

## Soundview Consultants LLC

Environmental Assessment • Planning • Land Use Solutions

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# Technical Memorandum

**To: Liz Willmot, Kimley-Horn**

**File Number: 2520.0003**

**From: Kramer Canup, Soundview Consultants LLC**

**Date: July 1, 2025**

**Re: FEMA Habitat Assessment  
1075 Cascade Mall Drive, Burlington, WA, 98233**

Dear Liz,

Soundview Consultants LLC (SVC) has been assisting Kimley-Horn LLC (Applicant) with environmental planning for the planned commercial redevelopment of a 1.25-acre site located at 1075 Cascade Mall Drive in the City of Burlington, Washington. The subject property consists of one parcel situated in the Northeast ¼ of Section 6, Township 34 North, Range 04 East, W.M. (Skagit County Tax Parcel Number P23694). The proposed commercial redevelopment activities include replacing the existing building in the southeast corner with a drive-through restaurant; the existing and proposed structures are situated partially within the 100-year floodplain. This Technical Memorandum has been prepared to provide a Federal Emergency Management Agency (FEMA) habitat assessment to satisfy requirements for a flood development permit through the City of Burlington.

**Figure 1. Subject Property Location.**



## **Background**

Per BMC 14.15.431(c), when development activities are proposed within the floodplain, a habitat assessment is required that is prepared in accordance with the Regional Guidance for Floodplain Habitat Assessment and Mitigation (FEMA Region X, 2010) or as amended. The FEMA National Flood Insurance Program Record of Decision requires local communities to obtain and maintain documentation of compliance with appropriate state and federal laws, including the Endangered Species Act (ESA), as a condition of issuing floodplain development permits (FEMA, 2018). FEMA has provided local jurisdictions with guidelines for floodplain habitat assessments consistent with the National Marine Fisheries Services' Biological Opinion on the implementation of the National Flood Insurance Program (NFIP) in Puget Sound; these guidelines from the Puget Sound Biological Opinion Floodplain Habitat Assessment Worksheet (FEMA, 2017) are addressed below.

## **Proposed Project**

The proposed commercial redevelopment activities include replacing the existing restaurant, parking lot and landscaping with a drive-through restaurant and reconfigured parking lot and landscaping. Overall, the proposed project will not result in a net increase in impervious surfaces onsite, as most of the site is currently fully paved and developed with only small areas of ornamental landscaping. The proposed development will tie into the City's stormwater system and existing utility infrastructure present on the subject property.

The proposed residential development project will require clearing, grading, and construction within the 100-year floodplain. A FEMA floodplain map is provided in Attachment A. Site plans for the project are provided under separate cover.

## **Existing Conditions**

The subject property is located in a mixed commercial-residential setting in the City of Burlington. The majority of the subject property is developed with impervious surfaces including a restaurant, parking facilities and associated infrastructure. Undeveloped areas onsite consist of small areas manicured lawn and ornamental landscaped trees and shrubs. The subject property is bound by commercial developments and parking lot area to the north and west, South Burlington Boulevard to the east and Cascade Mall Drive to the south. No streams, wetlands, or shorelines were identified on the subject property, and the nearest mapped stream/wetland complex is Gages Slough located 0.3 miles east/south of the subject property. Further, the FEMA Floodplain Map identifies the entire subject property as within the FEMA 100-year floodplain. Onsite, the project area is developed with a commercial structure and a paved parking area. The majority of the area is paved for parking with little vegetation beyond a few deciduous trees situated within parking strips.

## **Action Area**

The "Action Area" for evaluation of potential impacts to ESA-listed species encompasses the locations where project activities will occur plus areas that may be directly or indirectly affected by the proposed project either through physical, chemical, or biological mechanisms. The geographic limits of the Action Area were defined by considering the potential spatial extent of mechanisms that may affect listed species. Mechanisms identified as having a potential for impacting ESA-listed species or species habitat identified in the Puget Sound Biological Opinion includes noise from construction

equipment, water quality impacts due to turbidity or stormwater, and loss or alteration of suitable habitat within the floodplain. No in-water work is proposed; therefore, in-water noise and turbidity impacts are not anticipated. In addition, best management practices (BMPs) and temporary erosion and sediment control (TESC) measures will be implemented to further prevent any potential indirect effects. The overall impact associated with the proposed drive through restaurant is characterized by the proposed construction footprint.

