatic movement corridors, including shallow-water areas with a gradual gradient or slope);
- Maintain gradual gradients or slopes between Oregon Spotted Frog breeding habitats and Oregon Spotted Frog rearing, overwintering, and non-breeding habitats so that tadpoles and juvenile frogs can follow receding water to areas that hold or maintain water inundation year-round;
- Consider and plan for landscape-scale habitat connectivity when programming and designing road and infrastructure improvements within the Oregon Spotted Frog Special Management Areas (SMAs) (inclusive of wetlands, seasonally-flooded areas, watercourses, and ditches); and
- Evaluate opportunities for extending wetland hydroperiods and holding/retaining water in seasonally-flooded areas.

Construction Minimization

- Establish, demarcate, and observe “no work zones” on the project site that will not be affected by proposed construction project. The “no work zone” must be delineated on site with a temporary fencing barrier. The development envelope, shall contain all clearing and grading limits, encompass related activities, including site access/points of entry, staging of equipment, stockpiling of materials, and utility installations. The “no work zone(s)” and clearing and grading limits must be clearly identified on the approved site plans;

- Implement approved temporary erosion and sediment control plan using all known available and reasonable methods of treatment, prevention, and control of sediment. Implement measures to control and prevent sediments from leaving the construction site or entering aquatic systems and ensure no foreign material is side-cast into Covered Species habitat (such as soil, rock, gravel, uncured cement concrete or washout, and asphalt grindings or slurry);
- Implement a Stormwater Pollution Prevention Plan (SWPPP) where required pursuant to Thurston County Code Title 15 and as described in the Thurston County Drainage Design and Erosion Control Manual (DDECM). Where more than 7,000 sq ft (650 sq m) of soil will be disturbed, prepare a spill prevention, control, and countermeasures plan;
- Use biodegradable hydraulic fluids and lubricants in vehicles and heavy equipment (unless operating in the dry or during emergency actions) to reduce potential impacts resulting from a spill(s) or leak(s);
- Minimize temporary roads and travel paths within 300 ft (91 m) of streams or wetlands;
- Describe “weed free” (disinfection) protocols to be used to avoid spreading invasive species and/or disease;
- Design stormwater facilities to use infiltration where feasible. Avoid redirection of water to or from an existing wetland unless as part of habitat restoration;
- Re-route, untreated runoff from wetland while ensuring wetland is not dewatered;
- Complete culvert, conveyance, and ditch maintenance activities when they are dry (i.e., under low-flow or no-flow conditions). Avoid draining wetlands or seasonally-flooded areas, and diverting or interrupting surface hydrology, during the Oregon Spotted Frog breeding season (February thru June, approximate), when adult frogs, egg masses, and/or tadpoles may be present;
- Minimize the duration of in-water work (i.e., work within the wetted perimeter of a wetland or waterbody). Clean culverts and conveyances with hand tools, or from the top of the bank, under low-flow or no-flow conditions, or with flow bypass installed. Upon completion of all in-water work, remove all flow bypass or stream diversion devices and materials (e.g., temporary pipe, conduit, culvert, diversion dam or berm,; pumps, sandbags, etc.), and stabilize and restore any disturbed soil, the channel bed and banks;
- Restoration or replanting plans for riparian area in or adjacent to suitable Oregon Spotted Frog habitats (inclusive of all wetlands, seasonally-flooded areas, perennial or intermittent waters, watercourses, and ditches located within the Oregon Spotted Frog Habitat Screen), will avoid planting trees or taller shrubs where they may shade breeding sites. Breeding sites will be maintained/restored with short-statured vegetation (e.g., a 6 in (15 cm) vegetation height) by selecting/planting low growing species, such as inflated sedge (*Carex exsiccata*), slough sedge (*Carex obnupta*), awlfruit sedge (*Carex stipata*), spikerush (*Eleocharis palustris obtusa*), tall mannagrass (*Glyceria elata*), hairy-leaf rush (*Juncus supiniformis*), softstem bulrush (*Schoenoplectus tabernaemontani*), small flowered bulrush (*Scirpus microcarpus*), and/or bur-reed (*Sparganium emersum*);
- Avoid applying herbicides within 200 ft (61 m) of suitable Oregon Spotted Frog habitats (inclusive of all wetlands, seasonally-flooded areas, perennial or intermittent waters, watercourses, and ditches located within the OSF Habitat Screen), unless site-specific review indicates that no impacts are likely to occur due to topography or other factors. Herbicides

applied to seasonally-flooded areas during the dry season must break down and be absent from the environment before the next inundation;

