

CRITICAL AREAS ASSESSMENT (SUPPLEMENT)

BARKLEY VILLAGE
BELLINGHAM, WA

AUGUST 2023

NW ECOLOGICAL SERVICES
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EXECUTIVE SUMMARY

Northwest Ecological Services, LLC (NES) was retained to complete a supplemental critical areas assessment for a group of properties owned by the Talbot Group, locally known as Barkley Village, in the City of Bellingham, Washington. This report is intended to provide supplemental information to the original assessment prepared by Biohabitats in 2021/ 2022. This critical area assessment includes verification of all wetland boundaries, additional data collection, and re-rating of the site wetlands.

The assessment performed by NES included identification of wetlands, fish and wildlife habitat conservation areas, frequently flooded areas, and/or shorelines as observed within the review area. It did not include identification of the following critical areas: geologically hazardous areas or critical aquifer recharge areas.

All information contained in this report is based on available information and site conditions at the time of the site visits. This report is intended for inclusion with future wetland, stream, and wildlife habitat permit applications to the City of Bellingham (City), Washington State Department of Ecology (Ecology), Washington State Department of Fish and Wildlife (WDFW), and the U.S. Army Corps of Engineers (Corps), as may be required.

NES ecologists conducted site visits from March 30th through May 4th of 2023 to document current site conditions. A total of 44 distinct wetland units were identified (25.11 ac) within the review area. Under the Washington State Department of Ecology 2014 Wetland Rating System, four (4) are Category II wetlands, 36 are Category III, and four (4) are Category IV.

NES identified two seasonal streams within the review area: St. Clair Creek and Fever Creek. No fish were observed within either stream. WDFW was consulted regarding potential fish presence and has indicated the reaches in the vicinity of the site, for both streams, are non-fish bearing.

No ponds, other than stormwater retention ponds, or lakes were observed or mapped in the review area or within 150 feet.

No federal or state Threatened, Endangered, or Candidate species or state Priority species were observed within the review area or immediate vicinity. WDFW Priority habitat observed on site includes the identified wetlands, streams, associated riparian areas, and Priority snags and logs. Portions of the review area are mapped by the City as Important Wildlife Habitat and are likely to be considered Priority Biodiversity Areas and wildlife habitat conservation areas (HCAs).

Big brown bat (*Eptesicus fuscus*) occurrence is mapped in the township of the review area. Observed Priority snags within the review area have the potential to be utilized by big brown bat as day roosts and on-site riparian areas may also be used as foraging habitat.

There are no frequently flooded areas or shorelines mapped within the review area or immediate vicinity. However, FEMA and City mapping of frequently flooded areas does not appear to extend over this site.

All aforementioned critical areas (wetland and streams) are regulated by one or more agencies- the COB, Ecology, WDFW, and/or the Corps. The COB requires buffer on regulated features. Buffers for wetlands on this site are anticipated to range between 50 and 150 feet, depending on wetland category and wildlife habitat points scored. As non-fish bearing streams, the adjacent reaches of Fever and St Clair Creeks are likely to require a minimum buffer of 50 feet.

NES QUALIFICATIONS

NES is a specialized service-oriented environmental consulting firm based in Bellingham, Washington. We provide a range of biological services to both the public and private sectors. Our services include: wetland assessments, biological assessments, wetland restoration and mitigation plans, natural resource analysis, environmental regulatory compliance, landscape and ecological design, and environmental impact assessment of plants, animals, fish and sensitive habitats. NES professionals have performed wetland and biological assessments over 33,000 acres [1991-2022] in Whatcom, Skagit, Island, Snohomish, and King Counties.

NES staff qualifications summary:

- Molly Porter is an ecologist with NES and has provided environmental services within the north Puget Sound area since 2004. Ms. Porter obtained a Bachelor of Science in Environmental Science from Huxley College of the Environment at Western Washington University (WWU). She is certified through SWS as a PWS, #2064.
- Collin Van Slyke is an ecologist with NES, providing environmental services for projects throughout the north Puget Sound since 2014. Mr. Van Slyke obtained a Bachelor of Science in Environmental Science from Huxley College of the Environment at Western Washington University. He is certified through SWS as a PWS, #3129.
- Candice Trusty is an ecologist with NES and has been providing environmental services within the north Puget Sound since 2019. Ms. Trusty obtained a Bachelor of Science in Environmental Science from Western Washington University's College of the Environment. Her experience includes the assessment of wetland and fish & wildlife critical areas, fish removal, biological surveying, and habitat restoration. She is certified through SWS as a WPIT.
- Michael Whitehurst is an ecologist with NES. Mr. Whitehurst obtained a Bachelor of Science in Marine Biology from the University of West Florida and certificate in wetland science and management from the University of Washington. His experience includes marine and freshwater organism identification, marine and terrestrial botany, and water quality sampling and analysis.
- Ellie Aosved is an ecologist with NES. Ms. Aosved obtained a Bachelor of Arts in Biology from Pacific Lutheran University. Her experience includes marine and freshwater organism identification, marine and terrestrial botany, and wetland monitoring for state agencies.

DISCLAIMER

Wetland, stream, and lake delineations and determinations are based upon protocols defined in manuals and publications produced by federal, state, and local agencies. The wetland methodology used in this report is consistent with methods described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Corps, 2010) and the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987), as required by WAC 173-22-035.

Findings within this report are based on observations of conditions at the time of the stated site visit(s). This report is provided for the use of the named recipient only and is not intended for use by other parties for any other purpose. This report does not guarantee agency concurrence or permit approval.

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1.0 INTRODUCTION

1.1 Scope of Work

Northwest Ecological Services, LLC (NES) was retained to prepare a supplement to the critical areas assessment for a group of properties owned by the Talbot Group, located in the City of Bellingham, Washington. The assessment performed by NES included identification of wetlands, fish and wildlife habitat conservation areas, frequently flooded areas, and/or shorelines as observed within the review area. It did not include identification of the following critical areas: geologically hazardous areas or critical aquifer recharge areas.

All information contained in this report is based on available information and site conditions at the time of the site visits. This report is intended for inclusion with future wetland, stream, and wildlife habitat permit applications to the City of Bellingham (City), Washington State Department of Ecology (Ecology), Washington State Department of Fish and Wildlife (WDFW), and the U.S. Army Corps of Engineers (Corps), as may be required.

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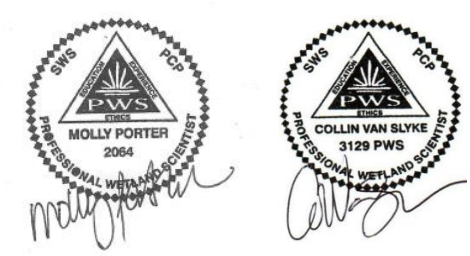

1.2 Review Area

The group of properties and the associated development owned by the Talbot Group are collectively known as Barkley Village. The NES review area included portions of 50 tax parcels and totals approximately 113 acres within the City limits (Sections [16, 17, 20, and 21], Township 38N, Range 03E) (Figure 1 - all referenced figures are located in Appendix B). The review area included partially developed parcels owned by the Talbot Group but excluded existing developed areas. An aerial photograph of the review area and surrounding landscape is included as Figure 2.

1.3 Background

In November of 2021, updated April of 2022, Biohabitats completed a critical areas assessment report documenting wetlands within the subject site (Biohabitats, 2022). Currently Barkley

Village is not formally recognized by the City as an Urban Village. The Talbot Group has proposed an Urban Village Plan, which is currently being reviewed by the City of Bellingham. This review includes approval of an Environmental Impact Statement (EIS), that is being prepared by WPS. The Biohabitats wetland assessment was prepared to inform the EIS and provide current critical areas detail for the subject site.

During the permitting process, the City requested additional review of the wetland assessment. NES was contracted to provide supplemental information to the original assessment including verification of all wetland boundaries, additional data collection, and re-rating the site wetlands. NES attempted to utilize the Biohabitats data and report to the greatest extent possible in order to avoid redundancy. This report is intended supplement the Biohabitats assessment, but data presented in this report should replace information contained in the Biohabitats report if conflicting.

2.0 ASSESSMENT METHODS

The critical areas assessment included an office review of existing publicly available natural resource data followed by multiple site visits. NES then completed a functional assessment for any identified critical areas. NES conducted the site investigation and assessments in accordance with methodology specific to each resource area (wetlands, fish and wildlife habitats, frequently flooded areas, and shorelines), as described below.

2.1 Document Review

NES reviewed publicly available maps and applicable reports pertaining to the review area. Specifically, NES reviewed existing documents related to soils, hydrology, vegetation, wetlands, fish and wildlife habitats, shorelines, and frequently flooded areas.

2.2 Field Methods

2.2.1 Wetlands

The wetland delineation was conducted in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Corps, 2010) and the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). To make a positive wetland determination, this methodology requires evidence that at least one positive wetland indicator be found for each of three parameters (vegetation, soils, and hydrology). An area is not considered a regulatory wetland if the area lacks indicators for any one of these three parameters under normal environmental conditions. Upland/wetland boundaries are delineated by locating the transition where soils, vegetation, or hydrology no longer indicate that wetland parameters are met.

2.2.2 Streams and Lakes

If streams or lakes were identified on the property, NES marked the ordinary high-water mark (OHWM) consistent with state law as defined in RCW 90.58.030. NES used field indicators to determine the OHWM based on the methodology contained in *Determining the Ordinary High*

Water Mark for Shoreline Management Act Compliance in Washington State (Anderson et al., 2016), Ecology Publication #16-06-029. During the site visit, the investigating ecologists also completed a stream characterization of basic stream attributes including average depth, vegetation, substrate, and habitat features. If lakes were present, NES documented basic lake attributes including size, surrounding vegetation, and hydrologic connectivity.

2.2.3 Fish and Wildlife

NES documented observations of any state Priority species or federal Threatened, Endangered, or Proposed species protected under the Endangered Species Act (ESA) during the site visit. NES also reviewed the site for general wildlife habitat conditions and habitat connectivity. If streams were present, NES documented any obvious fish passage barriers, characterized general stream attributes (as described above), and documented any observations of fish during the site visit.

2.2.4 Shorelines

NES reviewed the local shoreline management program (SMP) text and maps to determine the potential presence of a regulated shoreline within the review area. During the site visit, NES field verified the presence of any shoreline and determined the extent of SMP jurisdiction based on SMP mapping, OHWM, floodways, wetlands, and floodplains. If shorelines were present, NES determined the OHWM consistent with state law as defined in RCW 90.58.030 and described under Section 2.2.2.

2.2.5 Frequently Flooded Areas

NES reviewed Federal Emergency Management Agency (FEMA) mapping to determine if frequently flooded areas are documented on site.

2.2.6 Mapping

During the site visits, NES staff recorded the locations of the identified critical areas using a GPS/GNSS unit with reported sub-meter accuracy and 95% precision. The GPS waypoints were input to geographic information systems (GIS) mapping software to produce Figures 3-7. **Features shown in Figures 3-7 have not been surveyed and are approximate. Identified critical areas <u>were not flagged</u> in the field. Prior to remapping site wetlands, all agencies (COB, Corps, Ecology) agreed that re-flagging was not required, and that GIS data would be provided, and a verification walk through would be scheduled upon completion of this work effort.**

To evaluate the wetlands using the Ecology Wetland Rating System for Western Washington (Hruby, 2014), NES estimated the off-site extent of wetlands which extend outside of the review area. The delineated on-site and estimated off-site extent of the wetlands are depicted in the wetland rating form attachments included in Appendix E.

Off-site features were mapped at a reconnaissance level using available resources including previous site-specific wetland mapping, interpretation of aerial imagery and digital elevation modeling (DEM) (i.e. LiDAR), and remote observations made from the review area.

3.0 FINDINGS

NES ecologists conducted site visits from March 30th through May 4th of 2023 to document site conditions. The following descriptions are based on observations from the site visits and information gathered during the document review. Select photographs taken during the site visits are included in Appendix C.

3.1 Landscape Setting, Watersheds, & Site Overview

3.1.1 Document Review

The following provides a summary of the findings contained within documents reviewed:

- **Aerial Photograph: Whatcom County Aerial Imagery (Figure 2) (Whatcom County, 2022)**
  The southern portion of the review area, south of Barkley Boulevard (Blvd), appears undeveloped aside from trails that connect to the interurban Railroad Trail, which runs just outside the southern boundary. The southern review area appears mostly forested. The western portion is separated by Woburn St, which bisects the review area from north to south. In the eastern portion, a maintained powerline/pipeline easement bisects the review area from north to south.

  The northern portion of the review area, north of Barkley Blvd, appears to be largely forested and partially mixed with open field and shrub-dominant areas. High-density single-family residential development exists within the northern review area, along the northeast boundary, adjacent to East Sunset Drive. The powerline/pipeline easement also bisects the northern review area from north to south, separating the northern review area roughly in half.

  Land uses in the immediate vicinity include high-density single and multi-family residential development, and commercial and industrial development within Barkley Village including the Regal Cinema, Haggen grocery store, retail shops, financial buildings, and Trulife Engineered Solutions (industrial).

  The Roosevelt and Fever Creek Nature Areas (City parks) abut the review area along the southern boundary.

- **City of Bellingham CityIQ (COB, 2023) (Figure 8)**
  The review area straddles two watersheds: Squalicum Creek and Whatcom Creek. The northwest portion of the review area is within the Squalicum Creek watershed, and the remainder of the site is within the Whatcom Creek watershed.

- **WA State Dept. of Ecology – Water Quality Atlas (Ecology, 2023)**
  The review area is within Water Resource Inventory Area (WRIA) 1 (Nooksack) and again straddles two separate sub-watersheds (12-digit HUCs): Whatcom Creek and Squalicum Creek- Frontal Bellingham Bay.

- **United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) *Soil Survey of Whatcom County Area, Washington* (Figures 9 and 10) (USDA, NRCS, 2023)**
  The NRCS soil survey maps five soil series throughout the review area: Whatcom silt loam, 0 to 3 percent slopes (#178); Whatcom silt loam, 3 to 8 percent slopes (#179); Whatcom silt loam, 8 to 15 percent slopes (#180); Squalicum gravelly loam, 5 to 15 percent slopes (#156); and Squalicum gravelly loam, 15 to 30 percent slopes (#157).

  Whatcom silt loams are non-hydric and are typically found on hillslopes. They are moderately well drained soils and have a slow infiltration rate when thoroughly wet. The depth to the water table is typically 18 to 36 inches. Depending on the slope gradient, these three soil series have from 10 to 20 percent hydric soil components.

  Squalicum gravelly loams are non-hydric and are typically found on hillslopes. They are moderately well drained and have a moderate infiltration rate when thoroughly wet. The depth to the water table is typically 39 to 59 inches. Depending on the slope gradient, these two soil series have from 2 to 3 percent hydric soil components.

3.1.2 Watershed Summary

The northwestern corner of the review area is within the Squalicum Creek watershed. This portion of the review area drains to the northwest and into the City stormwater system along East Sunset Drive. Stormwater appears to be conveyed under E Sunset Dr and discharged to the Squalicum Creek corridor just north of the review area (COB, 2023).

This reach of Squalicum Creek is 303(d) listed by Ecology as an impaired water for low dissolved oxygen (DO), fecal coliform (FC) bacteria, and high temperature. Downstream reaches are similarly listed. An approved total maximum daily load (TMDL) water quality improvement project exists for the Squalicum Creek watershed for temperature, and a multi-parameter TMDL is in development for portions of the Squalicum Creek watershed due to bacteria impairments (Ecology, 2023). Flooding issues within Squalicum Creek exist along Squalicum Way, in Bellingham. During large rain events, flood waters render the road impassable.

Squalicum Creek flows directly to Bellingham Bay. The upper reaches of the watershed are primarily rural residential with some low-intensity agricultural uses (pasture, hay/silage, and cereal grain) (WSDA, 2023). Lower portions of the Squalicum Creek watershed are within Bellingham City Limits and the Urban Growth Area (UGA). This area contains high-intensity land uses including high-density residential development, commercial and industrial uses, a portion of the Bellingham International Airport, and the Bellingham Golf and Country Club. Additionally, portions of Squalicum Mountain are within the southern portion of the watershed which includes forestry areas and a WDFW mapped biodiversity area.

The remainder of the review area is within the Whatcom Creek Watershed. Eastern portions of the site drain directly to upper Fever Creek, a tributary of Whatcom Creek. Central portions of the site drain to St. Clair Creek, a tributary to Fever Creek. Western portions of the site drain to

lower Fever Creek via the City stormwater system. Stormwater appears to be discharged to lower Fever Creek near Roosevelt Park, south of the review area (COB, 2023).

