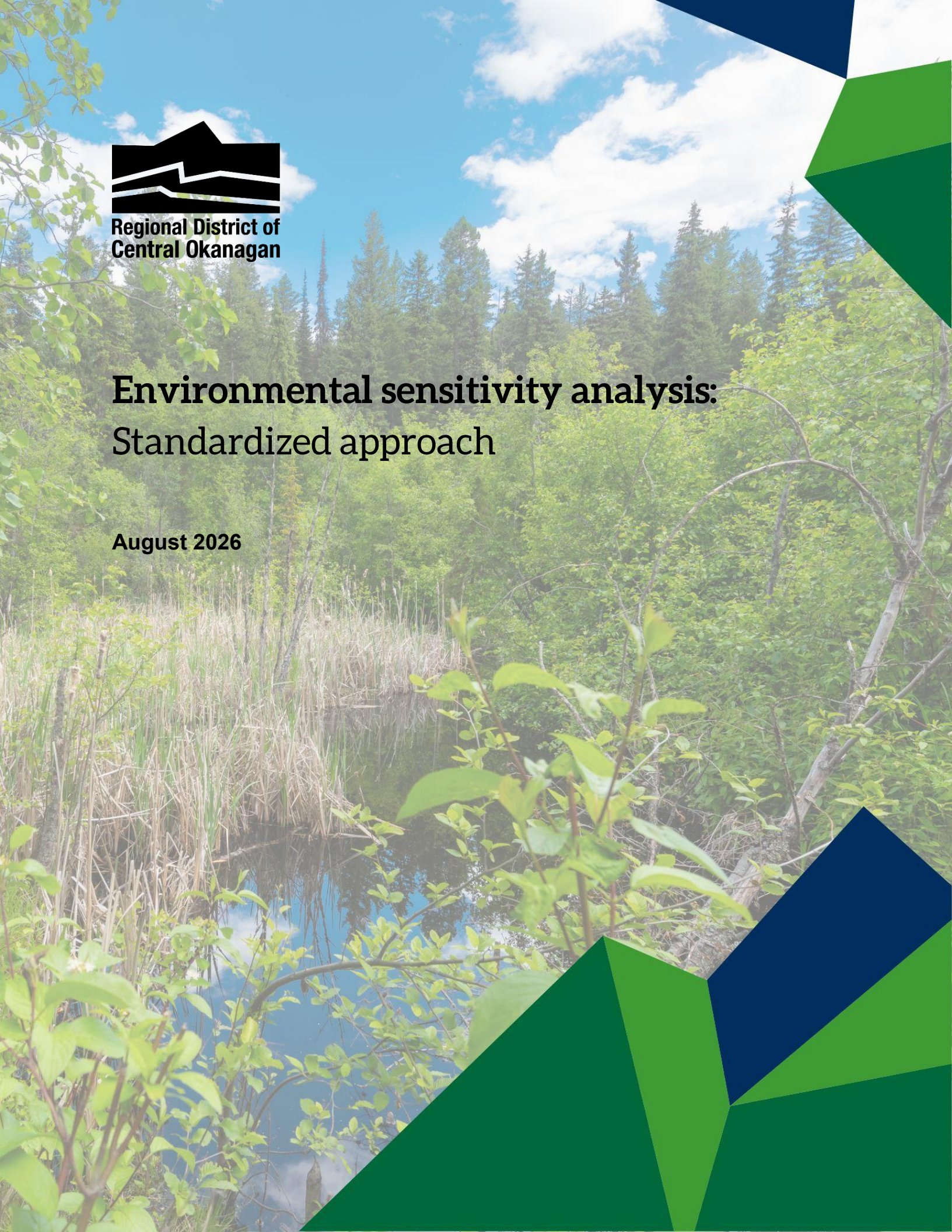

Regional District of Central Okanagan

Environmental sensitivity analysis: Standardized approach

August 2026

Land acknowledgement

The RDCO acknowledges our presence on the traditional, ancestral and unceded tm̓xʷúlaʔxʷ (land) of the syilx / Okanagan people who have resided here since time immemorial. We recognize, honour and respect the syilx / Okanagan lands upon which we live, work and play.

Acknowledgements

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Regional District of Central Okanagan

OCCP
OKANAGAN COLLABORATIVE CONSERVATION PROGRAM

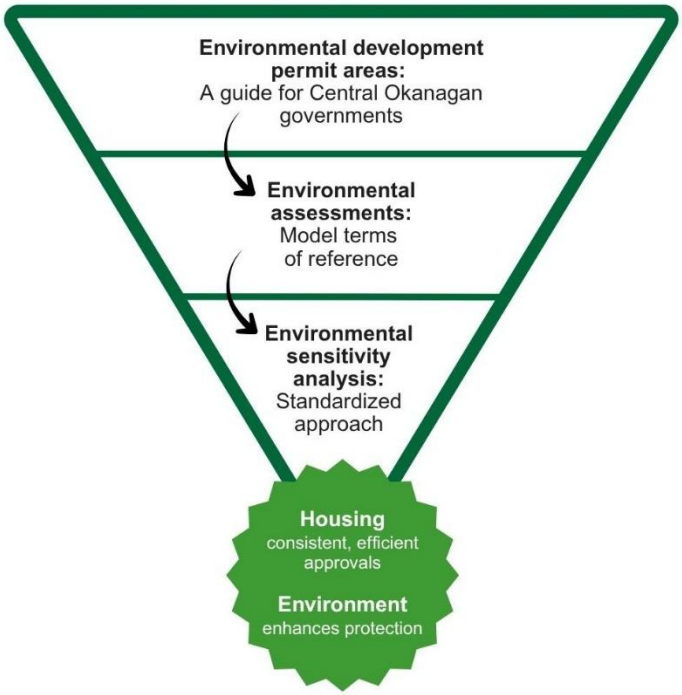
ECOSCAPE
Environmental Consultants Ltd.