- Avoid planting trees or taller shrubs, in or along seasonal or permanent bodies of water, within the Oregon Spotted Frog habitat including SMAs (inclusive of wetlands, seasonally-flooded areas, watercourses, and ditches); and
- Avoid unnecessary management alterations and/or impacts to American Beaver (*Castor canadensis*) activities, dams, and/or ponds within the Oregon Spotted Frog habitat including SMAs (inclusive of wetlands, seasonally-flooded areas, watercourses, and ditches).

Enhanced BMPs

These BMPs are recommended as best available and practicable means for property owners/managers who may want to voluntarily maintain and or enhance habitat values and functions for Covered Species outside of the development envelope. None of the activities listed below should be interpreted as mitigation efforts to offset impacts to Covered Species.

Prairie Habitat

The following BMPs address activities that maintain and/or enhance prairie and associated Covered Species habitats (e.g., Mazama Pocket Gopher subspecies, Oregon Vesper Sparrow, Taylor's Checkerspot Butterfly). The following activities are encouraged for all properties with dry prairie habitat and for restoration activities in mitigation areas to the greatest extent practicable.

- Remove encroaching trees, shrubs, and noxious weeds. Aggressively control and remove non-native species such as: Scotch broom (*Cytisus scoparius*); tall oatgrass (*Arrhenatherum elatius*); spurge laurel (*Daphne laureola*); and leafy spurge (*Euphorbia esula*). Maintain low densities of tansy ragwort (*Senecio jacobaea*) in accordance with Thurston County Noxious Weed Rules and Regulations to be no more than 25 plants in an area of 20 acres (8 hectares);
- Mow and/or mechanically remove noxious weeds and invasive/non-native/nuisance vegetation using the lightest equipment feasible and limit the number of passes. Avoid wet soils and soils that are likely to become rutted, compacted, or otherwise damaged. Set mower decks sufficiently high to avoid soil gouging;
- Use herbicides² to control noxious weeds and invasive/non-native/nuisance vegetation in a manner that avoids non-target plants, such as spot spraying/selective application of herbicide instead of broadcast spraying. Coordinate with Thurston County Noxious Weeds to identify the best options or more information tcweeds@co.thurston.wa.us;
- Limit the access, or unattended/unsupervised access, that domesticated pets (cats and dogs) have to occupied (or potentially occupied) Covered Species habitat. Mazama Pocket Gophers

² Herbicides will only be used according to their label constraints and Federal Insecticide, Fungicide, and Rodenticide Act label approved uses, guidelines and in accordance with Washington regulations. The commercial use of chemicals to control noxious vegetation requires registration with WSDA (RCW 15.58 and RCW 17.21) and for all aquatic areas requires a NPDES Aquatic Invasive Species permit (RCW 90.48).

are vulnerable to predation, including predation by domesticated pets. This may be best accomplished by fencing and excluding domesticated pets from areas being maintained for prairie habitat;

- Plant butterfly and other pollinator host and nectar/food plants (e.g., Table 1). Coordinate with Thurston County, the Washington State Department of Fish and Wildlife, and/or the Service to identify the best options, and to plan for compatible long-term management;
- Consider taking additional actions that promote conservation. Maintain movement corridors and larger, contiguous areas of undeveloped Covered Species habitat by working collaboratively with adjacent landowners, neighborhood associations, the Thurston County Conservation District, the Thurston County Washington State University (WSU) Extension Office, and/or conservation organizations; and
- Consider taking additional actions that promote conservation. Actively manage for native vegetation (including native bunchgrasses), by avoiding or limiting the extent of lawn. Avoid excessive irrigation and/or fertilization, which tend to favor invasive/non-native/nuisance vegetation. The dry prairie habitat that support Covered Species are vulnerable to encroachment by trees and woody plants, and invasive/non-native/nuisance vegetation, which degrades the quality and function of available habitat.