Fever Creek is 303(d) listed for DO, FC bacteria, and zinc. Downstream reaches of Whatcom Creek are also listed for DO and FC bacteria. An approved TMDL water quality improvement project exists for the Whatcom Creek watershed for temperature, and a TMDL is in development for bacteria impairments (Ecology, 2023). Flooding issues within Whatcom Creek exist from Woburn St through the industrial district (ending approximately at Meador Ave), in Bellingham. During large rain events, flood waters render Iowa St and the adjacent Whatcom Creek trail impassable.

Whatcom Creek is entirely within Bellingham city limits. Whatcom Creek outlets from Lake Whatcom and flows directly to Bellingham Bay, at the Whatcom Creek Waterway. The Whatcom Creek watershed contains high-intensity land uses including high-density residential development and commercial and industrial uses. The watershed also encompasses Whatcom Falls Park and portions of the Sehome Hill Arboretum and North Samish Crest open space.

3.1.3 Field Observations

The northern portion of the review area, north of Barkley Blvd, contains forested areas intermixed with shrub-dominant areas, an open field where three radio towers are located. Single family residential development is located onsite along East Sunset Drive. The northern review area is bisected from north to south by a powerline/pipeline easement. The easement appears periodically maintained and was mowed at the time of the site assessment. A forested ridge cuts through this portion of the site from the northeast to the southwest. This ridge is the watershed break. Areas northwest of the ridge drain to Squalicum Creek and areas south of the ridge drain to Whatcom Creek.

The northern review area contains dense residential development along the northeastern boundary. At least 13 single-family residences are present on site. Aside from the powerlines and towers, no other development was observed in the northern portion of the property. At least one abandoned encampment was observed north of Barkley Blvd.

The southern review area, south of Barkley Blvd, is primarily forested with a deciduous dominated forest with a dense understory, and one small field. The southern review area is bisected from north to south by Woburn Street in the western portion and the powerline/ pipeline easement in the eastern portion. Two trail connectors bisect the forest, one adjacent to the powerline easement and one south of Haggen, both which convenes with the Railroad Trail, a City trail system. The Railroad Trail, a compacted gravel trail approximately 15 feet wide, is adjacent to the majority of the southern boundary of the review area.

Portions of the review area west of Woburn Street are adjacent to E Illinois St, to the south. Aside from a small trail that connects to the park to the north, no other development was observed in this portion of the review area. Aside from trails and stormwater facilities, no other development was observed in the southern portion of the review area. A few encampments, both active and abandoned were observed in the southeast.

Plant communities observed throughout the site are described in the following wetland and upland sections. Species observed within the review area included:

> Douglas fir (*Pseudotsuga menziesii*), black cottonwood (*Populus balsamifera*), red alder (*Alnus rubra*), paper birch (*Betula papyrifera*), Western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), big-leaf maple (*Acer macrophyllum*), bitter cherry (*Prunus emarginata*), cascara (*Frangula purshiana*), quaking aspen (*Populus tremuloides*), Sitka willow (*Salix sitchensis*), Pacific willow (*S. lucida*), Pacific crabapple (*Malus fusca*), Sitka spruce (*Picea sitchensis*), salmonberry (*Rubus spectabilis*), vine maple (*Acer circinatum*), hardhack (*Spiraea douglasii*), black twinberry (*Lonicera involucrata*), oceanspray (*Holodiscus discolor*), snowberry (*Symphoricarpos albus*), low Oregon grape (*Mahonia nervosa*), salal (*Gaultheria shallon*), thimbleberry (*Rubus parviflorus*), beaked hazelnut (*Corylus cornuta*), red-osier dogwood (*Cornus sericea),* swamp gooseberry (*Ribes lacustre*), red elderberry (*Sambucus racemosa*), clustered rose (*Rosa pisocarpa*), Nootka rose (*R. nutkana*), bald-hip rose (*R. gymnocarpa*), osoberry (*Oemleria cerasiformis*), sword fern (*Polystichum munitum*), bracken fern (*Pteridium aquilinum*), lady fern (*Athyrium filix-femina*), trailing blackberry (*Rubus ursinus*), soft rush (*Juncus effusus*), slough sedge (*Carex obnupta*), creeping buttercup (*Ranunculus repens*), Dewey's sedge (*Carex deweyana*), American brooklime (*Veronica americana*), large-leaf avens (*Geum macrophyllum*), piggyback plant (*Tolmiea menziesii*), star flower (*Trientalis latifolia*), stinging nettle (*Urtica dioica*), orange honeysuckle (*Lonicera ciliosa*), water parsley (*Oenanthe sarmentosa*), skunk cabbage (*Lysichiton americanus*), field horsetail (*Equisetum arvense*), tall buttercup (*Ranunculus acris*), dandelion (*Taraxacum officinale*), clover (*Trifolium sp.*), narrowleaf plantain (*Plantago lanceolata*), hairy cat's ear (*Hypochaeris radicata*), cleavers (*Galium sp.*), periwinkle (*Vinca minor*), water-starwort (*Callitriche sp.*), Douglas aster (*Symphyotrichum subspicatum*), enchanter's nightshade (*Circaea alpina*), pathfinder (*Adenocaulon bicolor*), Watson's willowherb (*Epilobium ciliatum*), common yarrow (*Achillea millefolium*), bluegrass (*Poa sp.*), red fescue (*Festuca rubra*), velvet grass (*Holcus lanatus*), bentgrass (*Agrostis sp.*), sweet vernal grass (*Anthoxanthum odoratum*), meadow foxtail (*Alopecurus pratensis*), tall fescue (*Schedonorus arundinaceus*), mannagrass (*Glyceria sp.*), orchard grass (*Dactylis glomerata*), and rye grass (*Lolium sp.*).

Noxious weeds identified on site included:

> Himalayan blackberry (*Rubus armeniacus*), English hawthorn (*Crataegus monogyna*), English holly (*Ilex aquifolium*), English ivy (*Hedera helix*), Canada thistle (*Cirsium arvense*), herb-Robert (*Geranium robertianum*), Lesser celandine (*Ficaria verna*), Canada thistle (*Cirsium arvense*), and reed canarygrass (*Phalaris arundinacea*).

3.2 Wetlands

A total of 44 wetlands were identified by NES (Figures 3-7). Overall, the acreage of wetland observed by NES was much higher than that documented by Biohabitats. Many of the previously mapped smaller wetland areas are now mapped as fewer, larger wetland units, and a number of additional wetlands were observed. NES delineated 25.11 acres of wetland within the review area.

3.2.1 Document Review

The following provides a summary of the findings contained within documents reviewed:

- **United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Wetlands Mapper (USFWS, 2023)**
  NWI maps four wetlands within the review area. In the northern portion of the review area, adjacent to Barkley Boulevard, a palustrine forested (PFO) wetland is mapped. South of Barkley Blvd, in the southeast portion of the review area, a PFO and a palustrine scrub-shrub (PSS) wetland are mapped. Another PFO wetland is mapped in the southwest portion of the review area.
- **WDFW Priority Habitat and Species (PHS) Map (WDFW, 2023a) (Figure 11)**
  PHS wetland mapping is consistent with NWI mapping.
- **City of Bellingham CityIQ – Environmental Mapping (COB, 2023) (Figure 12)**
  The City maps several wetlands throughout the review area. Site-specific mapping includes the delineation conducted by Biohabitats in 2021. This 2021 mapping effort replaced other past assessments done between 2000 and 2020. The 1992 inventory also maps wetlands throughout the review area.
- **Barkley Village Critical Areas – report prepared for Talbot Group and Barkley Village (Biohabitats, 2022)**
  Biohabitats identified forty-four (44) wetlands within, or in the immediate vicinity of, the review area.

3.2.2 Field Observations

NES identified a total of 44 wetlands within the review area (Figures 3-7). Sample plots documenting vegetation, soils, and hydrology were taken within each wetland and adjacent uplands. Sample plot locations are shown in Figures 4-7 and datasheets are included in Appendix D.

Overall, the acreage of wetland observed by NES was much higher than that documented in the Biohabitats report. Many of the previously mapped smaller wetland areas are now mapped as fewer, larger wetland units, and a number of additional wetlands were observed. The Biohabitats field assessment was conducted at the beginning of the dry season after a dry spring. NES had the benefit of conducting the fieldwork during the wet season and being able to observe wetland hydrology.

Classifications of the identified wetlands are summarized in Table 1 and detailed in the following section.

Table 1. Wetland Classification Summary

Wetland Name	Cowardin Classification	Hydrogeomorphic Classification	Approximate Size* (acres)
W-1a	PFO	Depressional	1.20
W-1c	PSS	Depressional	0.02
W-3	PFO	Depressional/Slope	0.36
W-4	PFO	Depressional/Slope	0.17
W-5	PSS	Depressional	0.03
W-7	PSS	Depressional	0.002 [94 sq. ft.]
W-8	PSS/PEM	Depressional/Slope	1.20
W-9	PFO	Depressional	0.06
W-10c	PSS	Depressional	0.002 [73 sq. ft.]
W-12	PFO	Depressional	0.35
W-14	PFO/PSS	Depressional/Slope	2.47
W-16a	PFO/PEM	Depressional/Slope	6.30
W-16c	PFO	Depressional	0.01
W-16d	PFO	Slope	0.02
W-17	PSS/PEM	Slope	0.32
W-19	PEM	Slope	0.42
W-20a	PFO	Depressional	0.16
W-20b	PSS	Depressional	0.02 [870 sq. ft.]
W-29	PFO/PEM	Slope	0.41
W-30	PFO/PEM	Depressional/Slope	1.37
W-32	PFO/PSS	Depressional	0.78
W-37	PFO/PSS/PEM	Depressional/Slope	11.35
W-38	PEM	Depressional	0.01 [434 sq. ft.]
W-39	PEM	Slope	0.06
W-45	PFO	Depressional	0.04
W-46	PSS	Slope	0.08

Table 1. Wetland Classification Summary- Continued			
W-47	PSS	Slope	0.21
W-48a	PSS	Depressional	0.32
W-48b	PSS	Depressional	0.10
W-49	PFO/PEM	Slope	0.72
W-50	PSS	Depressional	0.01 [203 sq. ft.]
W-A	PFO	Depressional	0.03
W-B	PFO	Depressional/Slope	0.26
W-C	PSS	Depressional	0.01 [341 sq. ft.]
W-D	PSS	Depressional	0.02 [719 sq. ft.]
W-AA	PFO	Depressional	0.05
W-BB	PSS	Depressional	0.01 [323 sq. ft.]
W-CC	PFO	Depressional	0.10
W-DD	PSS	Depressional	0.01 [531 sq. ft.]
W-FF	PSS	Depressional	0.01 [593 sq. ft.]
W-GG	PFO/PEM	Slope	0.04
W-HH	PSS	Slope	0.02 [760 sq. ft.]
W-JJ	PSS	Depressional	0.17
WL-KK	PSS	Slope	0.01 [540 sq. ft.]
		Total	**29.31**

*Approximate size includes the off-site extent.
(P: palustrine, FO: forested, SS: scrub/shrub, EM: emergent)

Northern Forested Wetlands – Wetlands AA, BB, CC, DD, FF, GG, HH, JJ, KK, 16c, 16d, 20a, 20b, 30, 32, 38, 39, 48a, 48b, and 50 (Figures 4 and 5)

Twenty (20) palustrine forested (PFO) and/or palustrine scrub-shrub (PSS) wetlands are located in the forest and along the forest fringe in the northern portion of the review area.

The forested wetlands are dominated by black cottonwood, but also contain red alder, paper birch, crab apple, and quaking aspen. The understory within these wetlands ranges from sparse to densely vegetated. Understory shrub vegetation primarily included black twinberry, red-osier dogwood, snowberry, salmonberry, vine maple, and hardhack. Primary groundcover

within these wetlands included American speedwell, slough sedge, creeping buttercup, large-leaf avens, lady fern, soft rush, and reed canarygrass.

The northern PSS wetlands are dominated by hardhack, clustered rose, and English Hawthorne. Additional vegetation commonly observed within these wetlands includes Himalayan blackberry, tall buttercup, and Dewey's sedge.

Just over half of the northern PFO/PSS wetlands are depressional (some with slope components) and the remainder are slope wetlands. All of these wetlands have seasonally saturated soils and most have some degree of seasonal inundation. Sources of hydrology to these wetlands likely includes seasonally high and/or perched groundwater, groundwater discharge, surface runoff, and direct precipitation.

The wetlands on the northern side of the ridge/ watershed break, outlet to the north and into the City stormwater system along E Sunset Dr. The stormwater system outlets stormwater to the Squalicum Creek corridor just north of the review area. The wetlands to the south of the ridge outlet water to the south. Surface water impounds along Barkley Blvd and outlets via multiple culverts under Barkley Blvd and into the southern portion of the review area. This water eventually flows to Fever Creek (a tributary to Whatcom Creek).

Wetland soil profiles were generally silt loam atop clay loam or clayey silt loam and met one or more of the following NRCS hydric soil indicators: Depleted Below Dark Surface (A11), Thick Dark Surface (A12), Depleted Matrix (F3), or Redox Dark Surface (F6). Wetland conditions were documented at sample plots in all twenty of the above-listed wetlands. Table 2, below, lists the sample plots associated with each wetland, adjacent upland sample plots, as well as the relation of each wetland to wetlands previously mapped by Biohabitats. Sample plot locations are shown in Figures 4 and 5.

Wetland 37 (Figure 5)

Wetland 37 is the largest wetland within the review area. The estimated area, including the offsite extent is 11.35 acres. This wetland contains PFO, PSS and palustrine emergent (PEM) vegetation classes. The wetland has both depressional and slope hydrogeomorphic components. Forested portions of Wetland 37 are dominated by a black cottonwood canopy. In the southeast forested portion of Wetland 37, approximately 0.5-acres, the canopy is composed of mature black cottonwood with diameters at breast height (DBH) exceeding 36 inches. The understory within Wetland 37 ranges from sparse to dense and is dominated by black twinberry, skunk cabbage, slough sedge, and lady fern. The hillslope in the western portion of Wetland 37 is vegetated with dense hardhack, Nootka rose, and swamp rose. Additional species observed in this scrub-shrub portions includes European Hawthorne, Sitka willow, soft rush, slough sedge, and some reed canarygrass. Emergent portions of Wetland 37 are primarily within the maintained pipeline corridor outside of the review area to the east. This area is dominated by a variety of pasture grasses.

Wetland 37 is situated on an approximately 3 percent gradient sloping to the south-southwest. Sources of hydrology to Wetland 37 likely include seasonally high and/or perched groundwater, groundwater discharge, surface runoff, stormwater discharge from adjacent

development, and direct precipitation. The sloped portions of Wetland 37 have seasonally saturated soils with small pockets of seasonal inundation less than 6-inches deep. The southwest portion of the wetland has significant seasonal ponding, 6-12 inches deep, at the toe-of-slope. Surface water impounds along Barkley Blvd and outlets to the southeast via three culverts under the road. Water flows to Wetland 14 on the southern side of the road.

Fever Creek forms within the eastern portion of Wetland 37, where seasonal inundation becomes channelized and flows down gradient to the south. Surface water outlets via another culvert under Barkley Blvd and flows to an off-site wetland (Wetland 44) to the south.

Wetland conditions were documented in several locations throughout Wetland 37, see Table 2. Soils within the wetland are generally composed of silt loam topsoil with clay loam or clay subsoils. Soils met NRCS hydric soil indicators A11, F3, and F6. Sample plot locations are shown in Figure 5.

Northern Field - Wetlands 16a, 17, and 19 (Figure 4)

Wetlands 16a, 17, and 19 are within the open field containing three radio towers in the northern portion of the review area. Wetland 16a is a PFO/PEM, depressional/slope wetland, and the second largest wetland within the review area, with an estimated area of 6.3 acres. Wetland 16a spans the field from east to west and extends into the adjacent forested areas. Wetlands 17 and 19 are slope wetlands north of Wetland 16a. Wetland 17 is located adjacent to Sunset Drive and contains some shrubs in the eastern portion of the wetland boundary. Wetland 19 is located on residential parcels north of the radio towers.

Within the field, these wetlands are vegetated with a variety of pasture grasses and weedy herbaceous species including red fescue, tall fescue, reed canarygrass, bluegrass, velvet grass, bentgrass, creeping buttercup, and tall buttercup. The field portions of Wetlands 16a and 17 appear regularly maintained (mowed). The majority of Wetland 19 does not appear to be regularly mowed. The forested portions of Wetland 16a are primarily vegetated with black cottonwood, paper birch, black twinberry, spiraea, snowberry, soft rush, and creeping buttercup.