Contents

Introduction

The purpose of this document is to support Qualified Environmental Professionals (QEPs) with a best practice methodology for standardizing how Environmentally Sensitive Areas (ESAs) are determined across the Central Okanagan region. This document was developed as a voluntary resource for member municipal planning departments and QEPs within the Central Okanagan. Should other organizations find it a valuable resource, they are most welcome to use it as well.

This project was identified as a priority in the Priority Projects Plan (2024-2028), which was endorsed by the Regional Board in 2024. The need for a consistent regional approach was determined through a collaborative process with input from regional partners. This document is a companion to another regional guide entitled *Environmental assessments: Model terms of reference* and works together as part of a system with a third guide, *Environmental Development Permit Areas: A guide for Central Okanagan governments.* Together, these three guides comprise a regional environmental framework system of resource materials to support member governments within the Central Okanagan.



The project partners would also like to acknowledge our sylix / Okanagan First Nation partners who continue to steward the region as their traditional, ancestral and unceded territory. While this guide presents a contemporary scientific perspective, the importance of syilx / Okanagan knowledge and ongoing collaboration in regional environmental stewardship is also respectfully acknowledged. Further, the project partners look to existing efforts underway, such as the Foreshore Integrated Management Planning (FIMP) program led by Living Lakes Canada for leadership in integrating Indigenous Knowledge into environmental data and mapping efforts within the Okanagan.

Context for Environmental Sensitivity Analysis standardization

The two primary goals of establishing a standardized methodology for Environmental Sensitivity Analysis determination are as follows:

- Refine and ***standardize methods*** to better stratify Environmentally Sensitive Areas (ESAs, ranked 1 to 4) to ensure reproducible, quantitative results that are consistent across QEPs.

- ***To better protect terrestrial ecosystems***, including coniferous woodland and grassland, which have experienced substantial losses over the last 20 years through land conversion for residential and agricultural purposes.

The methodology for determining ESAs uses sensitive ecosystem classes and subclasses with relative ecosystem values, quality and condition values and wildlife habitat suitability and connectivity values. Methods for determining conservation values, along with the variables and descriptions used in these methods, are adapted from provincial standards with minor adjustments to provide improved regional applicability (Iverson & Cadrin, 2003; RISC, 2006). This overall approach allows for consistency with the SEI and consolidates terrestrial ecosystem polygons into broad SEI classes, which are more digestible for non-biologists and municipal planners.

Environmental Sensitivity Analysis

Using the information collected above and the three-variable calculation outlined in the ESA flowchart (see Appendix A: ESA determination flowchart and reference tables), determine the site's ESA designations. Reference tables used in the ESA determination process are also in Appendix A: ESA determination flowchart and reference tables. A detailed rationale, supported by verifiable references, must be provided if the QEP chooses not to utilize the following process for determining ESAs.

- Where available, Terrestrial Ecosystem Mapping (TEM) polygons from the 2021 Update of the Central Okanagan Sensitive Ecosystem Inventory (Pedersen et al., 2024) should be used to determine the site's base ecosystem units (2021 SEI Update Deliverables, Released June 2024). Based on the observations during the site assessment, modifications should be made to the coding and spatial orientation of ecosystem units. Where possible, ecosystem polygons should only include a single ecosystem unit. Ecosystem units should be described using contemporary TEM naming conventions (Ryan et al., 2022).

    - Ecosystem units are to be translated into their respective SEI classes, subclasses and Relative Ecosystem Values (REV) (see Appendix A: ESA determination flowchart and reference tables, Table 1). An ArcGIS Online Dashboard with the TEM to SEI lookup table is available. Users will need to create a free ESRI public account to view the online database.

- The professional report must describe the rationale used to determine the Quality/Condition Value (CDV) (see Appendix A: ESA determination flowchart and reference tables Table 2) and the Wildlife Rating (WLR) (see Appendix A: ESA determination flowchart and reference tables, Table 3), so valuations will be reproducible and transparent. Sub-criteria valuation tables are available for each of these variables (see Appendix A: ESA determination flowchart and reference tables, Table 2a-c and Table 3a-c) for further assistance in valuations. ***If the site was previously affected by natural disturbances such as wildfire, floods, windthrow or landslides, a CDV should be determined based on post-recovery or pre-disturbance conditions. Please see Appendix B:*** Post-wildfire assessment monitoring example***for a sample worksheet to collect data on post-recovery conditions.*** It is acknowledged that these conditions may be difficult to distinguish with certainty. The QEP should refer to surrounding areas unaffected by the natural disturbance to best estimate the post-recovery/pre-disturbance condition.

- Calculate the Conservation Value (CSRV) for each ecosystem unit by inserting the three variables (REV, CDV, WLR) into the CSRV equation, then follow the decision tree to determine the polygon's ESA value (see Appendix A: ESA determination flowchart and reference tables). ***If more than one ecosystem is assigned to the polygon, the final conservation value will equal the maximum CSRV assigned. For sites affected by natural disturbances, post-recovery/pre-disturbance CDV should be used in the equation.***

- ***The professional report must include a summary table of REV, CDV, WLR and CSRV scores by polygon***. If the QEP has a specific rationale for scoring an ESA higher or lower, it should be included in a comments field with appropriate justification.