No negative impacts to ESA-listed species were identified by the identified mechanisms.

### Terrestrial Noise

To define the Action Area, this assessment discusses the project actions potentially generating noise levels above normal daily noise levels found in the vicinity of the project area. At certain levels, noise from project activities can adversely affect wildlife with various behavioral and/or health-related consequences (WSDOT, 2023). Terrestrial noise (transmitted through air) is measured in decibels (dBA) on an “A”-weighted logarithmic scale. The commercial redevelopment will necessitate the use of the following three pieces of equipment with the loudest noise levels for grading and construction: an excavator, concrete pump truck, and dozer. The Washington State Department of Transportation (WSDOT) Biological Assessment Preparation Advanced Training Manual, Updated 2025, lists average noise levels for typical construction equipment. According to WSDOT, the average decibel level at 50 feet from an excavator is 87 dBA, the average decibel level at 50 feet from a dozer is 85 dBA, and the average decibel level at 50 feet from a working concrete pump truck is 82 dBA. Using decibel addition, 90 dBA was calculated to be the loudest projected noise level that will be heard at a 50-foot radius from where the construction actions will be performed. The use of construction equipment in this area will potentially lead to a higher noise level than traffic noise and ambient sound levels during portions of the project actions.

According to 2022 U.S. Population Density data adjusted by estimated population growth rates, population density in the vicinity of the installation site is 739 persons per square mile (Esri, 2022). The background sound level associated with this population density is 45 dBA (WSDOT, 2025). The closest significant noise generator is South Burlington Boulevard, which abuts the eastern boundary of the subject property. The highway has approximately 2,100 vehicles per hour according to WSDOT Traffic Count Database System from 2023, and a speed limit of 35 mph. According to Table 7-3 of the BA Manual traffic, this would result in approximately 69.2 dBA noise levels (WSDOT, 2025). Given that the traffic noise level to the background noise level is less than the construction noise level to the background noise level, the construction noise level to background noise level was used to determine the terrestrial noise impact of the proposed project.

Construction noise levels will be elevated above normal ambient noise but will not reach levels that are likely to significantly impact terrestrial species. Sound impacts on ESA-listed species are discussed below. For terrestrial noise, standard attenuation is approximately 6-7.5 dBA per doubling of distance from the source of noise, depending on whether the site is classified as hard or soft (WSDOT, 2020). The area surrounding the project area is generally considered a soft site due to the presence of surrounding residential, and commercial areas that help attenuate terrestrial noise. Using an ambient noise level of 65 dBA (WSDOT, 2025) and normal attenuation of 7.5 dB per distance doubling for a soft site, the construction noise will attenuate to background levels approximately 500 feet offsite (Table 1). Therefore, the Action Area for noise has an approximate 500-foot radius around project activities. The following table presents the estimated construction noise attenuation distance.

**Table 1. Terrestrial Noise Attenuation Calculations.**

<i>Proposed Project and Site Noise Levels</i>	
Project Noise Level	90 dBA
Background Noise Level <sup>1</sup>	65 dBA
Traffic Noise Level <sup>2</sup>	69.2 dBA
<i>Attenuation Distances</i>	
Construction to Background	500 feet
Traffic to Background	95 feet
<i>Construction Noise Extent</i>	
Construction to Background	889 feet

1 - Background noise per BA Manual pg. 7-18. (WSDOT, 2023)

2 - Traffic noise at the property line based on 2100 vehicles/hour traveling 35 mph 50 feet away.

### Water Quality

#### *Turbidity*

No wetlands, streams or regulated water courses were identified on the subject property. All stormwater generated from the site is collected onsite and routed to the City’s stormwater system to be treated. During project construction, TESC measures and BMPs designed to control site runoff will be implemented to avoid turbidity impacts to stormwater runoff leaving the site.

#### *Impervious Surfaces*

All impervious surfaces associated with the proposed project will be located within the footprint of the existing development, apart from minor overlap of the proposed parking lot, drive through and building footprint within areas of existing landscaping. Loss of the existing landscaped areas will be offset with proposed landscape islands within the parking lot reconfiguration and a landscape berm along the eastern and southern boundary of the subject property. Additionally, the proposed redevelopment will tie into the existing stormwater infrastructure onsite to treat runoff generated from development. As such no impacts to water quality from the proposed impervious surfaces are expected.