Wetlands 16a, 17, and 19 outlet north to the ditch adjacent to E Sunset Drive and the City stormwater system. These wetlands have seasonally saturated soils and Wetlands 16a and 19 also have some seasonal inundation. Sources of hydrology likely include seasonally high and/or perched groundwater, groundwater discharge, surface runoff, and direct precipitation. Wetland 17 also receives stormwater runoff from the road.

Soils within Wetlands 16a, 17, and 19 are generally composed of silt loam topsoil with clay loam subsoils. Soils met one or more of the following hydric soil indicators: A11, A12, F3, and/or F6. Sample plot locations can be seen in Figure 4.

Railroad Trail Wetlands- Wetlands A, B, 1a, 1c, 3, 4, 5, 7, 8, 9, 10c, and 12 (Figures 6 and 7)

Twelve (12) wetlands were identified within the review area just north of the Railroad Trail. All thirteen wetlands are depressional (some with slope components). These wetlands are PFO and/or PSS (Wetland 8 has a PEM component) and are dominated by black cottonwood, black

twinberry, red-osier dogwood, and vine maple. The understory is moderately dense and groundcover is sparse to moderately dense. Groundcover included creeping buttercup, tall buttercup, slough sedge, large-leaf avens, and a similar variety of grasses observed in other wetlands of the review area. Additional vegetation observed within the wetlands includes red alder, western red cedar, cascara, crab apple, European Hawthorne, swamp gooseberry, and snowberry. Wetland 1a had a larger variety of native plants compared to the other wetlands, with an understory dominated by slough sedge, due to what is assumed to be previous mitigation enhancement within the wetland and wetland buffer.

These wetlands have seasonally saturated soils and shallow seasonal inundation (except for Wetland B). Sources of hydrology to these wetlands likely includes seasonally high and/or perched groundwater, surface runoff, and direct precipitation. Wetland 8 is the headwater of St. Clair Creek. The stream flows south from the eastern portion of Wetland 8 to the ditch adjacent to the Railroad Trail, west within the ditch, then south via a culvert under the trail, and eventually to Fever Creek south of the review area. The western portion of Wetland 8 outlets to Wetland 12. Wetland 12 occasionally outlets to Wetland 5. Wetland 5 is situated within a deep depression which appears to man-made and possibly be an old stormwater catchment. The depression/ wetland contains a raised outlet structure which directs surface water to ditch/ St. Clair Creek. The inlet of this structure is set so that four to six inches of ponding would occur before it would outflow. Very little ponding was observed in this wetland during the site visits. Background mapping indicates a creek in this location, which was not observed.

West of St. Clair Creek, Wetlands 3 and 4 outlet to the southwest towards Wetland B. Wetland B outlets east, via a culvert under the Railroad Trail, to the Roosevelt Nature Area. West of Woburn Street, Wetland 1a outlets to the ditch along E Illinois Street and to the City stormwater system which appears to eventually outlet to lower Fever Creek. Wetlands A and 1c do not outlet surface water.

Wetland conditions were documented at sample plots shown in Table 2. Sample plot locations are shown in Figures 6 and 7. Wetland soil profiles were generally silt loam or clayey loam and met one or more of the following indicators: A11, F3, or F6.

Southeast Wetlands – Wetlands 14, 45, 46, 47, C, and D (Figure 7)

Six (6) wetlands were identified within the review area between Barkley Blvd and the Fever Creek Nature Area. Wetland 14 is a PFO/PSS depressional wetland, and the third largest wetland within the review area, with an area of approximately 2.47 acres. Wetland 14 is dominated by red alder, spiraea, clustered rose, and creeping buttercup. Wetland 14 also contained water starwort and lesser celandine, an invasive species. The western extent of Wetland 14 (near SP 125) collects stormwater from the City stormwater system, and based on field observations a portion of this wetland may have been modified (excavated) historically to retain additional surface runoff although the wetland is not mapped by the City as a stormwater feature.

Wetlands 46 and 47 are PSS slope wetlands that flow towards Fever Creek. These wetlands are vegetated with spiraea, red alder saplings, black twinberry, clustered rose, snowberry,

European Hawthorne, creeping buttercup, soft rush, and various grass species. Wetlands 45, C, and D are small depressional wetlands located in the forested area. Wetland 45 is PFO and dominated by red alder, black twinberry, and vine maple. Wetlands C and D are PSS and dominated by vine maple, salmonberry, lady fern, and piggyback plant. Additional vegetation observed within these wetlands includes large-leaf avens, American speedwell, field horsetail, stinging nettle, and various grass species.

These wetlands have seasonally saturated soils and all, except Wetland 47, have shallow seasonal inundation. Wetland 14 has a large seasonally ponded area in the western portion of the wetland that appears to pond between 6 to 12 inches. Wetland 14 outlets from its southern boundary, via a long culvert, towards Fever Creek. Wetlands 45, C, and D do not have a surface water outlet. Sources of hydrology to these wetlands likely includes seasonally high and/or perched groundwater, groundwater discharge, discharge from upgradient wetlands (Wetland 14), surface runoff, and direct precipitation.

Wetland conditions were documented at sample plots in all six of these wetlands (Table 2). Sample plot locations are shown in Figure 7. Wetland soil profiles were generally silt loam topsoil with clay loam subsoil and met hydric soil indicator A11 and/or F3.

Off-site Wetlands

Multiple off-site wetlands were observed or previously mapped within 150 feet of the review area boundary. Off-site wetlands were not mapped in the field but are depicted in Figures 3-7 are based on previous mapping and/or estimated based on a reconnaissance review. Off-site wetlands were not categorized using the Ecology Rating System.

Wetlands EE and 44 were observed and partially mapped in the field by NES. Wetland EE is a PFO wetland located north of the review area (near Wetland 30). Wetland 44 is a PFO, depressional/riverine wetland located east of the review area that was mapped by NES in a previous assessment for an adjacent parcel.

Biohabitats mapped eight (8) wetlands outside of the review area to the east and south: Wetlands 44a, 44b, 44c, 44d, 44e, 44f, 44g, and 44h (Biohabitats, 2022). Wetlands 44a, 44b, and 44c appear to be associated with Wetland 44, observed by NES. Biohabitats mapped Wetland 34 just north of the review area (near Wetland 32).

City IQ maps multiple site-specific delineated wetlands just outside of the review area. One wetland is located within the Fever Creek Nature Area (near Wetland 46) and four wetlands are mapped within the Roosevelt Nature Area. These wetlands were not observed by NES during the site assessment.

Table 2, below, lists the sample plots associated with each wetland, adjacent upland sample plots, as well as the relation of each wetland to wetlands previously mapped by Biohabitats.

Table 2. Wetland Data Summary

Wetland Name	Included Biohabitats Wetlands	Wetland Sample Plot (SP)	Adjacent Upland SP
W-1a	W-1a, W-1b	103, 104	102, 1abU, 105
W-1c	W-1c	1cW	1cU
W-3	W-3	108	109, 123
W-4	W-4	4-W, 108a	109a, 123
W-5	W-5	5-W	-
W-7	W-7	7-W	113
W-8	W-8, W-13	8-W, 13-W	113, 114
W-9	W-9	9-W	113
W-10c	W-10c	-	10-W
W-12	W-12a, 12b, 11a, 11b, 11c, 11d	111	110
W-14	W-14	14b-W, 125	115, 124, 126
W-16a	W-16a, 16b, 16e, 16f, 16g, 16h, 15a, 18a, 18b, 19a, 21a, 21b, 22, 24a, 24b, 24c, 25	200, 16-U (REV), 204, 210, 15-W (REV), 19-W, 208, 210, 212, 216, 218, 22W	201, 205, 15-U (REV), 209, 211, 215, 217, 219
W-16c	W-16c	202	201
W-16d	W-16d	203	201
W-17	W-17a, W-17b	207	206
W-19	W-19b, 19c, 19d	213	214, 268
W-20a	W-20a	20W	20U
W-20b	W-20b	266	265
W-29	W-28a, 28b, 29	263, 29-W	264
W-30	W-30a, 30b, 30c, 30d, 30e, 30g, 30h, 31	30-W, 31-W, 229	227, 228, 235
W-32	W-32a, 32b, 32c, 33, 35a, 35b	230, 35a-W	231
W-37	W-36a, 36b, 36c, 37, 41, 42, 43, 27	239, 241, 244, 246, 41-W, 248, 250, 252, 253, 257	240, 245, 247, 249, 251, 254
W-38	W-38	38-W	238
W-39	W-39	39-W	260

Table 2. Data Summary- Continued			
Wetland Name	**Included Biohabitats Wetlands**	**Wetland Sample Plot (SP)**	**Adjacent Upland SP**
W-45	W-45	45-W	118
W-46	W-46	46-W	117
W-47	W-47	116	117, 126
W-48a	W-48a, 48c, 48d, 48e	234	267
W-48b	W-48b	236	237
W-49	W-49, W-26	221, 265	220 (49-W), 266
W-50	W-50	50-W	-
W-A	New	101	100
W-B	New	107, 122	106
W-C	New	119	-
W-D	New	120	121
W-AA	New	222	223
W-BB	New	224	223
W-CC	New	225	226
W-DD	New	233	232
W-FF	New	242	243
W-GG	New	258	259
W-HH	New	261	262
W-JJ	New	268	267
WL-KK	New	255	256

REV = NES revised original data documented by Biohabitats.

3.2.3 2014 Wetland Categorization and Functional Assessment

NES categorized the identified wetlands using the Ecology Wetland Rating System for Western Washington: 2014 Update (Rating System) (Hruby, 2014) and the associated wetland rating form (January 2015).

The Washington State Wetland Rating System categorizes wetlands based on specific attributes based on rarity, sensitivity to disturbance, and the functions they provide. This methodology identifies and quantifies the potential of various functions operating within a wetland. This determination is based on the physical characteristics of water quality, hydrologic, and habitat functions in the wetland and its buffers. Using this system, wetlands are given a score based on the functions provided by the wetland and are classified as Category I (highest) through Category IV (lowest). A Category I rating is assigned to wetlands that have the highest value, opportunity, and potential to provide functions, and are most difficult to replace.

The Rating System scores wetland function for three categories: water quality, hydrology, and habitat. Each functional category is rated for site potential, landscape potential, and value. Rating scores are given as either "High," "Medium," and "Low."

Wetlands that rate "high" for water quality site potential typically have physical features that give the wetland the potential to provide water quality treatment. Wetlands that rate "high" for water quality landscape potential typically are in a position in the landscape that may receive potentially polluted runoff and therefore the wetlands have the opportunity to provide treatment. Wetlands that rate "high" for water quality value are typically valuable to society because they improve water quality in a basin with documented water quality impairment.

Wetlands that rate "high" for hydrologic site potential typically have physical characteristics that enable the wetland to reduce flooding and erosion by providing water storage. Wetlands that rate "high" for hydrologic landscape potential typically are in a setting where the wetlands receive runoff from developed or partially developed areas. Wetlands that rate "high" hydrologic value are typically valuable to society because they provide functions in a basin where flooding occurs.

Wetlands that rate "high" for wildlife habitat site potential typically have the physical features that provide breeding habitat, cover, and/or foraging habitat for a variety of species. Wetlands that rate "high" for habitat landscape potential are typically in a landscape position where little habitat fragmentation or loss has occurred, and the wetland has the opportunity to provide wildlife habitat as multiple species may be present. Wetlands that rate "high" for habitat value typically provide value to society because the wetlands are adjacent to habitats or species that are protected by local, state, or federal regulations.

Functions with a "medium" rating provide the above functions to a lesser degree. Functions with a "low" rating are typically in wetlands that are degraded, are not supported by the surrounding landscape, or do not provide functions that are of value to society.

The Ecology Rating Forms for the identified wetland(s) are included at the end of this report in Appendix E. A summary of the 2014 Ecology rating and scores are shown in Tables 3 and 4.

Note: the ratings were reviewed in relation to the Washington State Wetland Rating System For Western Washington 2014 Version 2.0 Update that was issued in July of 2023 (Hruby, T. & Yahnke, A. 2023). The previous forms remain in this report, but all points have been assigned based on the updated guidance.

Squalicum Creek Watershed

The 2014 Ecology ratings and scores for the sixteen (16) on-site wetlands that are within the Squalicum Creek watershed are summarized in Table 3.

Table 3. Site Wetland Rating and Functional Assessment (Squalicum Creek Watershed)

Wetland	Improving Water Quality	Hydrologic	Habitat	Total Score	Category
W-16a	L/M/H (6)	M/M/H (7)	M/L/H (6)	19	III
W-16c	M/M/H (7)	L/M/H (6)	L/L/L (3)	16	III
W-16d	L/M/H (6)	L/L/H (5)	L/L/M (4)	15	IV
W-17	L/M/H (6)	L/M/H (6)	L/L/M (4)	16	III
W-19	L/M/H (6)	L/L/H (5)	L/L/M (4)	15	IV
W-30	M/M/H (7)	M/M/H (7)	M/L/H (6)	20	II
W-32	M/L/H (6)	M/L/H (6)	M/L/H (6)	18	III
W-38	M/L/H (6)	M/L/H (6)	L/L/H (5)	17	III
W-48a	M/L/H (6)	M/M/H (7)	L/L/H (5)	18	III
W-48b	M/L/H (6)	M/M/H (7)	L/L/H (5)	18	III
W-49	L/L/H (5)	L/L/H (5)	M/L/H (6)	16	III
W-50	H/L/H (7)	M/M/H (7)	L/L/H (5)	19	III
W-AA	M/L/H (6)	M/M/H (7)	L/L/H (5)	18	III
W-BB	M/L/H (6)	M/L/H (6)	L/L/H (5)	17	III
W-CC	L/M/H (6)	M/M/H (7)	L/L/H (5)	18	III
W-DD	M/L/H (6)	M/M/H (7)	L/L/H (5)	18	III

Site potential score/landscape potential score/value score (total points for function)
L=Low; M=Moderate, H=High

Water Quality Function

In general, the above listed site wetlands have moderate potential to perform water quality improvement functions. Wetlands 16a, 16c, 30, 32, 38, 48a, 48b, 50, AA, BB, CC, and DD are depressional wetlands that are seasonally ponded. Depressional wetlands have the potential to retain or slow stormwater runoff, allowing for settling of particulates and pollutants associated with particulates. These site wetlands are moderately to densely vegetated with persistent, uncut plants that allow for filtering and trapping of sediments and other pollutants within surface waters. Portions of the depressional wetlands are seasonally ponded, which increases

the potential for water quality improvement of surface water, primarily nitrogen removal and particulate settling. Wetlands 32, 38, 48b, 50, BB, and DD do not outlet surface water, which increases the residence time of ponded water and allows more time for suspended particulates to settle out.

Wetlands 16d, 17, 19, and 49 are slope wetlands, which are generally less effective at trapping sediments and associated pollutants due to their topography and lack of surface water impoundment. These site wetlands are situated on a slope with a less than 5 percent gradient, which allows for surface water to move more slowly and increases the residence time of surface water within the wetlands. Sloped wetlands vegetated with dense, uncut herbaceous vegetation and/or dense woody vegetation provide greater filtering potential of surface water flowing through the wetland. These site wetlands provide this function to a varying degree with Wetland 16d being the most densely vegetated and Wetland 19 being the least.

Wetlands near the review area boundaries, such as Wetlands 16a, 16c, 16d, 17, 19, 30, and CC may be receiving excess pollutants from surrounding land uses (stormwater runoff from adjacent roads and development) which provides these wetlands with the opportunity to improve water quality on site. Water quality functions provided by all site wetlands within the Squalicum Creek watershed are valuable because the downstream waters of Squalicum Creek are 303(d)-listed for dissolved oxygen (DO), high temperature, and bacteria. An Approved TMDL exists for the watershed to address temperature impairments. Ecology is also developing a TMDL for this watershed due to high levels of bacteria.

Hydrologic Function

In general, these wetlands have moderate potential to perform hydrologic functions. Ponding within the depressional wetlands provides desynchronization of floodwater during storm events. Additionally, the site wetlands have small contributing basins relative to their overall size, and therefore have better opportunity to reduce peak flows during flooding events. However, the ponded areas are generally shallow, and they do not provide significant live storage due to limited ponding and surface water outlets.

Wetlands 16d, 17, 19, and 49 are slope wetlands, which are generally less capable of flood storage due to the runoff of surface water. None of these wetlands have enough dense, rigid vegetation to significantly slow surface water runoff.