ESA class definitions

ESA-1: Very High

ESA-1 contains functioning native habitats that support a high level of biodiversity, provide key ecosystem functions and services and/or are crucial for life requisites of abundant and at-risk species. The following are indicators of ESA-1:

- Wetlands, undisturbed foreshore/riparian, mid to late successional terrestrial ecosystems,

- Nesting/rearing and/or hibernaculum sites for at-risk species and critical movement corridors to and from these sites,

- Locally/regionally important and rare plant communities/ecosystems that support keystone species.

These will include Sensitive Ecosystems and/or High Conservation Value (>=7) areas identified using the modified SEI methodology (see Appendix A: ESA determination flowchart and reference tables). ESA-1 polygons will generally need little restoration or enhancement. Although prescribed burning, recreational trail restoration and/or invasive species management could be required without compromising the ESA-1 designation.

Areas given this valuation are considered the highest priority for conservation and should be left undisturbed and include adequate natural area buffers. The primary objective should be avoiding, conserving and enhancing Very High ESA designations. ***It is expected that there will be 100% retention of Very High (ESA-1) value habitat***. If development is unavoidable (e.g. critical infrastructure for public good), then the development footprint and environmental impact must be minimized and mitigated to the greatest degree possible.

No development will be considered within Very High value habitat (ESA-1) without optimally timed wildlife surveys as per RISC Standards that target life requisites of at-risk species. The intent of these surveys is to identify critical habitat and features used by at-risk species for key life requisites such as feeding, nesting, rearing, overwintering, migration, dispersal and/or connectivity. This information will be used to redesign the development to avoid habitats/features critical to at-risk species.

ESA-2: High

ESA-2 contains functioning native habitats that support a moderate to high level of biodiversity and contribute to the landscape's overall diversity and contiguous nature. ESA-2 polygons are only *slightly lower priority* for conservation than ESA-1, as they contain:

- Important habitat features that support life requisites, such as foraging and cover for common and at-risk species.
- Sensitive and at-risk ecosystems with minor disturbance regimes.
- Sensitive Ecosystems and/or a Conservation Value ranging from >=4.75 to <7.
- They may also include natural and/or disturbed areas used to adequately buffer ecological functions of Very High ecosystems and/or include disturbed/modified riparian or Streamside Protection and Enhancement Areas. Buffer widths should consider the life requisites of at-risk species. For example, a pond with painted turtles requires uplands with friable soils for nesting and safe movement corridors to connect nearby waterbodies.

Avoiding anthropogenic influence to allow the ecosystem to naturally recover from past disturbance, or via native plantings or invasive species management in ESA-2 will enhance habitat value so that, with time, it could be considered an ESA-1.

Development within ESA-2 is highly discouraged and should only occur if at least 80% of High value habitat can be maintained within a site. Lower-value ESAs (ESA-3 or -4) should

be utilized for development first. If development is unavoidable, at least 80% of large, connected portions of the habitat should be retained within the development parcel to maintain the landscape's contiguous nature and ensure the integrity of important connectivity corridors within and beyond the site. Development should not have any impacts on any adjacent Very High (ESA-1) value ecosystems. Any development within ESA-2 must be minimized to the greatest degree possible, such that 80% of the natural, undisturbed habitat remains functional. Mitigation measures must be maximally employed to reduce the development's environmental impacts.

No development will be considered within High value habitat (ESA-2) without optimally timed wildlife surveys that target life requisites of at-risk species. The intent of these surveys is to identify critical habitat and features used by at-risk species for key life requisites such as feeding, nesting, rearing, overwintering, migration, dispersal and/or connectivity. This information will be used to redesign the development to avoid habitats/features critical to at-risk species.

ESA-3: Moderate

ESA-3 contains areas of important and sensitive natural habitat with influential disturbance factors, valuable natural ecosystems not typically used by species at risk but may have significant carbon sequestration potential, or modified green landscapes that contribute to canopy cover, carbon cycling and/or other important habitat features. The ecological value of ESA-3 polygons is generally lower than that of ESA-1 and -2 due to a relative loss of function from typically influential disturbances and higher habitat fragmentation. The Conservation Value of ESA-3 polygons range from >=2.5 to <4.75. A Moderate ESA often contributes to the landscape's diversity, connectivity and cumulative natural area, regardless of the level of anthropogenic influence. Assessing the local and landscape context of these areas is crucial for determining which parts, where options are available, should be conserved and/or restored to retain functional ecological relationships. Anthropogenic green spaces (i.e., manicured parks and lawns, gardens, fallow fields, low-intensity agricultural land, etc.) in ESA-3 serve important functions within the broader environmental context and may buffer higher ESAs, act as wildlife movement corridors or play an important role in the area's hydrological functioning.

Based on the condition and adjacency, portions of Moderate ESAs may have significant ecological functions within the landscape that should be retained. But otherwise, development should be focused in these areas, along with ESA-4, over ESA-1 and ESA-2 designations.

ESA-4: Low

ESA-4 contains areas that contribute little or no value to the overall diversity of vegetation, soils, ecological connectivity, canopy cover, carbon cycling and/or actual or potential wildlife habitat. These areas often have substantial proportions of non-permeable surfaces, like paved areas or structures, or are devoid of native vegetation, such as roads or high-intensity agricultural lands. Low ESAs may have a history of contamination or little potential for rehabilitation. Urban green spaces may be included if disturbance regimes, functional connectivity, potential wildlife habitat (including pollinators, ungulates and birds), carbon capture and storage and risks of

environmental hazards are deemed insignificant. Development is to be focused on these areas before considering higher-valued ESAs.