Oregon Spotted Frog Habitat Screen

The following BMPs address activities that maintain and enhance OSF breeding habitats and OSF rearing, overwintering, and non-breeding habitats. Maintenance and enhancement of habitat is encouraged for areas that contain suitable hydrology and other conditions outside of the development envelope. These activities are encouraged for all properties with Oregon Spotted Frog habitat and for restoration and mitigation areas to the greatest extent practicable.

Note: Activity within a wetland and or its buffer may require prior authorization through Thurston County.

- Remove encroaching trees and shrubs. Aggressively control reed canarygrass (*Phalaris arundinacea*) via hand or mechanical means;
- Mow and/or mechanically remove noxious weeds and invasive/non-native/nuisance vegetation using the lightest equipment feasible and limit the number of passes to avoid ground compaction. Set mower decks sufficiently high to avoid soil gouging;
- Submit a plan for removal (and/or control) non-native, predatory, and competing species from suitable Oregon Spotted Frog habitats (inclusive of all wetlands, seasonally-flooded areas, perennial or intermittent waters, watercourses, and ditches located within the Oregon Spotted Frog Habitat Screen) (e.g., bullfrogs³, introduced warm water fishes). Remove or control reed

³ It is unlawful to take bullfrogs except by angling, hand dip netting, spearing (gigging), or with bow and arrow; there is no daily limit on the number of bullfrogs that may be taken, no possession limit, and no size restrictions in Washington (W.A.C. 220-416-120).

canarygrass to maintain short-statured vegetation (e.g., a 6-inch vegetation height). Use current methods endorsed by the Service and Washington State Department of Fish and Wildlife;

- Avoid removing large wood from suitable Oregon Spotted Frog habitats (inclusive of all wetlands, seasonally-flooded areas, perennial or intermittent waters, watercourses, and ditches located within the OSF Habitat Screen);
- Prioritize removal of existing, treated wood (creosote) structures;
- Consider and plan for landscape-scale habitat connectivity. Evaluate opportunities for extending wetland hydroperiods and holding/retaining water in seasonally-flooded areas;
- Maintain movement corridors and larger, contiguous areas of Covered Species habitat may be facilitated by working collaboratively with adjacent landowners, neighborhood associations, the Thurston Conservation District, the Thurston County WSU Extension Office, or conservation organizations; and
- Consider taking additional actions that promote and conserve water and reduce withdrawals from sources of surface and ground water.

Table 1. Partial list of native host and nectar/food plants for butterflies and pollinators in Thurston County.

Scientific Name	Common Name	Origin
<i>Arctostaphylos uva-ursi</i>	Kinnikinnick	Native
<i>Armeria maritima</i>	Sea pink	Native
<i>Balsamorhiza deltoidea</i>	Balsamroot	Native
<i>Camassia quamash</i>	Camas	Native
<i>Castilleja hispida</i>	Harsh paintbrush	Native
<i>Castilleja levisecta</i>	Golden paintbrush	Native
<i>Collinsia spp</i>	Blue eyed mary	Native
<i>Festuca roemerii</i>	Roemer's fescue	Native
<i>Fragaria virginiana</i>	Strawberry	Native
<i>Lomatium triternatum</i>	Nineleaf biscuitroot	Native
<i>Lomatium utriculatum</i>	Spring gold	Native
<i>Plectritis congesta</i>	Seablush	Native
<i>Ranunculus occidentalis</i>	Western buttercup	Native
<i>Saxifraga integrifolia</i>	Wholeleaf saxifrage	Native
<i>Viola adunca</i>	Hookedspur violet	Native