Wetlands 16a, 16c, 17, 30, 48a, 48b, 50, AA, CC, and DD are adjacent to land uses which generate excess stormwater runoff (runoff from roads and direct stormwater discharge) which flows into the wetlands. Therefore, these wetlands have the opportunity to provide hydrologic functions on site. Flooding is an issue down-gradient along Squalicum Creek which causes damage to roads and other infrastructure. Therefore, the hydrologic functions provided by the site wetlands are beneficial within the watershed.

Habitat Functions

In general, these wetlands have low to moderate potential to provide wildlife habitat. Wetlands 16a, 30, 32, and 49 have greater structural complexity, such as multiple plant classes and hydroperiods, greater interspersion of habitat types, and special habitat features (large downed

woody debris, standing snags, significant amphibian breeding habitat). Structural complexity increases the number of ecological niches which provides habitat for a wider variety of wildlife species. However, the site is disconnected from larger areas of relatively undisturbed habitat by high trafficked roads and dense residential development.

Wetlands 16a, 30, 32, 38, 48a, 48b, 50, AA, BB, CC, and DD are within a City identified Important Wildlife Habitat Area (COB, 2022). Therefore, these wetlands are considered important habitat for species that live within the City limits and likely provide foraging, refuge, and breeding opportunity for wildlife in a highly developed area. Additionally, multiple Priority snags and logs are in the immediate vicinity of many of the site wetlands which increases their potential as wildlife habitat.

Whatcom Creek Watershed

The 2014 Ecology rating and scores for the twenty-eight (28) on-site wetlands that are within the Whatcom Creek watershed are summarized in Table 4.

Table 4. Site Wetland Rating and Functional Assessment (Whatcom Creek Watershed)

Wetland	Improving Water Quality	Hydrologic	Habitat	Total Score	Category
W-A	M/M/H (7)	M/H/H (8)	L/L/M (4)	19	III
W-B	M/M/H (7)	M/M/H (7)	L/L/H (5)	19	III
W-C/D	M/M/H (7)	M/M/H (7)	L/L/H (5)	19	III
W-FF	M/L/H (6)	M/M/H (7)	L/L/H (5)	18	III
W-GG	L/L/H (5)	M/L/H (6)	L/L/H (5)	16	III
W-HH	L/L/H (5)	M/M/H (7)	L/L/H (5)	17	III
W-JJ	M/L/H (6)	M/L/H (6)	L/L/H (5)	17	III
W-KK	L/L/H (5)	L/L/H (5)	L/L/H (5)	15	IV
W-1a	M/M/H (7)	M/M/H (7)	M/L/M (5)	19	III
W-1c	M/M/H (7)	M/M/H (7)	L/L/M (4)	18	III
W-3	M/M/H (7)	M/M/H (7)	L/L/H (5)	19	III
W-4	M/M/H (7)	M/M/H (7)	L/L/H (5)	19	III
W-5	L/M/H (6)	L/M/H (6)	L/L/H (5)	17	III
W-7/10c	L/L/H (5)	M/L/H (6)	L/L/H (5)	16	III
W-8	M/M/H (7)	M/M/H (7)	M/L/H (6)	20	II
W-9	M/L/H (6)	M/L/H (6)	L/L/H (5)	17	III
W-12	M/M/H (7)	L/M/H (6)	L/L/H (5)	18	III
W-14	M/M/H (7)	M/M/H (7)	M/L/H (6)	20	II
W-20a	H/L/H (7)	H/L/H (7)	L/L/H (5)	19	III

Table 4 Continued					
Wetland	Improving Water Quality	Hydrologic	Habitat	Total Score	Category
W-20b	H/L/H (7)	H/L/H (7)	L/L/H (5)	19	III
W-29	L/L/H (5)	L/L/H (5)	M/L/H (6)	16	III
W-37	M/M/H (7)	M/H/H (8)	H/L/H (7)	22	II
W-39	M/L/H (6)	M/L/H (6)	L/L/H (5)	17	III
W-45	H/L/H (7)	H/L/H (7)	L/L/H (5)	19	III
W-46	L/L/H (5)	L/L/H (5)	L/L/H (5)	15	IV
W-47	M/L/H (6)	L/L/H (5)	L/L/H (5)	16	III

Site potential score/landscape potential score/value score (total points for function)
L=Low; M=Moderate, H=High

Water Quality Function

In general, the above listed site wetlands have moderate potential to perform water quality improvement functions. The majority of the site wetlands within the Whatcom Creek Watershed are depressional including wetlands 1a, 1c, 3, 4, 5, 7, 10c, 8, 9, 12, 14, 20a, 37, 45, A, B, C, D, FF, and JJ. These wetlands are seasonally ponded and have the potential to retain or slow stormwater runoff, allowing for settling of particulates and pollutants associated with particulates. These site wetlands are moderately to densely vegetated with persistent, uncut plants that allow for filtering and trapping of sediments and other pollutants within surface waters. Portions of the depressional wetlands are seasonally ponded, which increases the potential for water quality improvement of surface water, primarily nitrogen removal and particulate settling. Wetlands A, C, D, FF, 1c, 7, 10c, 9, 20a, 20b, and 45 do not outlet surface water, which increases the residence time of ponded water and allows more time for suspended particulates to settle out.

Wetlands 29, 39, 46, 47, GG, HH, and KK are slope wetlands and are generally less effective at trapping sediments and associated pollutants. These wetlands, except Wetland 29, are situated on a slope with a less than 5 percent gradient, allowing for surface water to move more slowly through the wetlands. These site wetlands are vegetated with dense, uncut vegetation to varying degrees from greater than half the wetland area to the entire wetland area.

Wetlands near the review area boundaries, such as Wetlands A, B, C, D, 1a, 1c, 3, 4, 5, 8, 12, 14, and 37 may be receiving excess pollutants from surrounding land uses (stormwater runoff from adjacent roads, trails, and development) which provides these wetlands with the opportunity to improve water quality on site. Water quality functions provided by all site wetlands within the Whatcom Creek watershed are valuable because the downstream waters of Fever Creek are 303(d)-listed for DO and bacteria. Further downstream, Whatcom Creek is listed for low DO.

An Approved TMDL exists for the watershed to address temperature impairments. Ecology is also developing a TMDL for this watershed due to high levels of bacteria.

Hydrologic Function

In general, these wetlands have moderate potential to perform hydrologic functions. Wetlands 37 and H have higher potential due to their position in the landscape where they receive excess runoff and have more opportunity to capture runoff before it flows down gradient. Ponding within the depressional wetlands provides desynchronization of floodwater during storm events. Additionally, the site wetlands, aside from Wetlands 12 and 14, have small contributing basins relative to their overall size, and therefore have better opportunity to reduce peak flows during flooding events. However, the ponded areas in most of the wetlands are shallow, and do not provide significant live storage due to limited ponding and surface water outlets. Wetlands 37 and 14, however, are capable of significant live storage.

Wetlands 29, 39, 46, 47, GG, HH, and KK are generally less capable of flood storage due to being situated on a slope. Of these wetlands, only Wetland GG, HH and 39 have enough dense, rigid vegetation to significantly slow surface water runoff.

Wetlands A, B, C, D, FF, HH, 1a, 1c, 3, 4, 5, 8, 12, 14, and 37 are adjacent to land uses which generate excess stormwater runoff (runoff from roads and direct stormwater discharge) which flows into the wetlands. Therefore, these wetlands have the opportunity to provide hydrologic functions on site. Flooding is an issue down-gradient within Fever Creek and Whatcom Creek which causes damage to roads and other infrastructure. Therefore, the hydrologic functions provided by the site wetlands are beneficial within the watershed.

Habitat Functions

In general, these wetlands have low to moderate potential to provide wildlife habitat. Wetlands 1a, 8, 14, 29, and 37 have greater structural complexity and may provide habitat for a wider variety of wildlife species. However, the site is highly disconnected from larger areas of relatively undisturbed habitat by high trafficked roads, commercial land use, and dense residential development. Therefore, the site wetlands are not very accessible to wildlife.

Wetlands C, D, FF, GG, HH, JJ, KK, 14, 20a, 20b, 29, 37, 39, 45, 46, and 47 are within a City identified Important Wildlife Habitat Area (COB, 2022). Therefore, these wetlands are considered important habitat for species that live within the City limits and likely provide foraging, refuge, and breeding opportunity for wildlife in a highly developed area. Additionally, multiple Priority snags and logs, two streams, and associated riparian areas are in the immediate vicinity of many of the site wetlands which increases their potential as wildlife habitat.

3.3 Upland Areas

3.3.1 Field Observations

Uplands within the review area are variable and consist of forested areas dominated by deciduous species, relatively mature conifer-dominant forested areas, upland fields, and uplands dominated by shrubs on the hillslope north of Barkley Blvd.

Forested uplands in the northwestern portion of the review area are younger and dominated by black cottonwood, with an understory of primarily snowberry and Himalayan blackberry. Forested uplands in the eastern 40 +acres of the site, north of Barkley Blvd, contain a canopy of large Douglas fir intermixed with big-leaf maple, western red cedar, red alder, and paper birch. The understory is composed of snowberry, vine maple, oceanspray, oso berry, salmonberry, elderberry, sword fern, bracken fern, and trailing blackberry. South of Barkley Blvd, forested uplands in the eastern review area, are similarly vegetated, containing a canopy dominated by deciduous canopy but also containing some western red cedar or Douglas fir.

To the west, along the Railroad Trail, forested uplands are dominated by black cottonwood, intermixed with alder and paper birch. The understory has a similar species composition to other forested areas, with a higher density of Himalayan blackberry.

Uplands within the field in the northwestern portion of the review area are composed of sweet vernal grass, red fescue, velvet grass, bentgrass, bluegrass, reed canarygrass, meadow foxtail, and various other weedy herbaceous species. Uplands on the shrubby-hillslope in the north-central portion of the review area are dominated by snowberry, clustered rose, and European Hawthorne.

Upland sample plots are listed in Table 2. Sample plot locations are shown in Figures 4-7. Soils within the uplands are generally composed of silt loams and the majority do not meet NRCS hydric soil indicators. Hydric soil indicators were met in a limited number of upland plots, however these areas did not meet wetland hydrologic indicators. Datasheets are attached to this report (Appendix D) and describe upland soils in greater detail.

3.4 Fish and Wildlife Habitat Conservation Areas (HCAs)

NES identified two seasonal streams within the review area: St. Clair Creek and Fever Creek. No fish were observed within either stream. Based on consultation with WDFW, neither stream is anticipated to be fish bearing.

No ponds, other than stormwater retention ponds, or lakes were observed or mapped in the review area or within 150 feet.

No federal or state Threatened, Endangered, or Candidate species or state Priority species were observed within the review area or immediate vicinity. WDFW Priority habitat observed on site includes the identified wetlands, streams, associated riparian areas, and Priority snags and logs. As described above, portions of the review area are mapped by the City as an Important Wildlife Habitat and is likely to be considered to be Priority Biodiversity Area and Wildlife HCA.

Big brown bat (*Eptesicus fuscus*) occurrence is mapped in the township of the review area. Observed Priority snags within the review area have the potential to be utilized by big brown bat as day roosts and on-site riparian areas may also be used as foraging habitat.

3.4.1 Document Review

The following provides a summary of the findings contained within documents reviewed:

- **WDFW PHS (WDFW, 2023a) (Figure 11)**
  Big brown bat (a Priority species) occurrence is mapped in the township of the review area. This mapping is not site specific.

- **WDFW SalmonScape (WDFW, 2023b) (Figure 13)**
  No streams are mapped by WDFW within the review. WDFW maps Fever Creek, as a perennial stream approximately 0.6-miles southwest of the review area. The stream continues south and eventually into Whatcom Creek, just east of Interstate-5.

  South of the site, Fever Creek is mapped to be gradient accessible to Dolly Varden/ bull trout (*Salvelinus malma*/*S. confluentus*), fall chum (*Oncorhynchus keta*) and coho salmon (*O. kisutch*). WDFW maps two culverts on Fever Creek that are total fish blockages. Documented presence of multiple salmonid species is mapped downstream in Whatcom Creek.

  Squalicum Creek, a perennial salmonid-bearing stream, is mapped approximately 330-feet north of the review area. However, the Squalicum Creek corridor is disconnected from the review area by E Sunset Drive and Hannegan Road.

- **City of Bellingham CityIQ – Stream Mapping (COB, 2023) (Figure 12)**
  COB mapping indicates both Fever Creek and St Clair Creek on or in the immediate vicinity of the site.

  Fever Creek is mapped as originating just south of Barkley Blvd in the western extent of the site. The stream flows south, through a pond in the Fever Creek Nature Area, and continues south and into Whatcom Creek just southeast of Interstate-5 and Iowa Street.

  St Clair Creek is located south of Barkley Blvd. The stream is located mid-site, and flows to the south, along the north side of the Railroad Trail. The stream flows west in a ditched channel along the north side of the trail, then south through the Roosevelt Nature area and into Fever Creek just east of Roosevelt Elementary School.

- **City of Bellingham CityIQ – Terrestrial Wildlife Habitat Network (COB, 2023) (Figure 14)**
  Forested areas in the north and eastern portion of the review area are mapped as an Important Wildlife Habitat Area. These areas are a part of a larger mapped terrestrial habitat polygon, approximately 122 acres in total, which extends northeast and south of the review area. This habitat area is disconnected from other nearby mapped important habitat areas by development. East Sunset Drive acts as a wildlife movement barrier to a 119-acre habitat area north of the review area, and dense residential development and Chandler Parkway act as a barrier to a 32-acre area to the east.

- **City of Bellingham CityIQ – Bellingham Habitat Restoration Technical Assessment (COB, 2023).**
  CityIQ maps the entire review area, except the single-family homes along East Sunset Drive as within a forested habitat block. Block 149 is mapped north of Barkley Blvd, and Block 151 is mapped south of Barkley Blvd. There are no areas mapped as recommended for protection or restoration within the review area.

3.4.2 Field Observations

Fever Creek

Fever Creek originates within the northeastern portion of the review area, from Wetland 37. Surface water within the wetland channelizes and flows south through a 36-inch diameter culvert under Barkley Blvd. The stream continues south, just outside of the eastern review area boundary, between the review area and the dense single-family neighborhood along Brandywine Way. Based on City mapping, the stream appears to discharge to the stormwater pond south of the review area, within the Fever Creek Nature Area, outlets from the pond from the south, and continues flowing southwest until it discharges to Whatcom Creek.

Within Wetland 37, the observed portion of the stream channel were generally 2-feet wide and 4-inches deep on average. The channel meanders through the wetland, the bed is composed of silt, and is partially vegetated. This portion of the stream has 100 percent cover of overhanging vegetation, including black cottonwood, black twinberry, red-osier dogwood, and vine maple. Conditions offsite in Wetland 44 are similar.

WDFW maps the terminus of Fever Creek approximately 0.6-miles southwest of the review area. At this location, Fever Creek is indicated to be perennial and gradient accessible to multiple Priority salmonids. Multiple partial and total fish passage barriers exist downstream. No fish were observed onsite. The stream reach adjacent to the review area contains the channel morphology necessary to support fish populations [greater than two feet wide and less than 16 percent gradient (WAC 222-16-031)]. However, NES consulted with WDFW staff and WDFW concludes that Fever Creek is not fish bearing upstream from the regional detention pond south (downstream) of the subject site (Ingram, 2023).

St. Clair Creek

St. Clair Creek, a tributary of Fever Creek, was observed as mapped by COB within the south-central portion of the review area. The creek originates within Wetland 8 as surface water within the wetland channelizes and outlets to the ditch along the Railroad Trail. The ditched stream channel flows west, just south of the review area, then outlets south via a culvert under the trail and continues flowing south until it discharges to Fever Creek. St. Clair Creek was flowing during the beginning of the site assessment from March through April and was no longer flowing at the time of the final site visit on May 4th.

No fish were observed in the adjacent reaches of the creek. The channel of the adjacent reaches of St. Clair Creek are ditched and less than 2-feet wide, and do not have suitable morphology to support fish. WDFW staff has indicated they do not consider St. Clair Creek as fish bearing

north of North Haven Place because the channel losses definition in the wetlands within the Roosevelt Nature Area (Ingram, 2023).

Lakes and Ponds

No lakes or pond HCAs were observed in the review area or within 150 feet. Two stormwater ponds associated with adjacent development were observed in the vicinity. A retention pond within the Fever Creek Nature Area was observed south of the southeastern portion of the review area. This stormwater pond is known to support amphibian breeding and waterfowl. Another retention pond just north of the southwestern review area was also observed. Canada geese (*Branta canadensis*) are known to utilize this pond.