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Appendix A: ESA determination flowchart and reference tables

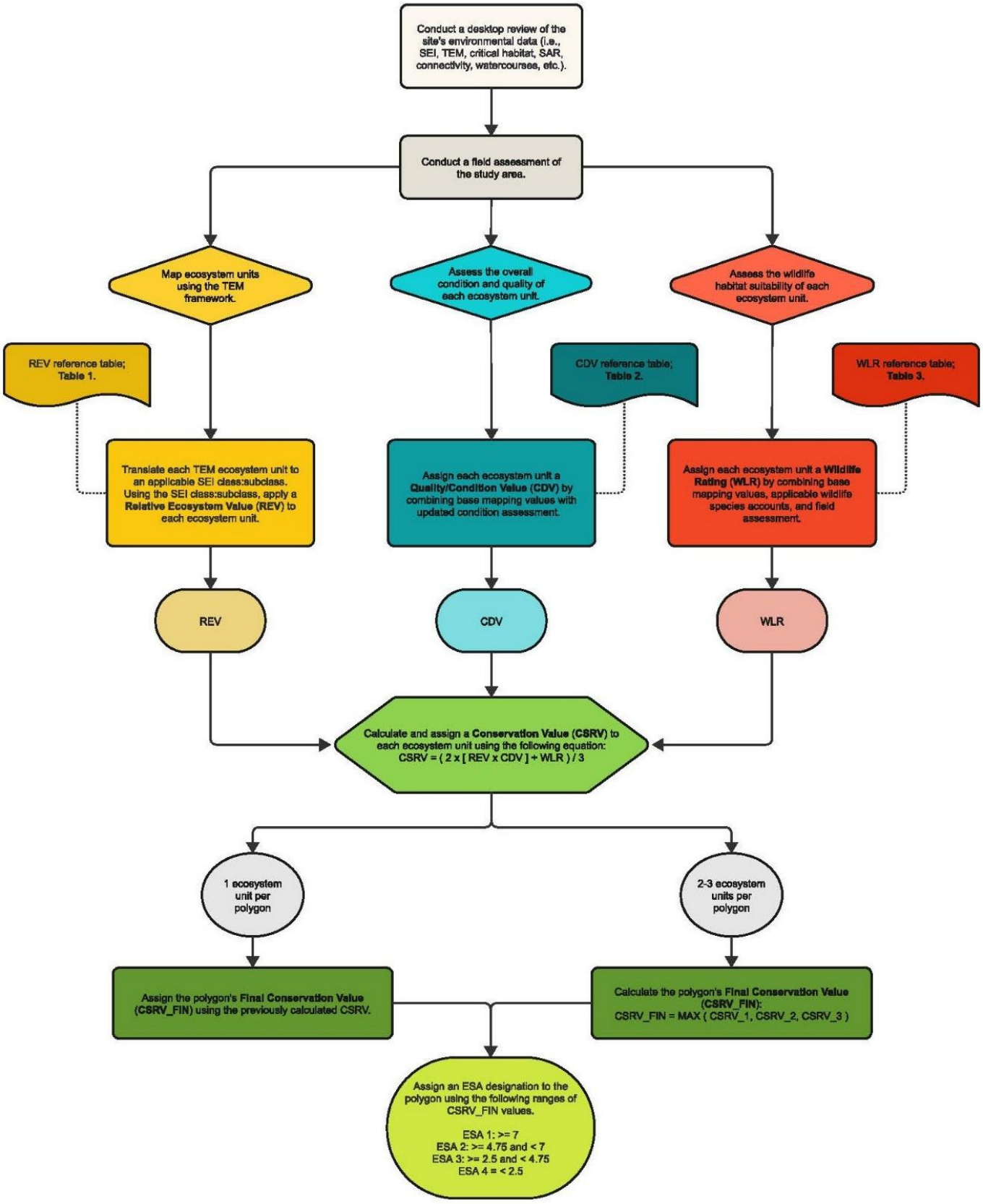

Table 1. Relative Ecosystem Value reference table: modified sensitive ecosystem classes and subclasses with relative rankings and rationale