#### *6PPD/6PPD-q*

6PPD is a chemical used in the fabrication of automobile tires. As tires wear on the road and in parking lots they leave micro deposits and small chunks of tire material behind. When 6PPD is exposed to ozone and suspended/dissolved in stormwater it transforms into 6PPD-q, which in 2020 was identified as the chemical responsible for pre-spawn coho salmon mortality events in urban streams (Chow et al., 2019; Peter et al., 2020; Tian et al., 2021). The coho pre-spawn urban runoff associated mortality was known previously as URMS (Urban Runoff Mortality Syndrome), and has been documented since the 1990’s throughout the Puget Sound basin in urban and rural areas with direct discharge of transportation system runoff (Chow et al., 2019). Since the discovery of the chemical responsible and it’s effects in 2020, research has been conducted showing that other species of salmonids such as ESA listed Steelhead and Chinook salmon are also sensitive to 6PPD-q, however toxicity thresholds appear to be much lower in coho than other salmonids studied to date (Brinkmann

et al., 2022; French et al., 2022; Tian et al., 2022). Long term low level or repeated sublethal exposure effects have yet to be evaluated, however preliminary results from toxicity threshold testing show sublethal exposures still result in neurological damage in surviving individuals in both juveniles and adults.

Based on currently available best available science provided by the Washington Department of Ecology (DOE) and the Washington Stormwater Center, 6PPD and 6PPD-q are removed below toxicity levels or removed below detection levels if biofiltration and infiltration BMP's are applied to stormwater treatment (WSDOE, 2022a and 2022b). 6PPD appears to change conformation and bind to biological media similar to other active organic compounds. The available DOE literature identifies that due to the ongoing research needs to better understand the potential for resuspension and half life timelines of 6PPD and 6PPD-q, current management recommendations suggest a focus on BMP's to prevent 6PPD and 6PPD-q from reaching stormwater infrastructure. Therefore, given the unknown long-term impact to aquatic species and of particular interest to ESA listed bull trout, chinook salmon and steelhead at this time we recommend dispersion, infiltration or biofiltration of parking surfaces and roads stormwater to effectively reduce 6PPD and 6PPD-q below toxicity thresholds at a minimum. Additional source control BMP's that may be highly effective for projects to apply are standard vegetated filtration to remove 6PPD from surface water runoff prior to discharge to stormwater treatment systems. DOE has identified 28 BMPs for flow and treatment control and 9 BMPs for source control with a high treatment potential effectiveness for 6PPD and 6PPD-q based on what is currently known about the pollutant. Stormwater from the proposed development will be captured and treated within the City's stormwater system and ultimately outlet to the west end of Gages Slough. Within the slough, stormwater is expected to infiltrate and further filter runoff before in enters the Skagit River, and significant reductions in 6PPD/6PPD-q below detectable levels are anticipated. While the slough is mapped as gradient accessible to pink salmon, chum, Chinook, coho, and steelhead trout by the WDFW and NWIFC SWIFD map, WDFW Fish Passage inventory identified a total fish passage blockage separating the Skagit River from Gages Slough. As such, stormwater is anticipated to infiltrate and filter through the slough/wetland complex before flowing into the nearest water with documented salmonid presence.

## **Proposed Project Effects to Habitat**

### *Impacts to Water Quality and Quantity and Flood Storage Capacity*

The proposed commercial development will result in fill, excavation, grading, and construction on the subject property within the Protected Area. Most of the proposed development and associated infrastructure is situated on a portion of the subject property previously developed with a commercial structure and associated paved surfaces. Additionally, undeveloped areas onsite potentially impacted by the proposed development are limited to compacted areas vegetated with manicured lawn and landscaping. As such, impacts to flood storage capacity onsite are expected to be de minimus. Further, all runoff associated with onsite impervious surfaces will tie into existing stormwater management facilities onsite and as such is not anticipated to adversely impact water quality or quantity.

During project construction, TESC measures and BMPs designed to control site runoff will further minimize potential immediate effects to hydrology and water quality. No adverse impacts to water quality, quantity, or flood storage capacity will occur due to the de minimis impacts of floodplain grading, appropriate construction measures that will be in place, and proposed stormwater management.