Wildlife Habitat

No federal or state Threatened, Endangered, or Candidate species or state Priority species were observed within the review area or immediate vicinity. WDFW Priority habitat observed on site includes the identified wetlands, streams, associated riparian areas, and Priority snags and logs. As described above, portions of the review area are mapped by the City as an Important Wildlife Habitat. These areas also appear to meet the description of a WDFW Priority Biodiversity Area as defined in the WDFW State of Washington PHS List (WDFW, 2023d). This area is also likely to be considered a wildlife HCA by the COB, as the area meets the HCA definition of "land useful or essential for preserving connections between habitat blocks and open spaces" (BMC 16.55.470(A)(7)).

WDFW maps the occurrence of big brown bat within the township of the review area (but not site specifically). Big brown bat is a habitat generalist that will occupy a variety of forest types, rangeland, and urban areas. The species uses buildings, trees, snags, caves, mines, crevices in cliffs, and bridges as day roosts. Occupation of trees and snags depends on the presence of cavities, hollow trunks, crevices, loose exfoliating bark, and dead or broken tops; cavity volume; openness from surrounding vegetation; and older age of the forest stand. Hibernacula includes buildings, caves, mines, rock crevices, and potentially other natural sites such as hollow trees. Protection of maternity roosts and sizeable hibernacula is a conservation priority for this species (WDFW, 2022c).

No habitat features that would be used by this species as hibernacula were observed in the review area or vicinity. Multiple Priority snags were observed within the review area, which have the potential to be utilized by big brown bat as day roosts. Bats may also use on-site riparian areas as foraging habitat.

In general, the site provides habitat for a variety of wildlife species that can tolerate urban or semi urban environments, and the site provides refuge in a developing area. Wildlife use of the habitat on site is somewhat limited by the surrounding roads and development that disconnect it from other nearby habitat blocks. However, the property is part of a larger mapped habitat block that extends offsite to the north, south, and east, but it is disconnected from other surrounding habitat by roads and development.

Wildlife observed on site includes a variety of songbirds and deer, and Pacific chorus frogs (*Pseudacris regilla*). Other species that were not observed but are likely to utilize the site for

foraging, breeding, and refugia are those that are well adapted to human presence such as raptors, bats, and other small mammals, such as squirrels and racoon.

3.5 Frequently Flooded Areas

No frequently flooded areas are mapped within the review area.

3.5.1 Document Review

The following provides a summary of the findings contained within documents reviewed:

- **FEMA National Flood Hazard Layer (FEMA, 2023)**
  FEMA mapping does not indicate any floodplain or floodway onsite. However, mapping along Fever Creek appears to be limited to the lower reaches and the limit of study does not extend north of Texas Street.
- **City of Bellingham CityIQ – Flood (COB, 2023)**
  COB mapping does not indicate any FEMA floodway or 100-year floodplain within the review area, or other frequently flooded areas onsite.
- **Frequently Flooded Areas Assessment, Best Available Science Documentation COB (Elements, 2017)**
  Within the review area, mapping in this document includes a polygon north of the road, roughly in relation to Wetland 37, that is indicated as a DEM Interpolated Depressions, as well as a wetland south of Barkley Blvd, in the approximate location of Wetland 14. The DEM Interpolated depression may be a potential frequently flooded area or a depressional wetland.

3.5.2 Field Observations

Field observations confirm background resources, no flooding was observed on site and none was known to occur during the most recent 2021 flood events.

3.6 Shorelines

The review area appears to be outside of the COB SMP jurisdiction.

3.6.1 Document Review

The following provides a summary of the findings contained within documents reviewed:

- **City of Bellingham CityIQ – Shoreline Mater Program Mapping (COB, 2023)**
  The nearest mapped Shoreline of the State is Squalicum Creek, which has a designation of Urban Conservancy (UC). The review area appears to be outside of the shoreline jurisdiction.

3.6.2 Field Observations

Field observations confirm COB mapping.

4.0 REGULATIONS

Agencies with regulatory authority over site wetlands, streams, fish and wildlife habitats, shorelines, and/or frequently flooded areas are summarized in Table 5.

Table 5. Regulatory Summary

Feature	Ecology Category/ Water Type	Habitat Points+	Regulated Authority				Regulated Buffer* (ft)
			COB	Corps	Ecology	WDFW	
W-1a	III	5	X		X		150
W-1c	III	4	X		X		80
W-3	III	5	X		X		150
W-4	III	5	X		X		150
W-5	III	5	X		X	X	150
W-7	III	5	X		X		-
W-8	II	6	X	X	X	X	150
W-9	III	5	X		X		150
W-10c	III	5	X		X		-
W-12	III	5	X		X		150
W-14	II	6	X	X	X	X	150
W-16a	III	6	X		X		150
W-16c	III	3	X		X		80
W-16d	IV	4	X		X		50
W-17	III	5	X		X		150
W-19	IV	4	X		X		50
W-20a	III	5	X		X		150
W-20b	III	5	X		X		-
W-29	III	6	X		X		150
W-30	II	6	X		X		150
W-32	III	6	X		X		150
W-37	II	7	X	X	X	X	150

Table 5. Regulatory Summary- Continued							
W-38	III	5	X		X		-
W-39	III	5	X		X		150
W-44	III	5	X	X	X	X	150
W-45	III	5	X		X		150
W-46	IV	5	X		X	X	50
W-47	III	5	X		X		150
W-48a	III	5	X		X		150
W-48b	III	5	X		X		150
W-49	III	6	X		X		150
W-50	III	5	X		X		-
W-A	III	4	X		X		80
W-B	III	5	X		X		150
W-C	III	5	X		X		-
W-D	III	5	X		X		-
W-AA	III	5	X		X		150
W-BB	III	5	X		X		-
W-CC	III	5	X		X		150
W-DD	III	5	X		X		-
W-FF	III	5	X		X		-
W-GG	III	5	X		X		150
W-HH	III	5	X		X		150
W-JJ	III	4	X		X		80
WL-KK	IV	5	X		X		50
Fever Creek	NS	na	X	X	X	X	50
St. Clair Creek	Ns	na	X	X	X	X	50

[+]From Ecology 2014 Wetland Rating System
*Buffer based on high intensity land use
W= Wetland; F= Fish bearing; Ns= Non-fish bearing, seasonal

4.1 City of Bellingham

The COB critical areas ordinance (CAO) states that no activity may be conducted within a regulated wetland, stream, or buffer without critical areas review and approval. Activities impacting regulated wetlands generally must provide mitigation sufficient to maintain or enhance the wetland functions.

The COB regulates all wetlands, regardless of size or category. All wetlands listed in Table 5 are located within or in the immediate vicinity of the review area and are under the jurisdiction of the COB CAO.

The COB requires a buffer around most regulated critical areas to protect functions (BMC 16.55.340). The buffer must remain naturally vegetated except where it can be enhanced to improve the functions. Wetland buffers are measured from the wetland edge. However, isolated Category III and IV wetlands that are under 1,000 sq. feet and meet other requirements in BMC 16.55.270.B are exempt from buffers and mitigation sequencing. This appears to apply to Wetlands 7, 10c, 38, 50, 20b, C, D, BB, DD, and FF. Wetlands HH, KK, 16c and 16d are also under 1,000 sq. ft. but they are not isolated.

For all other site wetlands, the standard wetland buffer widths are determined according to proposed or existing land use intensity, the overall wetland category, and the habitat rating (from the Rating System). Future development within the review area is anticipated to be considered high intensity, based on the COB CAO. **Buffers anticipated for this site are based on high-intensity land use and are detailed above in Table 5 and are depicted in Figures 3-7.**

The COB regulates streams as HCAs. COB requires a buffer around regulated HCAs to protect functions (BMC 16.55.500). **As a non-fish bearing, seasonal streams both Fever Creek and St. Clair Creek are expected to require a standard buffer of 50 feet.**

4.2 Washington State Department of Ecology

Ecology has authority over discharge into all waters of the state, which includes wetlands (including isolated wetlands) and streams, and can impose buffers and compensatory mitigation for impacts (RCW 90.48.080).

Under Section 401 of the Clean Water Act (CWA), any activity involving a discharge into waters of the U.S. authorized under a Federal permit must receive CWA Section 401 Water Quality Certification (WQC). Ecology is authorized to make WQC decisions on federal, public and privates lands in Washington, with a few exceptions (where EPA or Tribes have authority). Ecology reviews all CWA Section 404 permit applications received by the Corps for WQC. Ecology requires an "individual" review of all wetland disturbances greater than one-half acre, projects in tidal waters, or where impacts to wetlands and streams are determined to require additional review.

State laws that protect wetlands are broader than current federal regulations. The state can establish protocols for managing wetlands falling outside federal jurisdiction. For non-federally regulated wetlands, applicants must submit a request for an Administrative Order to comply with the state Water Pollution Control Act (Chapter 90.48 RCW).

4.3 Washington State Department of Fish and Wildlife

The WDFW requires issuance of a Hydraulic Project Approval (HPA) prior to any activities that may directly or indirectly affect streams or associated wetlands. **The WDFW is anticipated to regulate Fever Creek and St. Clair Creek. Wetlands 37 and 46 are anticipated to be regulated due to direct stream connection and discharge to Fever Creek. Wetland 8 is also anticipated to be regulated by WDFW due to direct connection to St. Clair Creek.** Only the WDFW has the authority to make this determination.

4.4 U.S. Army Corps of Engineers

The Corps regulates the discharge of dredged or fill material into all waters of the United States (WOTUS), including wetlands, under Section 404 of the clean water act (CWA). The Corps regulates the construction of any structure and/or work in or affecting the course, condition, or capacity of navigable water of the United States under Section 10 of the Rivers and Harbors Act of 1899. The Corps requires pre-construction notification for all disturbances to wetlands, streams, and potentially to other drainages (ditches) prior to commencing any work. It is incumbent upon the landowner to disclose disturbances.

The 1972 amendments to the CWA established federal jurisdiction over "navigable waters", defined as WOTUS (CWA Section 502[7]). The CWA gives authority for defining WOTUS in regulations to the two federal agencies charged with enforcement of the CWA – the Environmental Protection Agency (EPA) and Corps (EPA, 2023). The interpretation of WOTUS and thereby the scope of waters federally regulated under the CWA, has gone through decades of litigation.

In May of 2023, the U.S. Supreme Court issued a decision on more recent litigation, *Sackett v. EPA*. It appears that the Court has adopted the "relatively permanent" standard from *Rapanos vs. United States* to define WOTUS and eliminated a significant nexus as a basis for jurisdiction (NAWM, 2023). Under *Rapanos*, WOTUS ''include[ ] only those relatively permanent, standing or continuously flowing bodies of water 'forming geographic features' that are described in ordinary parlance as 'streams[,] . . . oceans, rivers, [and] lakes,'" and "wetlands with a continuous surface connection" to a "relatively permanent body of water connected to traditional interstate navigable waters." (EPA, 2023).

The *Sackett* decision holds that WOTUS includes only those "wetlands with a continuous surface connection to bodies that are 'waters of the United States' in their own right," so that they are "as a practical matter indistinguishable from waters of the United States." Therefore, at this time, in order for a wetland to be jurisdictional under the CWA, it must meet two requirements: (1) have a continuous surface connection to a WOTUS and (2) be practically indistinguishable from that ocean, river, stream, or lake (NAWM and SWS, 2023).

Only the Corps has the authority to make jurisdictional determinations; however, the following is a description of the anticipated determinations. Fever Creek appears to have continuous surface flow for at least three months of the year and is a tributary to Whatcom Creek (a relatively permanent water [RPW]), which flows to Bellingham Bay (a traditionally navigable water [TNW]). **Therefore, Fever Creek is anticipated to be regulated as an RPW and**

is likely under Corps jurisdiction. St. Clair Creek appears to have continuous surface flow for at least three months of the year and is a tributary to Fever Creek. **Therefore, St. Clair Creek is anticipated to be regulated as an RPW and is likely under Corps jurisdiction.** Wetland 37 is the headwater of Fever Creek and is indistinguishable from the stream in portions of the wetland. **Therefore, Wetland 37 may be under Corps jurisdiction.** Wetland 8 is the headwater of St. Clair Creek and is indistinguishable from the stream in portions of the wetland. **Therefore, Wetland 8 may be under Corps jurisdiction.**

At this time, the remaining site wetlands do not appear to be regulated by the Corps.

Activities in Waters of the United States that require Corps authorization may qualify for authorization under one of the general Nationwide Permits (NWPs) if the activities meet the criteria. In the more commonly used NWPs, discharge (fill) is limited to under 1/2 acre of wetland, 300 linear feet of stream, and 1/3 acre of tidal waters. Discharge exceeding the NWP thresholds requires an Individual Permit from the Corps. Mitigation is required for most activities. The Corps also has discretion to disallow disturbance to high quality wetlands. As part of their permit review, the Corps must verify the project complies with Section 7 of the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, and Section 106 of the National Historic Preservation Act, (including archeological sites).

4.5 Mitigation Sequencing

Local, state, and federal agencies require projects impacting wetlands, streams, or wildlife HCAs, and/or shorelines to follow mitigation sequencing. Mitigation sequencing is a process where applicants show they have avoided all impacts to regulated areas and their buffers to the furthest extent possible. In some cases, if an alteration to the regulated area is deemed unavoidable, impacts may be allowed if they are mitigated using the best available science and result in no net loss of critical area functions and values. When alteration or impact to a regulated area is proposed, the applicant must demonstrate that all reasonable efforts have been taken to mitigate impacts in the following, prioritized, order: 1) Avoid, 2) Minimize, 3) Rectify, 4) Reduce, 5) Compensate.

4.5 Summary

In summary, NES delineated 44 wetlands (25.11 ac) within the review area. Of the mapped wetlands, four (4) are Category II, 36 are Category III and four (4) are Category IV. A summary wetland table is provided below in Table 6.

NES observed two streams onsite- Fever Creek and St Clair Creek, both are non-fish bearing. Upland forest portions of the site also appear to qualify as WDFW Priority Biodiversity Area and a wildlife HCA regulated by the City of Bellingham.