SEI Class		SEEIN Unit		Relative	
Broadleaf Woodland	Ecosystems dominated by trembling aspen include aspen copse ecosystems (BW:ac) occurring in depressions and moist areas in grasslands, and aspen seepage ecosystems (BW:as) occurring on slopes with subsurface moisture in a matrix of coniferous forest; old Broadleaf Woodlands are part of the Old Forest category.	BW:ac	Aspen Copse	7	Sensitive; very rare in study area
		BW:as	Aspen Seepage	7	Sensitive; extremely rare in study area
Grassland	Non-forested ecosystems dominated by bunchgrasses (grassland, GR:gr), grasslands occurring on steep slopes (GR:st), grasslands occurring on steep shallow-soiled slopes (GR:ss), and shrubland (GR:sh) ecosystems that occur in a grassland matrix, or non-native invasive plants with some bunchgrasses (disturbed grassland, GR:dg).	GR:dg	Disturbed Grassland	6	Disturbed but provide values for many grassland species, including rare wildlife; rare in study area
		GR:gr	Grassland	9	Very sensitive and provincially rare; common in study area
		GR:sh	Shrubland	9	Very sensitive and provincially rare; very rare in study area
		GR:ss	Steep Shallow-soiled	9	Very sensitive and provincially rare; extremely rare
		GR:st	Steep	9	Very sensitive and provincially rare; extremely rare
Old Forest	Forest ecosystems dominated by large, old trees that are subdivided by dominant tree type: coniferous (OF:co) forest, mixed (OF:mx) forest, and broadleaf (OF:bd) forest; includes old Coniferous Woodlands, old Broadleaf Woodlands, and old Riparian forests.	OF:co	Coniferous	10	Very sensitive; very important wildlife habitat; very rare
		OF:mx	Mixed	10	Very sensitive; very important wildlife habitat; extremely rare
Riparian	Streamside ecosystems occurring on bench/floodplains (RI:fp) or in gullies with intermittent or permanent creeks (gully, RI:gu) and fringe ecosystems associated with pond and lake shorelines (fringe, RI:ff); also includes river (RI:ri) and beach (RI:be) ecosystems. Old Riparian forest ecosystems are part of the Old Forest category.	RI:be	Beach	10	Very sensitive; very important wildlife habitat; extremely rare in study area
		RI:ff	Fluvial Fringe	10	Very sensitive; very important wildlife habitat; very rare
		RI:fp	Bench / Floodplain	10	Very sensitive; very important wildlife habitat; rare
		RI:gu	Gulley	10	Very sensitive; very important wildlife habitat; rare
		RI:ri	River	10	Very sensitive; important wildlife habitat; very rare
Sparsely Vegetated	Ecosystems with little vegetation occurring on bedrock or colluvial features (shrub, SV:sh), grassy or unvegetated rock outcrops (SV:ro), talus (SV:ta) slopes, and cliffs (SV:cl).	SV:cl	Cliff	10	Sensitive; very important wildlife habitat; very rare
		SV:ro	Rock Outcrop	8	Sensitive; important wildlife habitat; rare
		SV:sh	Shrub	10	Sensitive; very important wildlife habitat; very rare
		SV:ta	Talus	8	Sensitive; important wildlife habitat; rare
Coniferous Woodland	Open stands of Douglas-fir or ponderosa pine, often on shallow soils, with typically grassy understories; coniferous woodlands are split into young (WD:co) and mature (WD:mc) categories. Old Coniferous Woodlands are part of the Old Forest category.	WD:co	Coniferous	6	Sensitive; very important wildlife habitat; common
		WD:mc	Mature Coniferous	8	Sensitive; very important wildlife habitat; rare
Wetland	Non-forested ecosystems where the water table is at or near the surface; includes wet meadows (WN:md), marshes (WN:ms), swamps (WN:sp), and shallow open water (WN:sw) including ponds.	WN:md	Meadow	10	Sensitive; important wildlife habitat; extremely rare
		WN:ms	Marsh	10	Very sensitive; very important wildlife habitat; very rare
		WN:sp	Swamp	10	Sensitive; important wildlife habitat; extremely rare
		WN:sw	Shallow Open Water	10	Very sensitive; very important wildlife habitat; very rare
Seasonally Flooded Fields	Cultivated fields that flood annually and provide important migratory habitats for birds and habitats for other wildlife. These sites were formerly riparian or wetland ecosystems and may have some potential for restoration of these ecosystems.	FS:fs	-	4	Less sensitive; important wildlife habitat; extremely rare in study area
Mature Forest	Forests dominated by mature trees include broadleaf (MF:bd) forests, coniferous (MF:co) forests, and mixed (MF:mx) deciduous and coniferous forests, excluding mature Riparian forests and mature Coniferous and Broadleaf Woodlands.	MF:co	Coniferous	4	Less sensitive; common in study area
		MF:bd	Broadleaf	5	Less sensitive; extremely rare
		MF:mx	Mixed	5	Less sensitive; very rare
Young Forest	Forested ecosystems with ages less than 80 years (structural stage < 6) that are not classified as Sensitive by the original SEI framework; includes coniferous young forest (YF:co), broadleaf young forest (YF:bd), and mixed young forest (YF:mx). These ecosystems are common at the provincial level, hold long-term importance, and may be suitable for restoration efforts.	YF:co	Coniferous	2	Fairly common; not sensitive; some important wildlife habitat and ecological functions; growing importance in the context of climate change;
		YF:bd	Broadleaf	3	
		YF:mx	Mixed	3	
Not Sensitive	Natural ecosystem units that do not fall into the above classes.	NS:na	Natural	1-2	Not sensitive per the SEI; may have important wildlife habitat and ecological functions; growing importance in the context of climate change.
	Anthropogenic ecosystem units, ranging from dense urban environments to cultivated orchards to exposed cutbanks.	NS:at	Anthropogenic	0	Not sensitive; anthropogenic ecosystem units; some important wildlife habitat and ecological functions in semi-vegetated categories

[1] These values are used as the REV variable in the ESA determination process.

Source: Table is modified from Pedersen et al., 2024 and Iverson & Cadrin, 2003. Changes from previous tables include increasing the relative ecosystem values (REV) of mature forests and young forests to improve conservation and management of these ecosystems in the context of high development pressure, biodiversity loss, increased intensity and frequency of natural disasters, and climate change.

Considered factors in valuation: Biodiversity, vulnerability to land use conversion, fragility/sensitivity, rarity, species richness, wildlife habitat suitability, species and ecosystems at risk, connectivity, ecosystem services

Table 2. Quality/Condition reference table: modified SEI disturbance intensity and condition values