### *Impacts to Riparian Vegetation*

There are no riparian habitats associated with the subject property. The majority of the project area consists of paved surfaces. The remaining undeveloped areas onsite consist of manicured lawn and landscaped trees and shrubs isolated from adjacent habitat by existing development. No streams or watercourses have been identified within 300 feet of the subject property and as such no associated riparian habitat is present within the vicinity of the site. As such, the proposed development will not impact any riparian vegetation associated with the floodplain.

### *Impacts to Habitat Forming Processes*

The proposed development will not adversely impact any habitat forming processes within the Protected Area. The Action Area is largely comprised primarily of paved parking areas, and generally lacks native woody plant cover, habitat interspersions, and large woody debris. Furthermore, the subject property is separated from riparian habitat areas associated with Gages Slough and the Skagit River by the surrounding existing development consisting of mixed residential and commercial land uses and local roadways.

### *Impacts to Floodwater Refuge*

No side channels or backwater flood refuge are present within the Action Area or Protected Area. As such, the proposed development will not impact any side channels that could potentially provide floodwater refuge habitat.

### *Impacts to Spawning Substrate*

The proposed project will be located in a paved area, and as such, is not anticipated to impact spawning substrate.

### *Impacts from Habitat Isolation, Bank Armoring, Channel Straightening, Construction Effects, and Direct Effects*

No habitat isolation, bank armoring, channel straightening or other related direct effects are proposed. BMP's and TESC measures will be implemented throughout construction to limit potential indirect effects.

## **Proposed Project Effects to Species**

Per the Regional Guidance for Floodplain Habitat Assessment and Mitigation, FEMA Region X, 2010, this document will include effects determinations for Puget Sound steelhead trout, Puget Sound Chinook salmon, and Southern Resident killer whales. An effect determination is also provided for bull trout as it is another ESA-listed species affected by floodplain functions (Table 2).

**Table 2. Species Determination Summary.**

<b>Species Name</b>	<b>Common Name</b>	<b>Federal Listing Status</b>	<b>Determination of Effect to Species<sup>1</sup></b>	<b>Determination of Effect to Critical Habitat</b>
<i>Oncorhynchus mykiss</i>	Puget Sound steelhead trout	Threatened	No Effect	No Effect

<i>Oncorhynchus tshawytscha</i>	Puget Sound Chinook salmon	Threatened	No Effect	No Effect
<i>Orcinus orca</i>	Southern Resident killer whale	Endangered	No Effect	No Effect
<i>Salvelinus confluentus</i>	Bull trout	Threatened	No Effect	No Effect

### **Puget Sound Steelhead ESU and Critical Habitat**

*Oncorhynchus mykiss* – Threatened, listed May 11, 2007

*Critical habitat designated 2005 (78 FR 2725)*

In nearshore marine areas, steelhead need areas free of obstruction with forage, including aquatic invertebrates and fishes, supporting growth and maturation, and natural cover. Adequate substrate, water quality, water quantity, water temperature, water velocity, cover, shelter, food, riparian vegetation, space, and safe passage conditions are essential features of critical habitat. Steelhead rear within freshwater environments and typically migrate through Puget Sound from the freshwater systems to the ocean within the span of a few days to a couple weeks. As shown by the WDFW and NWIFC SWIFD map, the nearest tributary with documented steelhead is approximately 1.3 miles away from the subject property within the Skagit River separated by mixed commercial and residential development. Additionally, Gages Slough located approximately 0.3 miles south of the site is mapped as gradient accessible to steelhead; however, a total fish passage barrier separates the Skagit River from Gages Slough, and as such no steelhead are expected to utilize the slough. No functional habitat is present onsite within the Project Area, therefore no habitat impacts are anticipated. Appropriate stormwater, BMP's, and TESC measures will be implemented to further prevent any potential indirect effects. As such, it is anticipated the proposed project actions will have **No Effect on Puget Sound Steelhead**. The nearest designated critical habitat for steelhead is located approximately 1.3 miles south and east of the project area in the Skagit River. Given the distance to the nearest mapped critical habitat from the Action Area and the lack of in-water work, the proposed activities will have **No Effect on Puget Sound Steelhead Critical Habitat**.