Table 6. Wetland Summary

Wetland Name	Cowardin Classification	Hydrogeomorphic Classification	Category	Buffer (ft) *
W-1a, W-9, W-12, W-20a, W-45, W-AA, W-CC	PFO	Depressional	III	150
W-1c, W-JJ	PSS	Depressional	III	80
W-3, W-4, W-B	PFO	Depressional/Slope	III	150
W-5, W-48a, W-48b,	PSS	Depressional	III	150
W-7, W10c, W-20b, W50, W-C, W-D, W-BB, W-DD, W-FF	PSS	Depressional	III	-
W-8, W-30	PSS/PEM	Depressional/Slope	II	150
W-14	PFO/PSS	Depressional/Slope	II	150
W-16a	PFO/PEM	Depressional/Slope	III	150
W-16c, W-A	PFO	Depressional	III	80
W-16d	PFO	Slope	IV	50
W-17	PSS/PEM	Slope	III	150
W-19	PEM	Slope	IV	50
W-29, W-49, W-GG	PFO/PEM	Slope	III	150
W-32	PFO/PSS	Depressional	III	150
W-37	PFO/PSS/PEM	Depressional/Slope	II	150
W-38	PEM	Depressional	III	-
W-39	PEM	Slope	III	150
W-46, W-KK	PSS	Slope	IV	50
W-47, W-HH	PSS	Slope	III	150

(P: palustrine, FO: forested, SS: scrub/shrub, EM: emergent)
* buffer based on high intensity land use

APPENDIX A: REFERENCES

References

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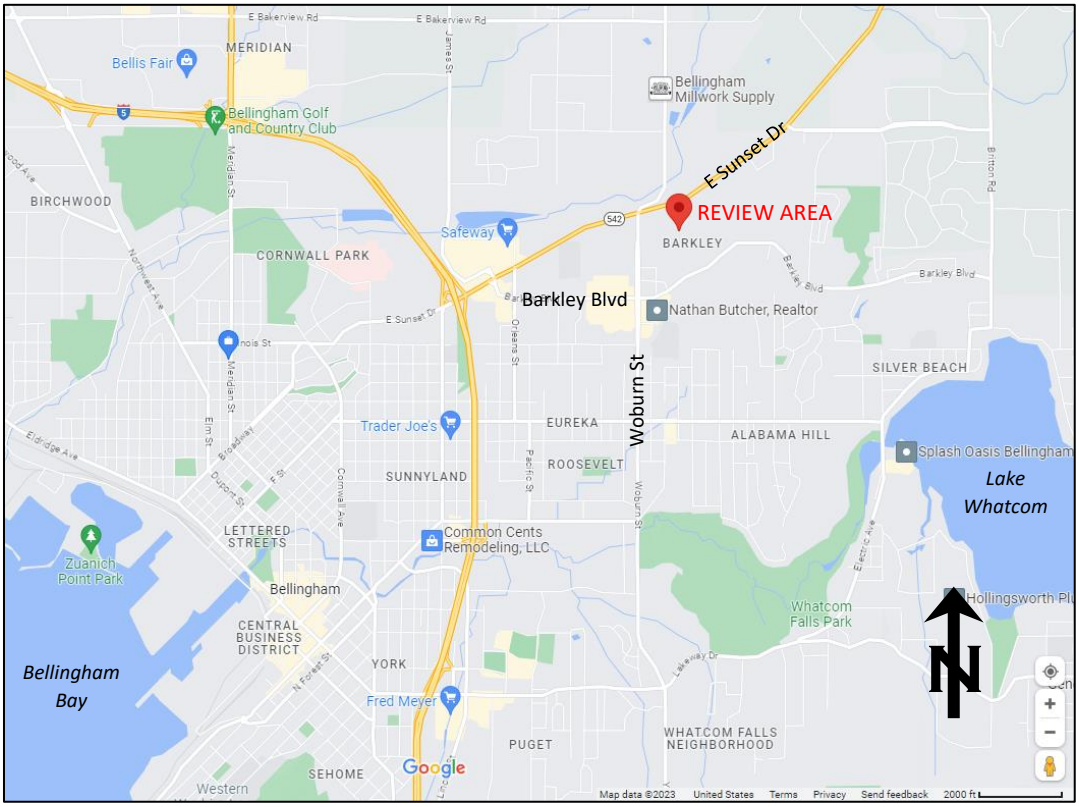
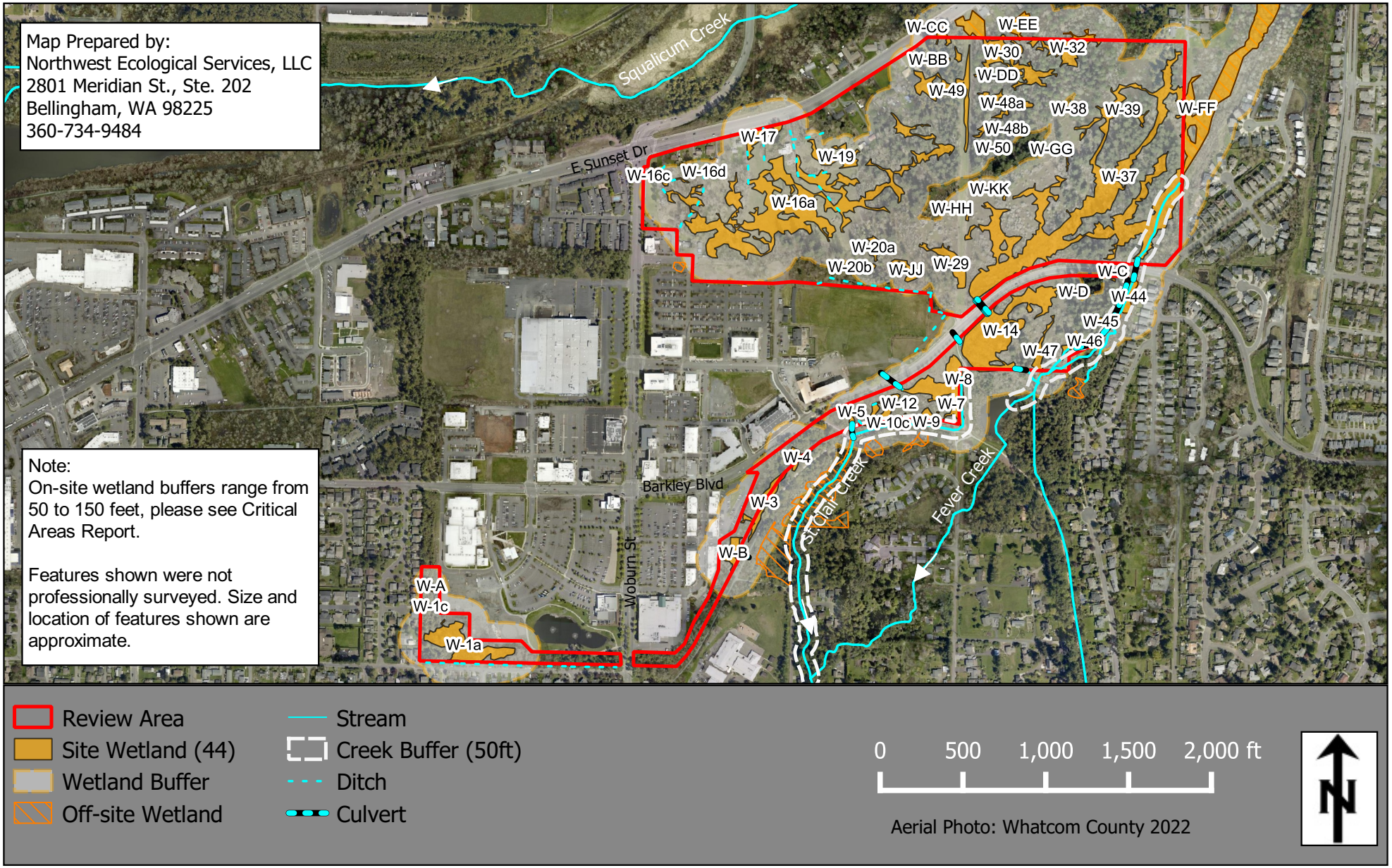
APPENDIX B: FIGURES

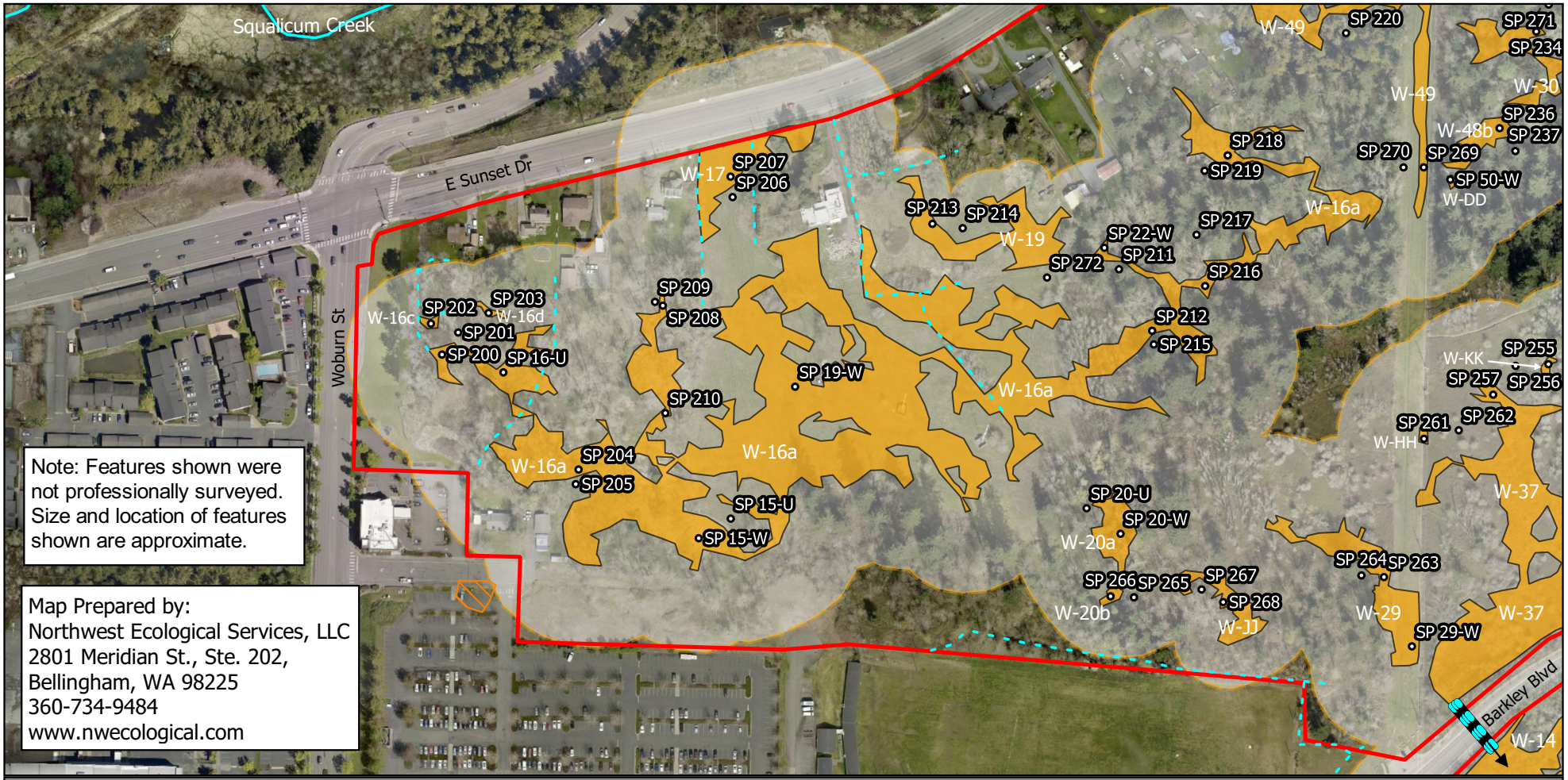


ECOLOGICAL NORTHWEST	**Vicinity Maps (Google Maps)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 1** **AUG 2023**

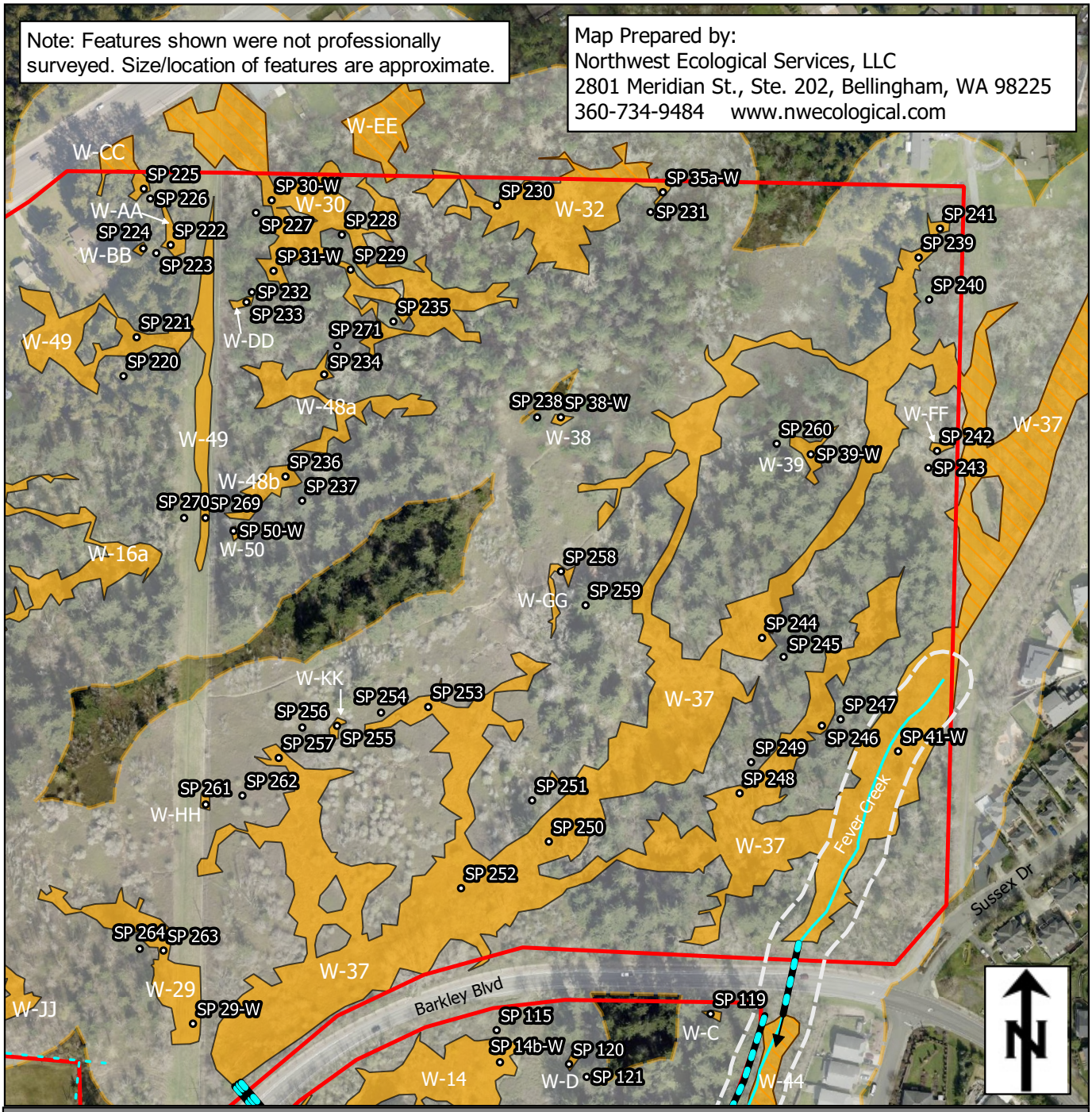
Ecological Northwest	**2022 Aerial Photograph** **Barkely Village** **Critical Areas Assessment Supplement**	**Figure 2** **AUG 2023**



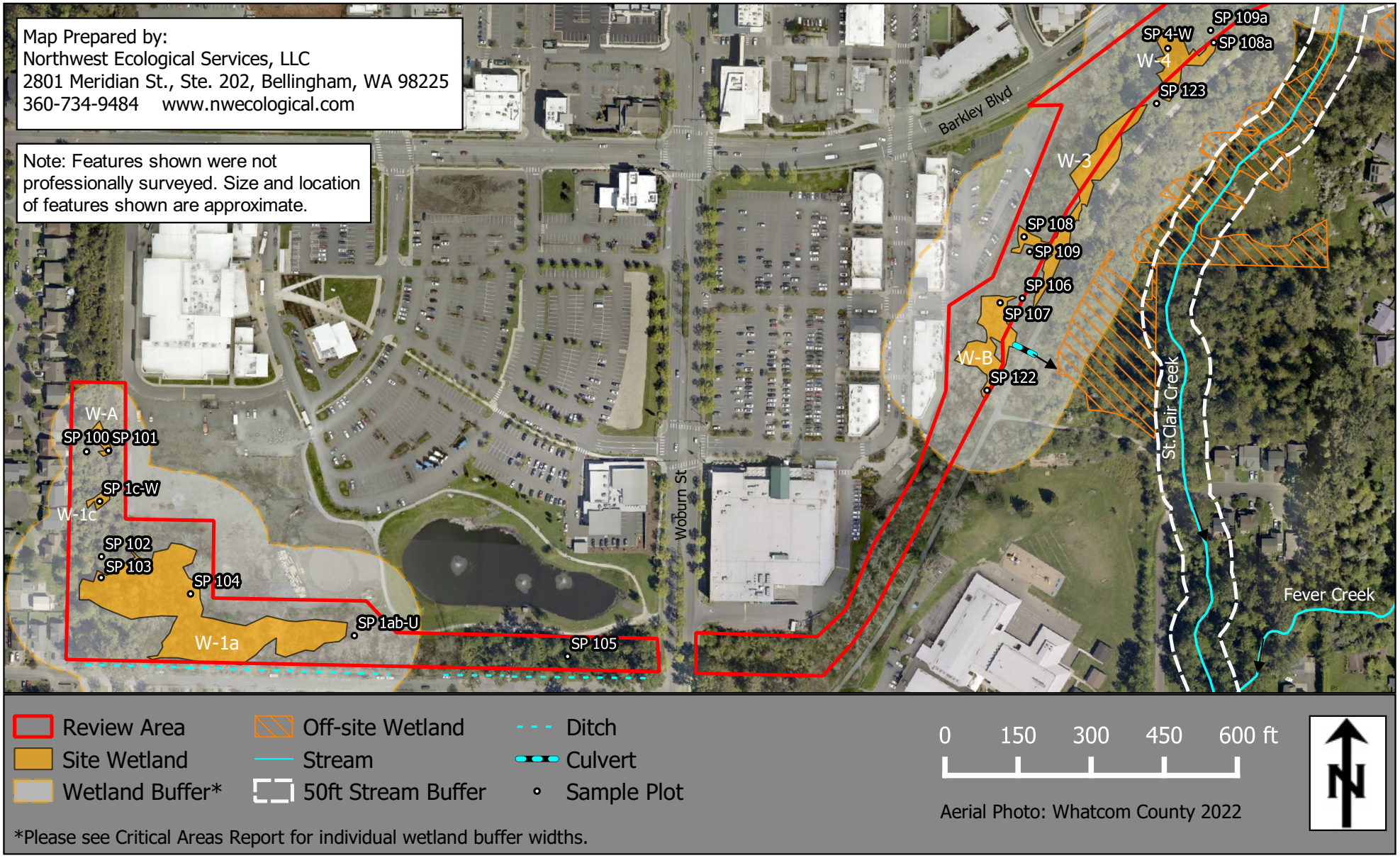
ECOLOGICAL NORTHWEST	**Critical Areas Map (Site Overview)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 3** **AUG 2023**