Quality/Condition Rating [1] (CDV)	Subcriteria Summed Value [2]	Label	Description
1	14-15	Excellent	No anthropogenic disturbances have altered the ecosystem and no vegetation or soil removal has occurred. Species composition, structure, and site features indicate an advanced seral stage. Ecosystem occurrence is of sufficient size to be resilient to intense natural disturbances and to contribute to home ranges for wildlife typical of that system. Natural succession is in process (i.e., not artificially thinned or ingrown, fire regime maintained within natural parameters) and ecosystem has long-term viability. There is little to no fragmentation of the ecosystem or its surrounding landscape by anthropogenic activities or structures, and little to no cover of introduced species occur in the ecosystem.
0.86	12-13	Good	Little to no soil removal or disturbance to soil surface or influence of historical anthropogenic activites. Minor recreational trails may be present. Minor cover (<5-15%) of introduced species occurs in the ecosystem, dependent on the ecosystem type (i.e., grasslands are likely to have a higher incidence of non-native plants than other ecosystem types). Species composition, structure, and site features indicate an advanced seral stage. Ecosystem occurrence is of sufficient size to be resilient to moderate intensity natural disturbances and to contribute to home ranges for wildlife typical of that system. Alterations to the ecosystem's natural succession are minor. Ecosystem remains viable in the long-term. The ecosystem has low fragmentation and there is low or moderate fragmentation of the surrounding landscape.
0.66	8-11	Fair	Some low impact anthropogenic disturbances occur in the ecosystem and remnant historical disturbance may be present. May be moderate cover of introduced species (5-15% in forests and riparian systems, 15-25% in grasslands). Species composition, structure, and site features indicate a younger seral stage or an older modified community. Ecosystem occurrence is of sufficient size to be resilient to moderate intensity natural disturbances and to contribute to home ranges for wildlife typical of that system. Alterations to the ecosystem's natural succession are influential but not defining characteristics. Ecosystem remains viable in the long-term. The ecosystem has low or moderate fragmentation and the surrounding landscape has moderate or high fragmentation by anthropogenic development and current use, although still primarily vegetated (i.e., rural areas, agriculture, manicured parks).
0.41	5-7	Marginal	Some significant or widespread low impact anthropogenic disturbances have occurred in the ecosystem. May be significant cover of introduced species (15-25% in forests and riparian systems, 25-50% in grasslands). Species composition, structure, and site features indicate a younger seral stage or an older modified community. Ecosystem occurrence is of sufficient size to be resilient to low intensity natural disturbances but may insufficiently contribute to home ranges for wildlife typical of that system. Alterations to the ecosystems natural succession (e.g., forest harvesting, grazing, spacing, thinning, alterations to hydrological regime) are defining characteristics of the community. Ecosystem's long-term viability is questionable. The ecosystem has moderate fragmentation and the surrounding landscape may be highly fragmented by anthropogenic development and current use.
0.1	3-4	Poor	Significant anthropogenic disturbances have occurred, particularly removal/disturbance of soil materials and vegetation. Introduced species may dominate a vegetation layer or may total more than 25% (>50% for grasslands) cover overall. Species composition, structure, and site features tentatively indicate a young seral stage. Ecosystem occurrence is insufficient size to be resilient to low intensity natural disturbances and insufficiently contributes to home ranges for wildlife typical of that system. Alterations to the ecosystems natural succession are widespread (e.g., forest harvesting). Ecosystem's long-term viability is precarious. The ecosystem has high fragmentation and is located within a matrix of heavily fragmented and urbanized landscape.

1 These values are used as the CDV variable in the ESA determination process. Numerical values are based on disturbance-ecosystem response relationship used in category valuation in Iverson & Cadrin, 2003.

2 Sum of optional subcriteria table (2a-c) values

Notes: Wildfires, floods, windthrow, and landslides are considered natural disturbances and should be considered separately from anthropogenic disturbances. Quality/Condition ratings for natural disturbances should default to pre-disturbance or post-recovery conditions. A post-wildfire assessment must be included as part of the EA for sites affected by wildfire. Descriptions are adapted from Iverson & Cadrin, 2003 and RISC, 2006.

Table 2a. Degree of Anthropogenic Disturbance

Value	Criteria Category	Criteria Description
5	Excellent	No current or historical anthropogenic disturbances have altered the ecosystem and no vegetation or soil removal has occurred. Little to no cover of invasive alien species occur in the ecosystem.
4	Good	Little to no soil removal or disturbance to soil surface has occurred; little or no influence of old road beds or skid tracks, no construction evidence, old selection harvesting only, minimal influence of fire exclusion, permeable recreational trails may be present. May be minor cover of invasive alien species occurs in the ecosystem (<5% in forest and riparian systems, <15% in grasslands).
3	Fair	Some low impact anthropogenic disturbances occur in the ecosystem and remnant historical disturbance may be present. May be moderate cover of invasive alien species (5-15% in forests and riparian systems, 15-25% in grasslands).
2	Marginal	Some significant or widespread low impact anthropogenic disturbances have occurred in the ecosystem. May be significant cover of invasive alien species (15-25% in forests and riparian systems, 25-50% in grasslands).
1	Poor	Significant anthropogenic disturbances have occurred, particularly removal/disturbance of soil materials and vegetation. Invasive alien species may dominate a vegetation layer or may total more than 25% (>50% for grasslands) cover overall.

Note: Descriptions are adapted from Iverson & Cadrin, 2003 and RISC, 2006.