### **Puget Sound Chinook Salmon ESU and Critical Habitat**

*Oncorhynchus tshawytscha* – Threatened, listed (reaffirmed) June 28, 2005 (70FR37160)

*Critical habitat designated September 2, 2005 (70FR52630)*

Chinook range from the Chukchi Sea in Alaska down to Monterey Bay, California, using many of the rivers located within their range for spawning and rearing. Chinook use Puget Sound as a rearing environment. As shown by the WDFW and NWIFD SWIFD map, the nearest tributary with documented Chinook is approximately 1.3 miles away from the subject property within the Skagit River separated by mixed commercial and residential development. Gages Slough located approximately 0.3 miles south of the site is mapped as gradient accessible to Chinook salmon; however, a total fish passage barrier separates the Skagit River from Gages Slough, and as such no Chinook are expected to utilize the slough. The high degree of development along this shoreline section limits habitat suitability for rearing Chinook. No in-water work is proposed; therefore, no turbidity impacts are anticipated. No functional habitat is present onsite within the Project Area, therefore no habitat impacts are anticipated. Appropriate stormwater, BMP's, and TESC measures will be implemented to further prevent any potential indirect effects. As such, it is anticipated the proposed project actions will have **No Effect on Puget Chinook Salmon**. The nearest designated

critical habitat is located approximately 1.3 miles south and east of the project area in the Skagit River. As there is no in-water work proposed within the Action Area the proposed activities will have **No Effect on Puget Sound Chinook Critical Habitat.**

### **Southern Resident Killer Whale and Critical Habitat**

*Orcinus orca* - Endangered, listed November 15, 2005

*Critical Habitat designated November 2006*

Southern Resident killer whales (*Orcinus orca*) are currently endangered with a declining population. The only relevant discussion of potential effects to Southern Resident killer whale is in possible indirect effects, as no in-water work is proposed. The primary prey source of these whales is chinook salmon. The project will have no effect on chinook salmon or their habitat, therefore, the project will result in no appreciable change in available prey for Southern Resident killer whale. As such, the project is expected to have **No Effect on Southern Resident Killer Whales.** The nearest designated critical habitat is approximately 10 miles away in Padilla Bay or Skagit Bay. As there is no in-water work proposed within the Action Area the proposed project activities will have **No Effect on Southern Resident Killer Whale Critical Habitat.**

### **Bull Trout and Critical Habitat**

*Salvelinus confluentus* – Threatened, listed November 1, 1999

*Critical habitat designated October 18, 2010 (75FR64004)*

Bull trout have the most specific habitat requirements of salmonids. They require colder water temperatures, clean stream substrates for spawning and rearing, complex habitats including streams with riffles and deep pools, undercut banks and large logs; and they also rely on river, lake and ocean habitats that connect to headwater streams for annual spawning and feeding migrations. Anadromous populations of bull trout spawn in natal tributaries and migrate downstream to mature in nearshore estuarine and marine waters. Anadromous populations tend to only travel modest distances throughout Puget Sound, although some individuals have been known to travel greater distances and maintain prolonged residences in marine waters. The WDFW and NWIFC SWIFD map identifies the nearest tributary with documented bull trout as approximately 1.3 miles away in the Skagit River. Due to the distance between the subject property and this tributary, there is no suitable habitat for Bull Trout within the project area. No in-water work is proposed; therefore, no turbidity impacts are anticipated. No functional habitat is present onsite within the Protected Area, therefore no habitat impacts are anticipated. Appropriate stormwater, BMP's, and TESC measures will be implemented to further prevent any potential indirect effects. As such the project will have **No Effect on Bull Trout.** The nearest designated critical habitat is located approximately 1 mile southeast of the subject property, outside of the Action Area and Protected Area within the Skagit River. Due to the lack of critical habitat in the Action Area and Protected Area, the proposed project will have **No Effect on Bull Trout Critical Habitat.**

If you have any questions, please contact us at your earliest convenience.