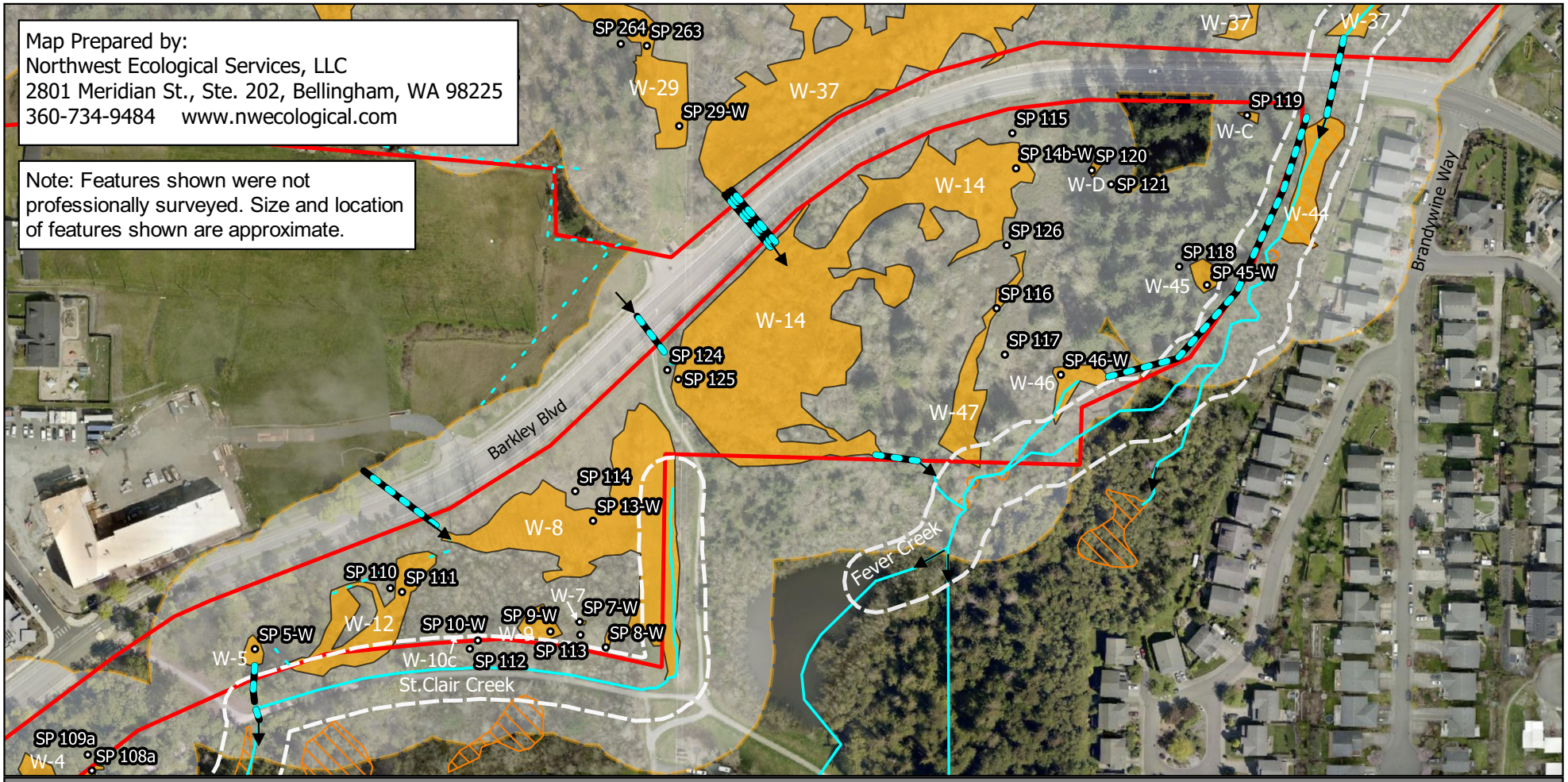
Ecological Northwest	**Critical Areas Map (Northwest Review Area)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 4** **AUG 2023**



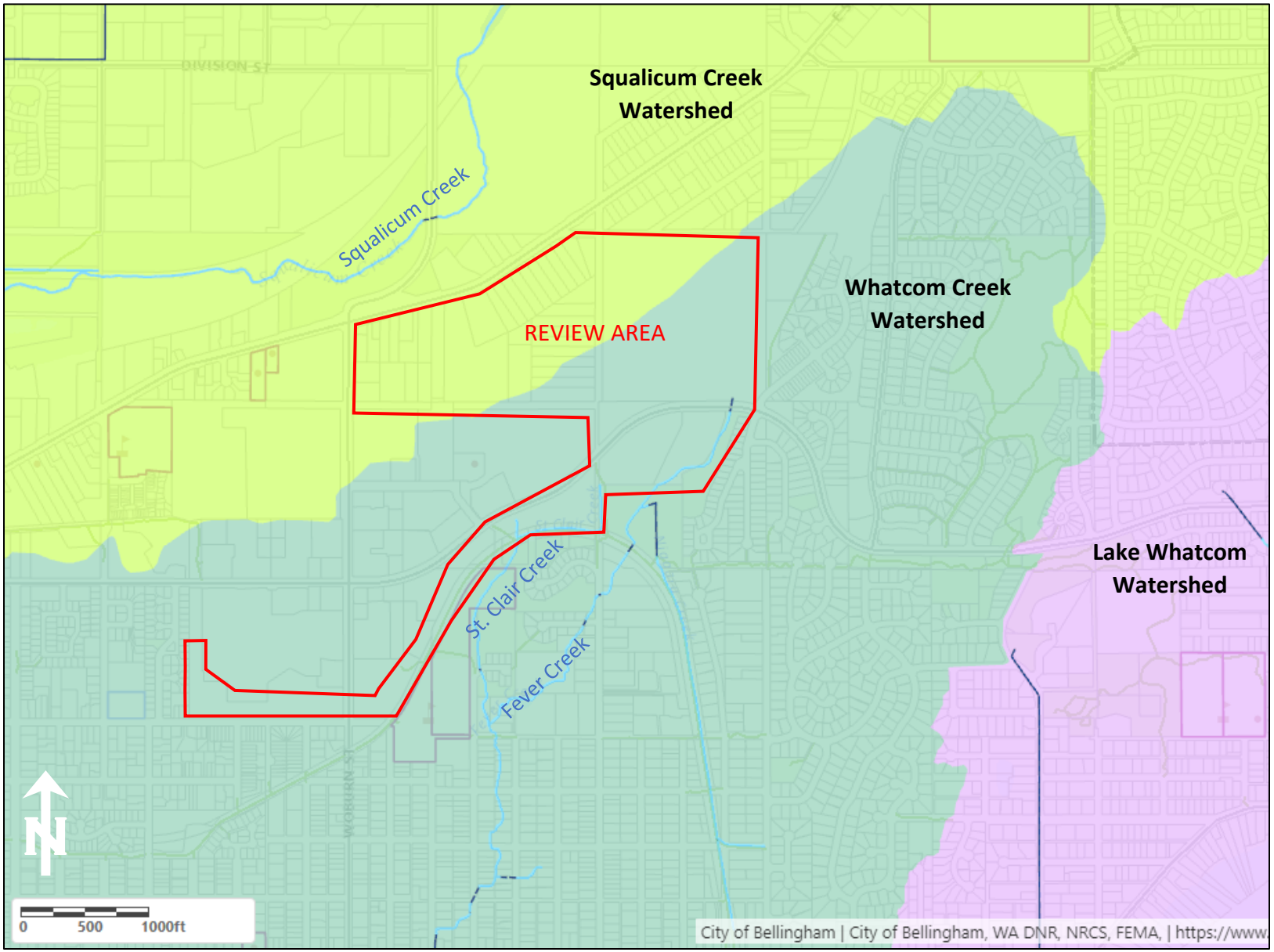
ECOLOGICAL NORTHWEST	**Critical Areas Map (Northeast Review Area)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 5** **AUG 2023**



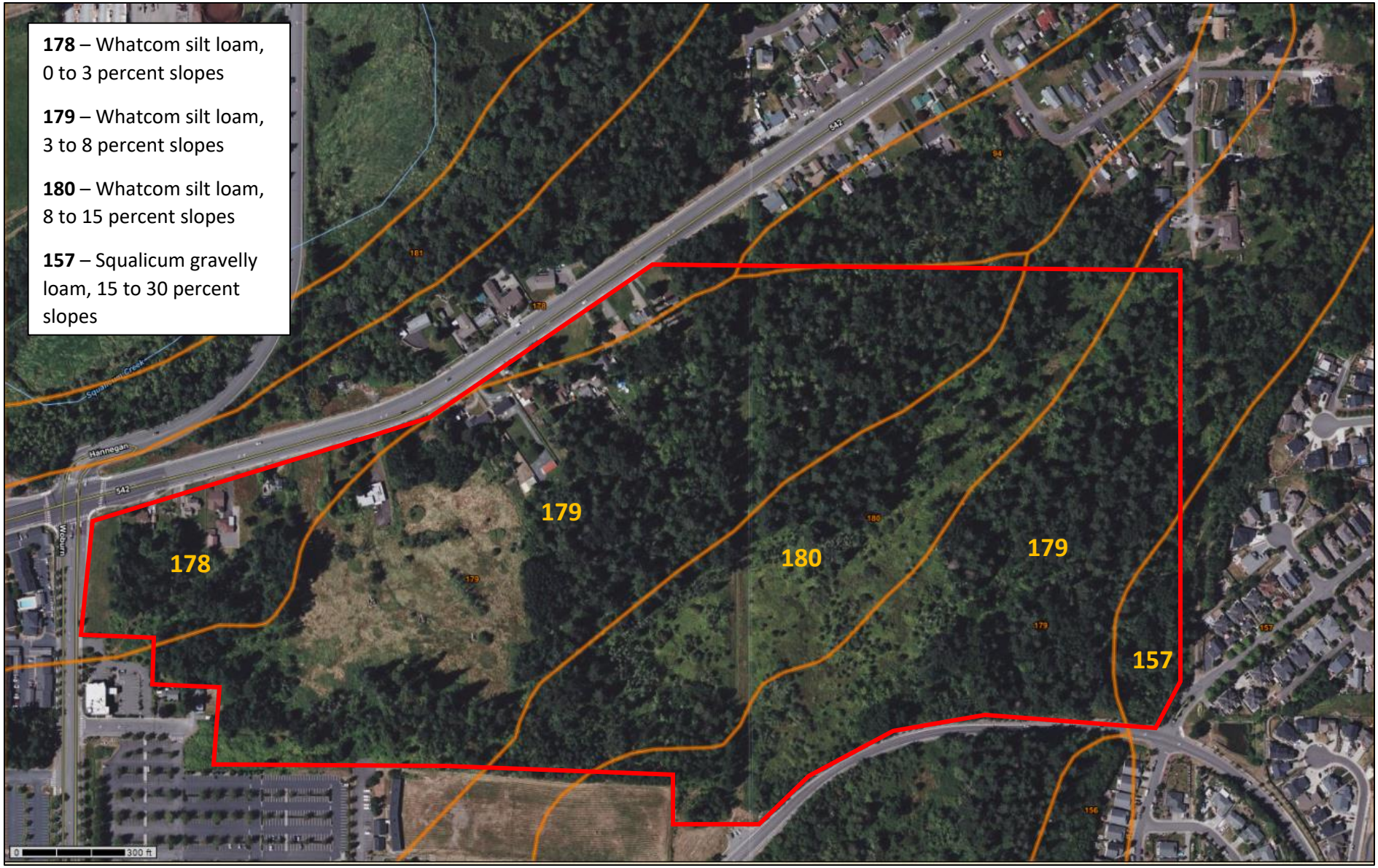
NORTHWEST ECOLOGICAL	**Critical Areas Map (Southwest Review Area)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 6** **AUG 2023**



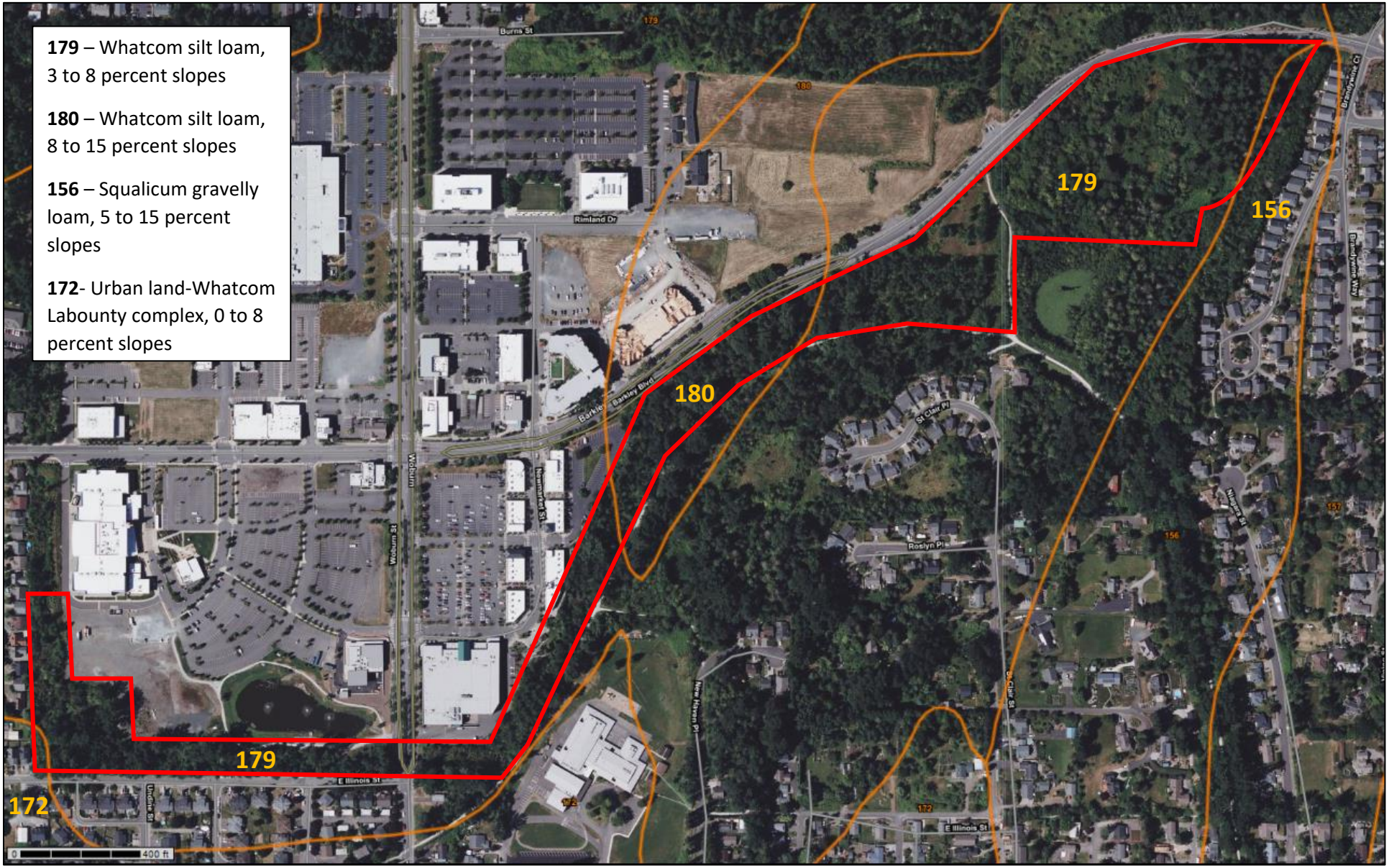
ECOLOGICAL NORTHWEST	**Critical Areas Map (Southeast Review Area)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 7** **AUG 2023**