Table 2b. Quality and Long-Term Viability

Value	Criteria Category	Criteria Description
5	Excellent	Species composition, structure, and site features indicate a mature seral stage. Ecosystem occurrence is of sufficient size to be resilient to intense natural disturbances (e.g., fire, flood) and to contribute to home ranges for wildlife typical of that system. Natural succession is in process (i.e., not artificially thinned or ingrown, fire regime maintained within natural parameters, intact hydrological regime) and ecosystem is viable in the long-term.
4	Good	Species composition, structure, and site features indicate a mature seral stage. Ecosystem occurrence is of sufficient size to be resilient to moderate intensity natural disturbances and to contribute to home ranges for wildlife typical of that system. Alterations to the ecosystem's natural succession are minor. Ecosystem remains viable in the long-term.
3	Fair	Species composition, structure, and site features may indicate a younger seral stage or a mature modified community. Ecosystem occurrence is of sufficient size to be resilient to moderate intensity natural disturbances and to contribute to home ranges for wildlife typical of that system. Alterations to the ecosystem's natural succession are influential but not defining characteristics. Ecosystem remains viable in the long-term.
2	Marginal	Species composition, structure, and site features may indicate a younger seral stage or a mature modified community. Ecosystem occurrence is of sufficient size to be resilient to low intensity natural disturbances but may insufficiently contribute to home ranges for wildlife typical of that system. Alterations to the ecosystems natural succession (e.g., forest harvesting, grazing, spacing, thinning, alterations to hydrological regime) are defining characteristics of the community. Ecosystem's long-term viability is questionable.
1	Poor	Species composition, structure, and site features may tentatively indicate a young seral stage. Ecosystem occurrence is insufficient size to be resilient to low intensity natural disturbances and insufficiently contributes to home ranges for wildlife typical of that system. Alterations to the ecosystems natural succession are widespread (e.g., forest harvesting, grazing, spacing, thinning, alterations to hydrological regime). Ecosystem's long-term viability is precarious.

Note: Descriptions adapted from Iverson & Cadrin, 2003 and RISC, 2006.
Variables assessed: seral stage; size of broad ecosystem community; natural succession; long-term viability; resiliency

Table 2c. Degree of Fragmentation

Value	Criteria Category	Criteria Description	Ecosystem Fragmentation	Landscape Fragmentation
5	Excellent	The ecosystem has minimal or low fragmentation by anthropogenic activities in the ecosystem and in the surrounding landscape (e.g., roads, other transportation corridors, rural settlement or urban developments, industrial activity, recent forest harvesting).	Minimal / Low	Low / Minimal
4	Good	The ecosystem has low fragmentation and there is low or moderate fragmentation of the surrounding landscape.	Low	Moderate / Low
3	Fair	The ecosystem has low or moderate fragmentation and the surrounding landscape has moderate or high fragmentation by anthropogenic development and current use, although still primarily vegetated (i.e., rural areas, agriculture, manicured parks).	Low / Moderate	Fragmented / Moderate
2	Marginal	The ecosystem has moderate fragmentation and the surrounding landscape is highly fragmented by anthropogenic development and current use.	Moderate / Fragmented	Fragmented / Moderate
1	Poor	The ecosystem has high fragmentation is located within a matrix of heavily fragmented and urbanized landscape.	Fragmented	Fragmented

Notes: Fragmentation percents: Minimal = <5%, Low 5-10%, Moderate 10-25%, Fragmented >25%.
The "surrounding landscape" is considered to be a 300 metre radius from the edge of the ecosystem unit (Environmental Law Institute, 2001)

Table 3. Wildlife Rating Reference Table: Wildlife Habitat Suitability and Connectivity Values

Wildlife Rating [1] (WLR)	Subcriteria Summed Value [2]	Label	Description
10	13-15	Excellent	High levels of available, potential, or observed habitat for the life requisites of important wildlife species; exceptional structural complexity and diversity; ecosystem habitat appears highly functional and plays a key role in the ecological connectivity of the area; minimal to no barriers to movement or edge effects; suitable for numerous generalist and specialist wildlife species..
7.5	11-12	Good	Moderately high levels of available, potential, or observed habitat for the life requisites of important wildlife species; good structural complexity and diversity; may be a small amounts of permanent disturbance to habitat structure; may have minor fragmentation or disconnectedness; some movement barriers and edge effects may be present; suitable for many wildlife guilds and high abundances.
5	8-10	Fair	Moderate levels of available, potential, or observed habitat for the life requisites of important wildlife species; moderate structural complexity and diversity; may be some permanent disturbance to habitat structure or key features; may have some fragmentation or disconnectedness; movement barriers and edge effects likely present; suitable for many generalist and some habitat specialists.
2.5	5-7	Marginal	Low levels of available, potential, or observed habitat for the life requisites of important wildlife species; limited structural complexity and diversity; may be substantial permanent disturbance to key habitat features and structure; may have high fragmentation or disconnectedness; movement barriers and edge effects may be substantial; suitable for generalist species with limited abundances.
1	3-4	Poor	Very low levels of available and potential habitat for life requisites of important wildlife species; little to no exceptional structural complexity and diversity; frequent disturbances that are not conducive to wildlife; may be highly disconnected; movement barriers and edge effects are substantial; suitable for few tolerant generalist species.

1 These values are used as the WLR variable in the ESA determination process.
2 Sum of optional subcriteria table (3a-c) values

Table 3a. Species At Risk (SAR) Habitat Use

Value	Criteria Category	Criteria Description	Field Adjustment
1-5	Poor to Excellent	Relative score indicating the ecosystem association's *potential* to support life requisites of species at risk. Higher scores indicate greater potential support for important and critical life requisites across a range of species.	Observed critical habitat (obligate use): +3 Observed important habitat (facultative use): +2 Adjacent to observed critical or important wildlife habitat: +1

Notes: *Base ecosystem association scores should be increased using field adjustment values when SAR are observed in or near the polygon*. Base values are a relative score indicating an ecosystem association's potential wildlife habitat usage based on the amount and type of use: obligate, facultative (frequent), facultative (occasional), by SAR in the region. Base values for many ecosystems in the region are available in the lookup table. Missing data should be filled in by biologists and interested parties over time.