Sincerely,



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Kramer Canup  
Senior Project Manager/Senior Environmental Planner

July 1, 2025

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Date

## References

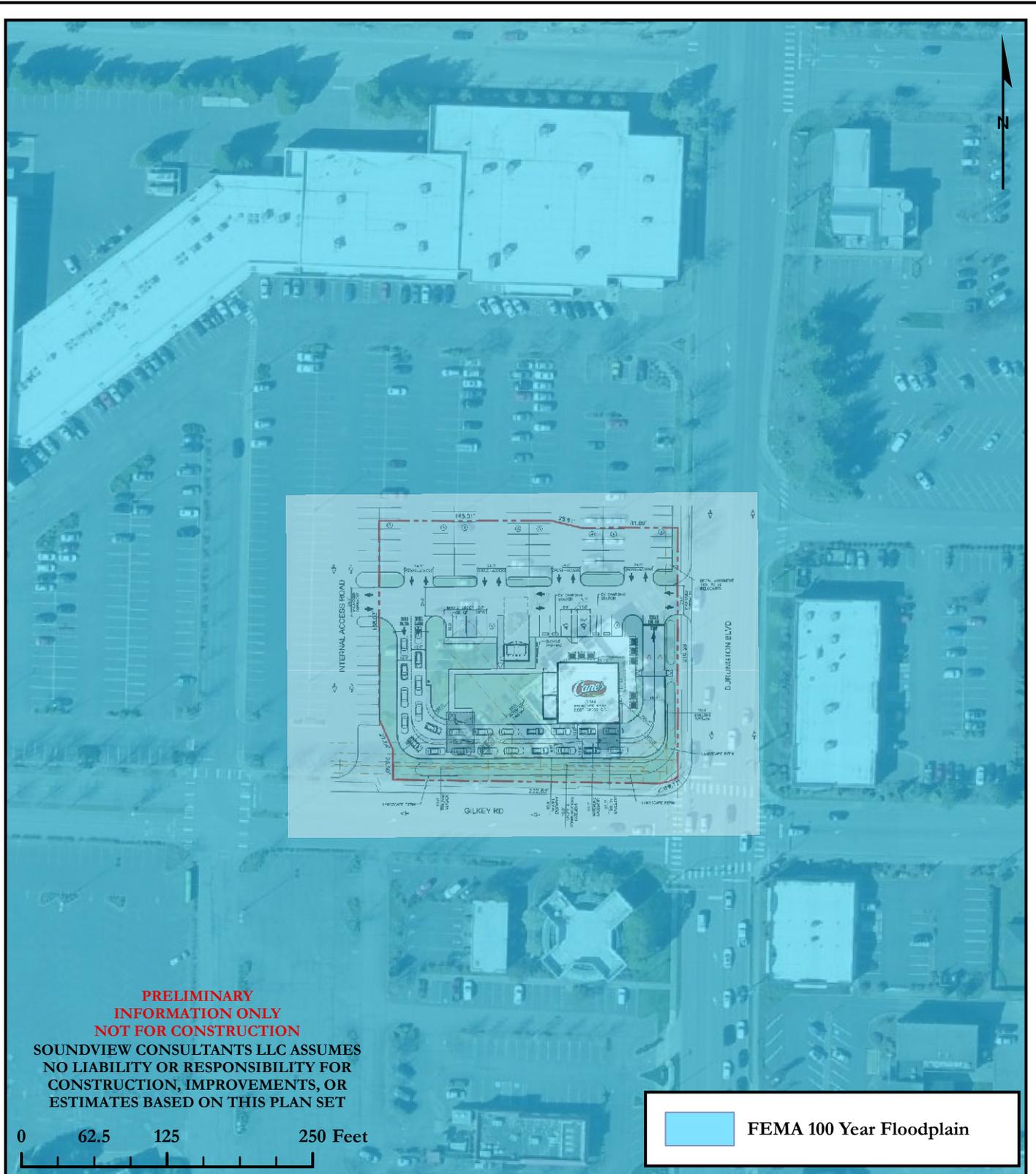
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# Attachment A — FEMA Floodplain Map

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# FEMA FLOODPLAIN EXHIBIT



**PRELIMINARY  
INFORMATION ONLY  
NOT FOR CONSTRUCTION**

SOUNDVIEW CONSULTANTS LLC ASSUMES  
NO LIABILITY OR RESPONSIBILITY FOR  
CONSTRUCTION, IMPROVEMENTS, OR  
ESTIMATES BASED ON THIS PLAN SET