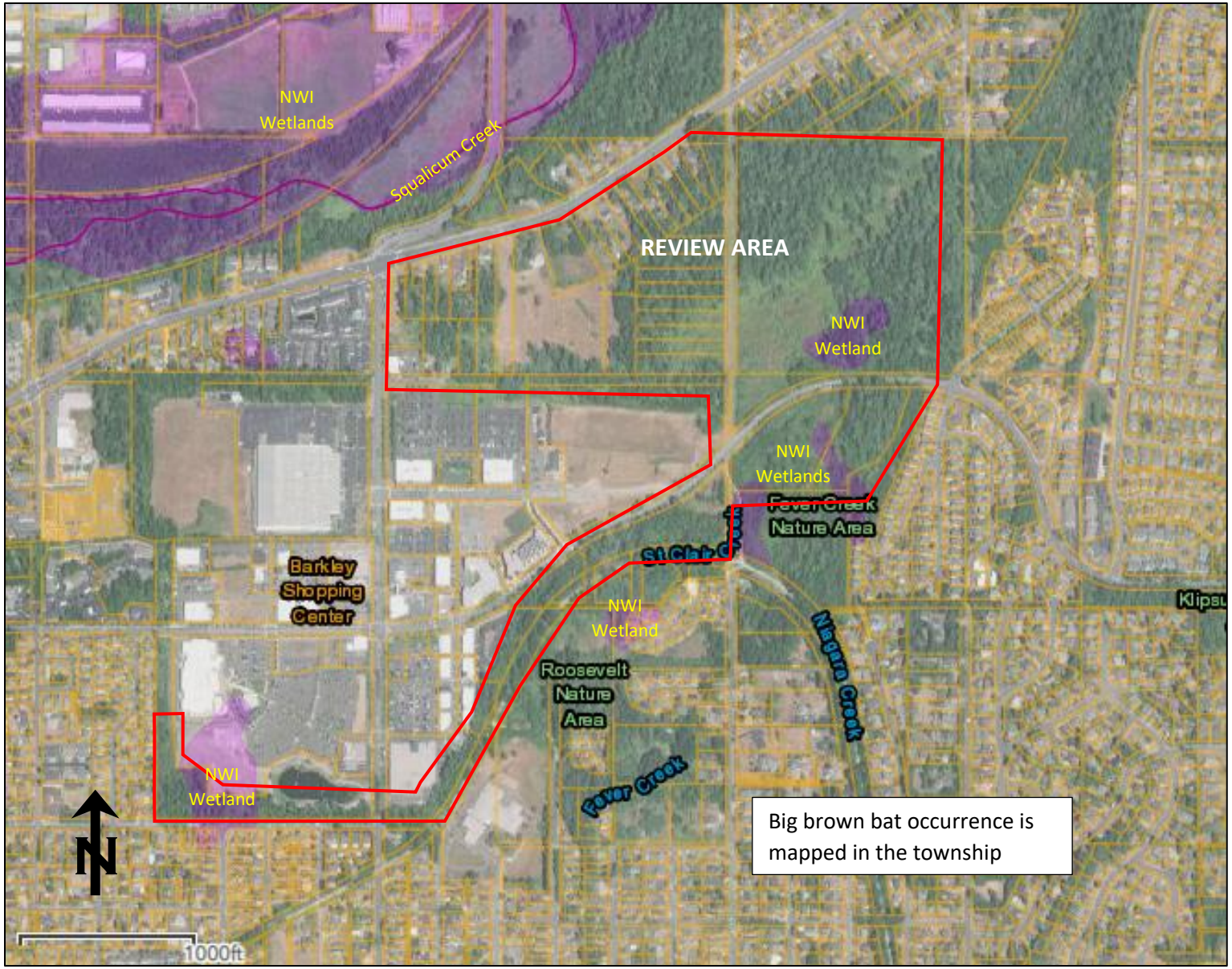
ECOLOGICAL NORTHWEST	**COB Watershed Map (CityIQ, 2023)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 8** **AUG 2023**



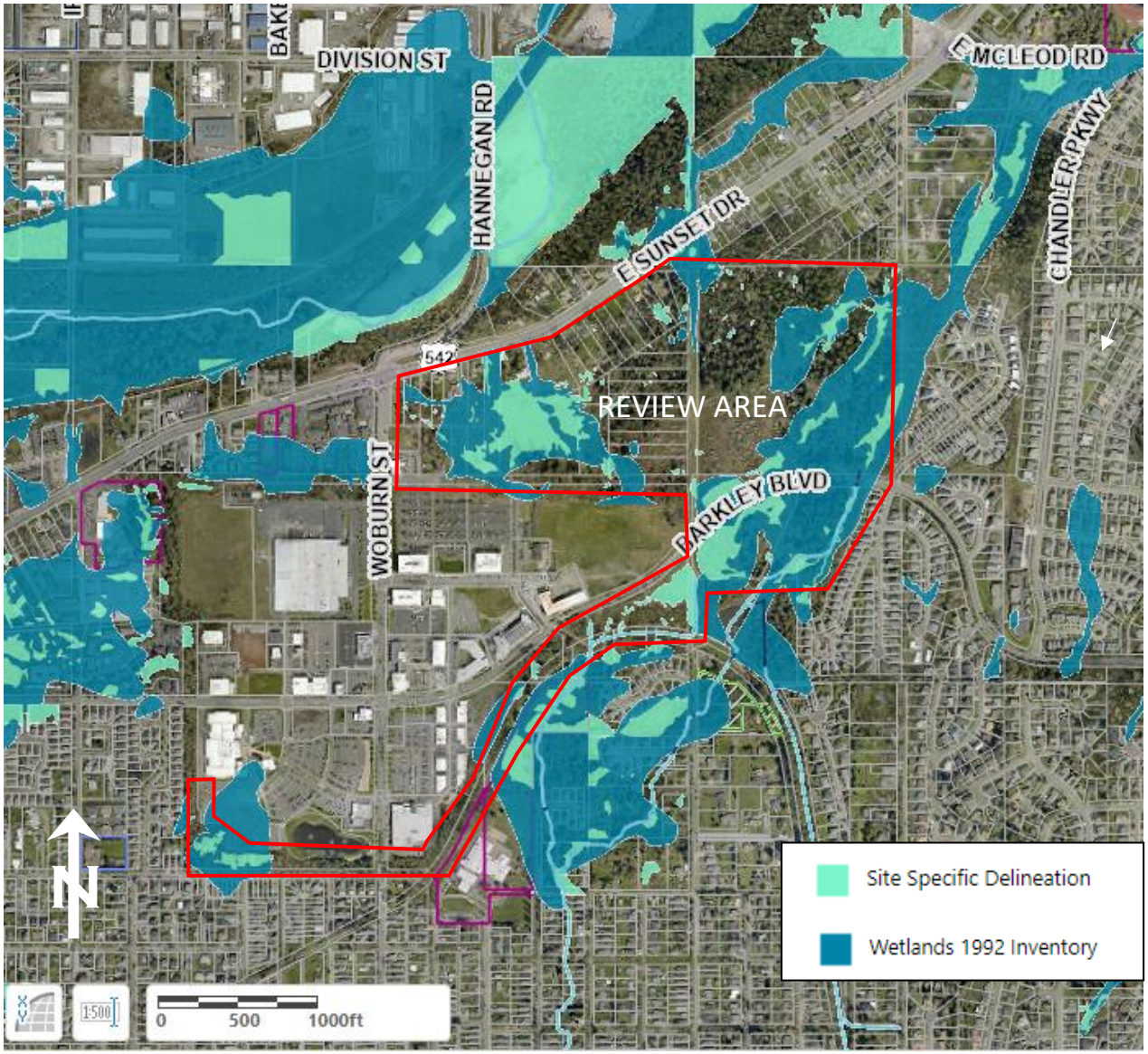
ECOLOGICAL NORTHWEST	**Soil Survey Map - North** **(NRCS, 2023)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 9** **AUG 2023**



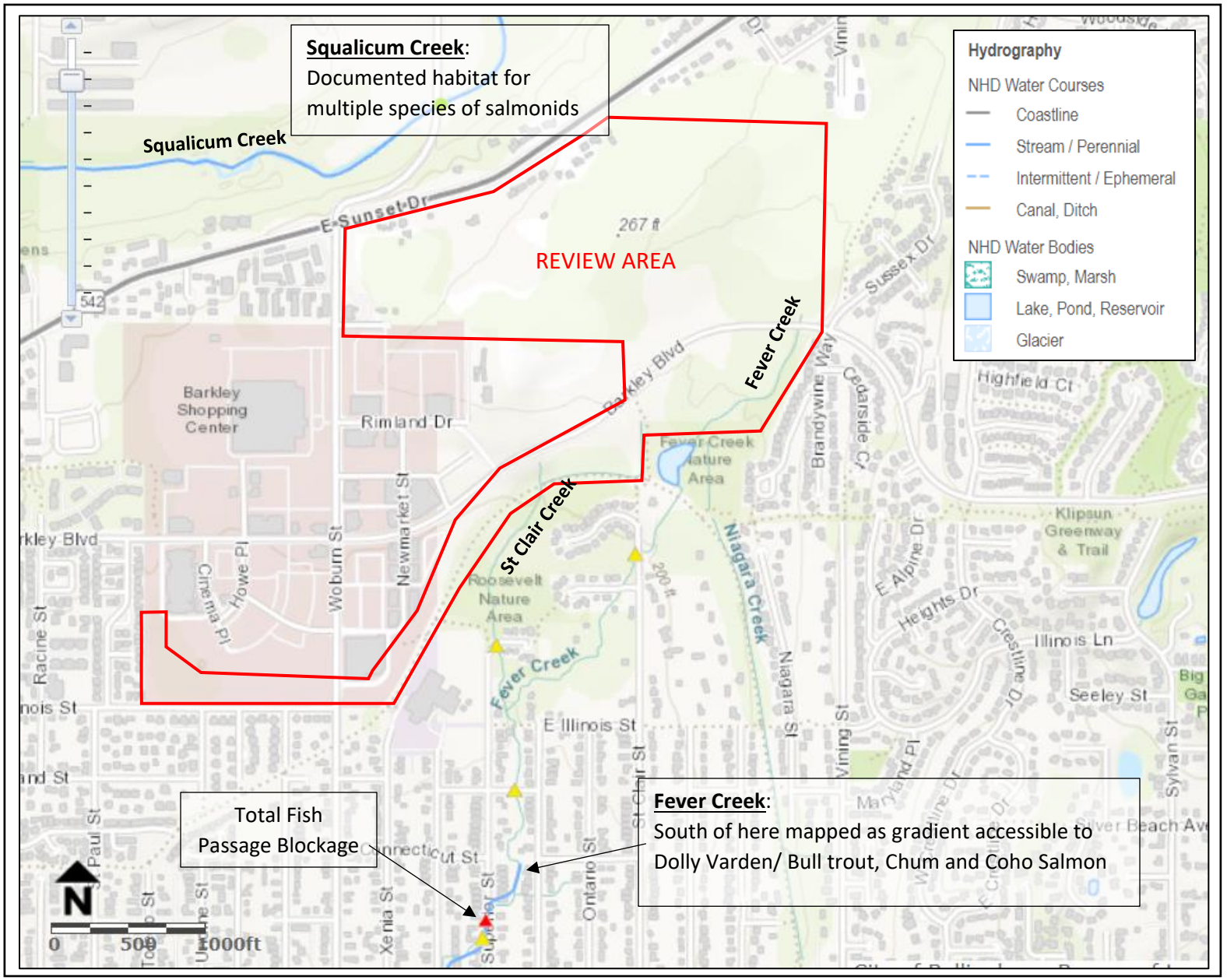
ECOLOGICAL NORTHWEST	**Soil Survey Map - South** **(NRCS, 2023)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 10** **AUG 2023**



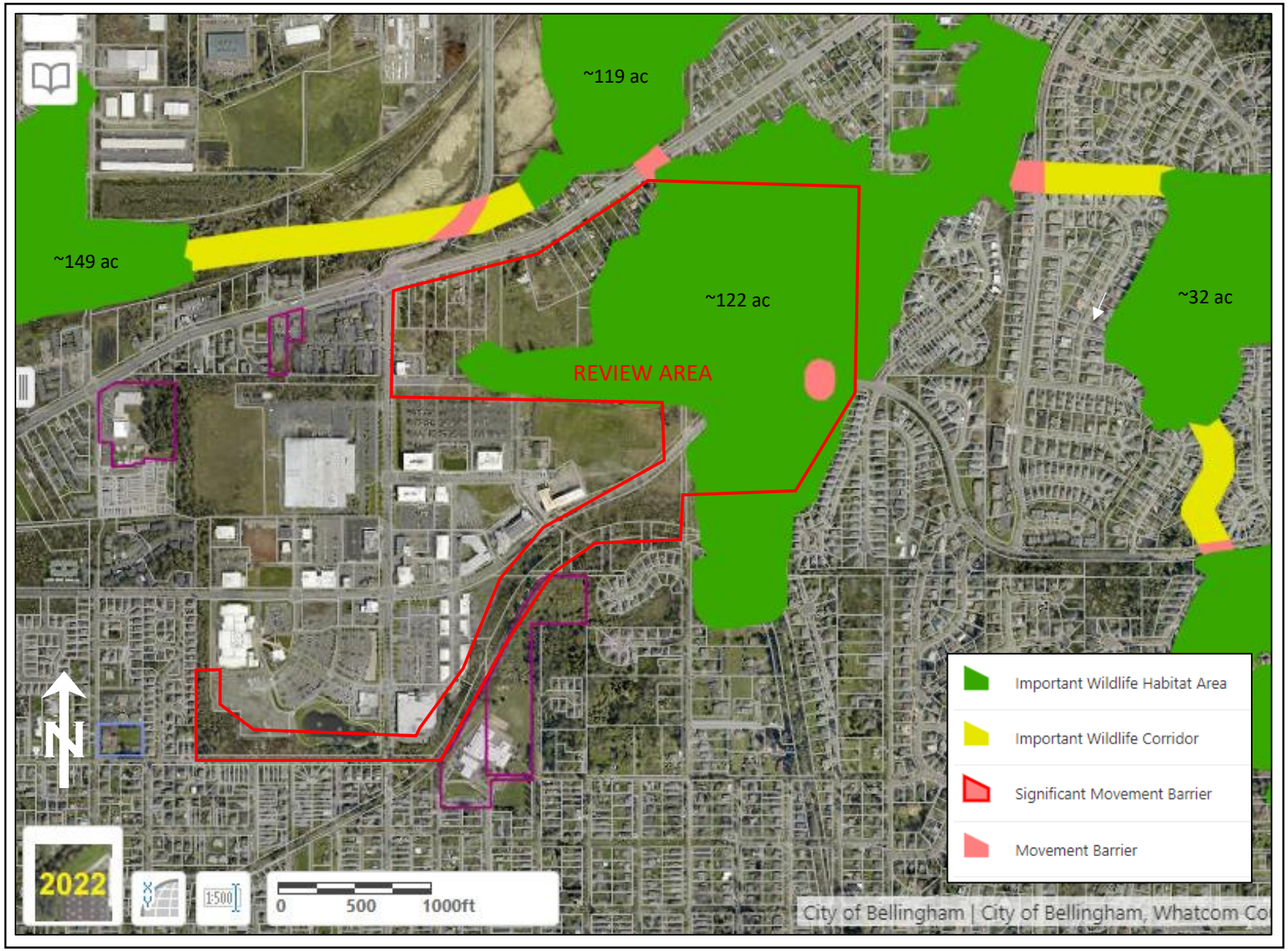
ECOLOGICAL NORTHWEST	**PHS Map** **(WDFW, 2023)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 11** **AUG 2023**



ECOLOGICAL NORTHWEST	**COB Environmental Mapping** **(City IQ, 2023)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 12** **AUG 2023**



ECOLOGICAL NORTHWEST	**SalmonScape Map** (WDFW, 2023)	**Figure 13**
	Barkley Village **Critical Areas Assessment Supplement**	**AUG 2023**



ECOLOGICAL NORTHWEST	**Terrestrial Wildlife Habitat Mapping** **(COB CityIQ, 2023)** **Barkley Village** **Critical Areas Assessment Supplement**	**Figure 14** **AUG 2023**

APPENDIX C: PHOTOGRAPHS

APPENDIX D: DATA SHEETS

APPENDIX E: ECOLOGY RATING FORMS