Table 3b. Habitat Structure and Vegetation Complexity

Value	Criteria Category	Criteria Description	Example Ecosystems
5	Excellent	Exceptional vertical complexity and horizontal heterogeneity; diverse native plant guilds; abundant microhabitat features and variety of microclimates; capable of providing forage, shelter, and nesting resources for numerous generalist and specialist wildlife species.	Climax flood fringe forest Wetland with several aquatic vegetation types and microhabitat features Mature aspen copse in grassland mosaic
4	Good	Marked vertical diversity, with multiple layers or height classes; varied horizontal structure with patch mosaics common; diverse native plant guilds; notable microhabitats; provides good cover, foraging variety, nesting, and living options for many wildlife guilds.	Native, intact grassland with many microhabitats Open woodland with notable patchiness
3	Fair	Moderate vertical layering or height diversity with a few defined strata; moderate heterogeneity with some patches and microtopographic variations; modest native species diversity and a mix of age classes; microhabitats are present but not abundant; provides adequate cover and forage for many wildlife species, but may not support habitat specialists or high richness.	Young forest lacking prominent microhabitats, mast trees, and vegetation guild diversity Naturally regenerating fire-affected ecosystem
2	Marginal	Limited structural complexity - simple 1-2 vertical layers; limited patchiness, with few functional openinging or structures; low vegetation diversity with limited native composition or age variations; few microhabitats due to low snag, log, or crevice availability; offers some resources but insufficient in supporting many wildlife species or specialists.	Heavily grazed and invasive-dominated grassland Uniform age forest stand whose structure is strongly influenced by human activities (e.g., heavily managed for wildfire through fuel removal)
1	Poor	Vegetation is uniform, with little to no variation in height or layers; homogeneous horizontal structure; very low plant diversity, often dominated by invasives or monocultures; few or no microhabitats; provides minimal usable resources for wildlife, and likely supports only a few tolerant generalist species.	Most agricultural land and urban spaces

Variables assessed: vertical complexity; horizontal heterogeneity; native plant species richness across multiple plant guilds/age classes; microhabitats; cover/forage/movement options for various wildlife guilds

Microhabitats: snags, downed trees, shrub thickets, burrows, boulders, emergent vegetation, dense ground cover, cavities, bark, dens, refugia, cover patches, rock crevices, veteran trees, varied water depths

Table 3c. Local Connectivity and Wildlife Movement

Value	Criteria Category	Criteria Description	Examples
5	Excellent	Contiguous native habitat, with minimal fragmentation; preferred movement pathways like gulleys, ridgelines, and continuous cover are likely present; there are few movement barriers and minimal edge effects; likely connects or contributes to important or critical wildlife habitat; may be part of a larger core habitat area; likely diverse wildlife use field observations.	Wide linear riparian forest Riparian fringe between wetland with observed Painted Turtles and probable nesting slope
4	Good	Primarily contiguous native habitat; preferred movement corridors like gulleys, ridgelines, and continuous cover may be present, but potentially with a constrained width; some barriers and edge effects may be present; likely connects or contributes to important or critical wildlife habitat; may be part of a larger core habitat area; likely notable wildlife use field observations.	Wide native grassland with soft transitions to neighbouring ecosystems Natural ecosystem on lakefront near kokanee spawning zone
3	Fair	May be natural or urban green spaces; likely lacking intact preferred movement corridors; forage and water availability may be inconsistent; some barriers and edge effects may be influential; may connect or contribute to important or critical wildlife habitat; may be part of a larger core habitat area; likely some wildlife use field observations.	Low complexity native forest stand lacking notable forage, cover, and preferred pathways, but contributes to larger core habitat area Semi-natural narrow green space corridor facilitating movement between natural areas
2	Marginal	May be natural or urban green spaces; low ecological and wildlife benefit due to poor condition and structure; provides connections or buffers for other natural areas or functions as a refuge area in urban areas; may connect to important wildlife habitat; likely few wildlife use field observations.	Small, disturbed, natural area on urban fringe with prominent edge effects Lakefront urban ecosystem within a suburban neighbourhood
1	Poor	Severely fragmented or modified ecosystem with little to no support for ecological processes or wildlife movement; is not and does not connect to important wildlife habitat; not part of larger core habitat area; unlikely wildlife use field observations.	Isolated, disturbed, natural ecosystem offering little wildlife function Urban ecosystem not adjacent to important natural area

Appendix B: Post-wildfire assessment monitoring example

Assessor: _____

Site Information

Location: _____ Date: _____

Fire name and year: _____ Severity: low / moderate / high

1. Tree regeneration

Species present:

- Ponderosa Pine _____
- Douglas-fir _____
- Western Larch _____
- Lodgepole Pine _____
- Western White Pine _____
- Trembling Aspen _____
- Paper Birch _____
- Black Cottonwood _____

Regeneration matrices:

Seedlings per hectare (by species) _____

Average height (by species) _____

Notes: _____

2. Understory vegetation

Dominant species _____

Invasive species present: yes / no Species: _____

Ground cover (%) _____

Notes: _____

3. Soil condition

Erosion evidence _____

Organic layer recovery: poor / fair / good

Notes: _____

Soil hydrophobicity

(Optional: most relevant within 1 to 3 years post-fire – conduct only if erosion or infiltration issues persist)

Water infiltration test result _____

Rills/gullies present: yes/no Severity: low / moderate / high

Notes: _____

4. Wildlife habitat

Snags and coarse woody debris

Snags per hectare: _____ CWD volume: _____ m^3/ha

Notes: _____

Wildlife observations

Species observed _____

Evidence of use (tracks, scat, nests): _____

Notes: _____

Additional notes, comments and recommended follow-up:

_____