0 62.5 125 250 Feet

 FEMA 100 Year Floodplain



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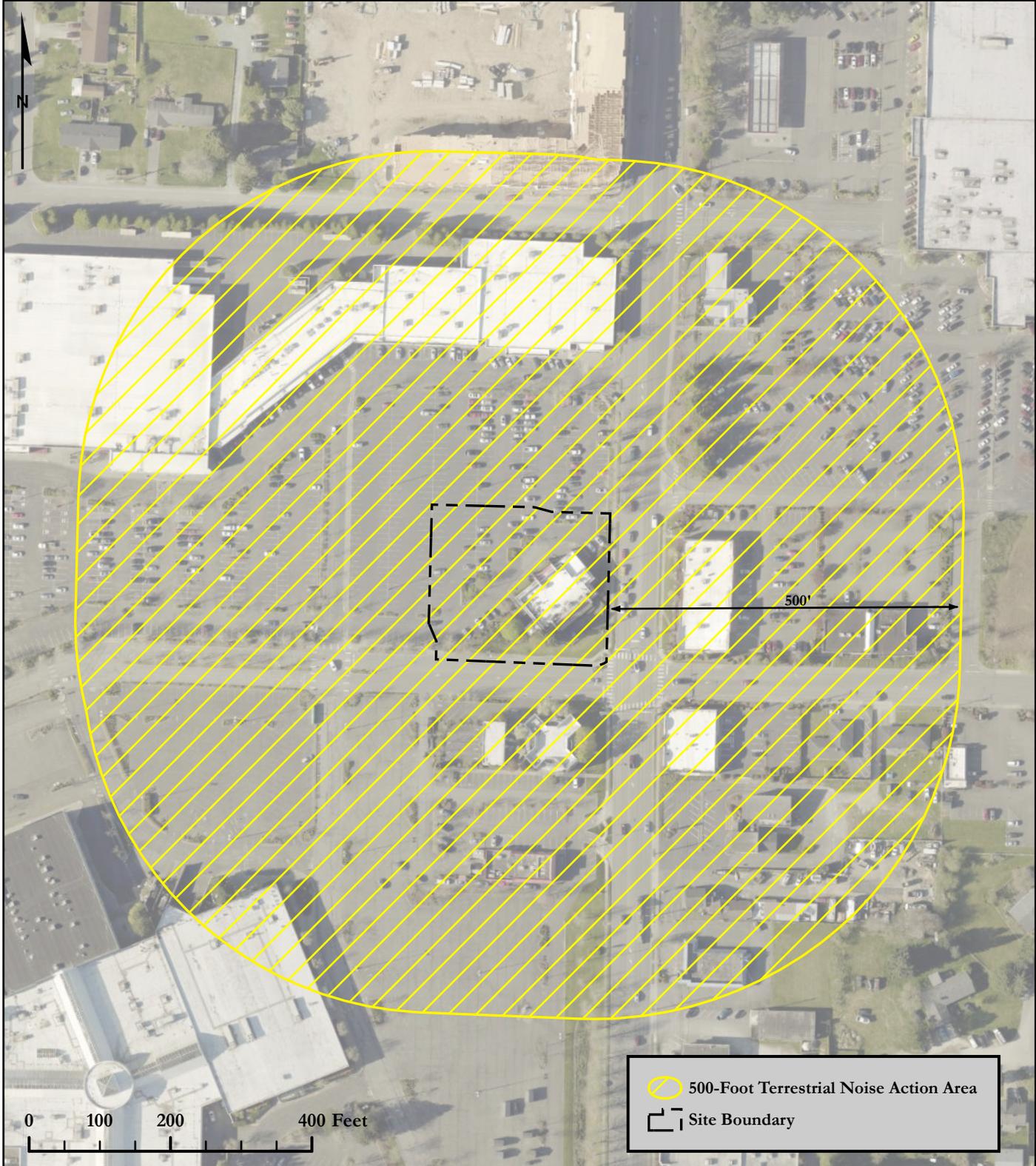
**CASCADE MALL DRIVE**  
1075 CASCADE MALL DRIVE  
BURLINGTON WA 98233  
SKAGIT COUNTY PARCEL NUMBER:  
P23694

DATE: 6/3/2025
JOB: 2520.0003
BY: MR
SCALE: 1" = 120'
FIGURE NO. 1

# Attachment B – Action Area Map

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ACTION AREA MAP




**Soundview Consultants LLC**  
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CASCADE MALL DRIVE  
 1075 CASCADE MALL DRIVE  
 BURLINGTON WA 98233  
 SKAGIT COUNTY PARCEL NUMBER:  
 P23694

DATE: 6/27/2025
JOB: 2520.0003
BY: RS
SCALE: 1" = 200'
FIGURE NO. 1

## Attachment C — Project Team Qualifications

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**Project Manager:** Kramer Canup

**Report Preparation By:** Chloe Beck

**Document Quality Assurance By:** Catherine Mills

**Kramer Canup** is a Project Manager and Environmental Scientist with 10 years of professional experience. Kramer has a professional background in project management, ecological restoration, vegetation monitoring, invasive plant management, monitoring protocol development, grant writing, tropical ecology, wildlife monitoring and environmental education. He currently manages residential and commercial projects, performs wetland and ordinary high-water delineations and shoreline assessments; conducts environmental code analysis and prepares environmental assessment and mitigation reports, biological evaluations, and permit applications to support clients through the planning and permitting processes. His noteworthy experiences include supporting clients with navigating environmental regulations related to land use and development, managing wetland and riparian restoration projects, leading wetland and ordinary high water delineations throughout the Puget Sound region, and instructing study abroad courses in the Peruvian Amazon for the University of Washington.

*Education:* Bachelor of Arts in Environmental Studies with a minor in Ecological Restoration from the University of Washington. *Professional Trainings:* Basic Wetland Delineator Training with the Wetland Training Institute 40-hour USACE wetland delineation training. Kramer has been formally trained through the Washington State Department of Ecology, Coastal Training Program, How to Determine the Ordinary High Water Mark, Using the Washington State Wetland Rating System (2014), and Using the Credit-Debit Method for Estimating Mitigation Needs.

**Chloe Beck** is a Staff Scientist with 7+ years of professional experience. Chloe has a professional background in research, vegetation monitoring, grant writing, bird and wildlife surveying, volunteer coordination, and environmental education. She currently assists with wetland and ordinary highwater delineations, conducts environmental code analysis and prepares environmental assessments. Her noteworthy experiences include managing large biological datasets, performing ecological surveys in Puget Sound region, and experience conducting various ecological surveys while studying abroad in Patagonia, Chile.

*Education:* Bachelor of Arts in Zoology and Bachelor of Arts in International Studies with a focus on The Global Environment from Miami University in Oxford, OH. Master of Science in Environmental Science from Western Washington University. Thesis title: Biodiversity of Snow Algae in the North Cascades: Comparing Distinct Microhabitats at Mount Watson. *Professional Certificates:* Data Science for Environmental Applications from Western Washington University. Washington State Department of Ecology, Coastal Training Program, How to Determine the Ordinary High Water Mark and Using the Washington State Wetland Rating System (2014).

**Catherine Mills** is an Environmental Scientist II with 4 years of professional experience. Catherine has a background in chemical ecology and pollination biology from the Pollination Lab at Colorado State University, and has received extensive, hands-on experience working in lab and field settings, and studying wildlife management, biodiversity and natural resource policy during her undergraduate program. She currently performs wetland, stream, and shoreline delineations and fish and wildlife

habitat assessments; conducts environmental code analysis; and prepares environmental assessments and mitigation reports, biological evaluations, and permit applications to support clients through the regulatory and planning process for various land use projects. Her noteworthy experiences include assisting projects with permitting and mitigation requirements for the Salish Sea Nearshore Programmatic (SSNP).

*Education:* Bachelor of Science degree in Fish, Wildlife and Conservation Biology from Colorado State University, Fort Collins. *Professional Certifications:* GIS Certificate, NAUI Open Water Diver Certificate, and USFWS Marbled Murrelet Marine Monitoring Protocol Certified Observer *Professional Trainings:* She has received training from 40-hour wetland delineation training for Western Mountains, Valleys, & Coast and Arid West Regional Supplement through Terrascience, Using the Revised 2014 Wetland Rating System for Western Washington, How to Determine the Ordinary High Water Mark through the Washington Department of Ecology, and How to Conduct a Forage Fish Survey through the Washington Department of Fish and Wildlife.