City of Bellingham Umbrella Mitigation Bank
Prospectus

City of Bellingham, Washington

Prepared by:

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Freeland & Associates
Cascadia Consulting Group

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Table of Contents

Executive Summary ........................................................................................................................................ 5
Introduction .................................................................................................................................................. 7

1. Umbrella Mitigation Bank Program—How did we get here? ................................................................. 9
   1.1 City of Bellingham Setting and Ecological Context ........................................................................ 14

2. Impact Analysis ..................................................................................................................................... 15

3. Mitigation Site Selection .......................................................................................................................... 18

4. Proposed Service Area ............................................................................................................................ 20
   4.1 A Watershed-Based Approach ...................................................................................................... 20
   4.2 Ten-Mile Creek Watershed ........................................................................................................... 22
   4.3 Silver Creek Watershed .................................................................................................................. 22
   4.4 Squalicum Creek Watershed .......................................................................................................... 25
   4.5 Whatcom Creek Watershed ........................................................................................................... 28
   4.6 Padden Creek Watershed .............................................................................................................. 29
   4.7 Chuckanut Creek Watershed ......................................................................................................... 30
   4.8 Samish Bay Watershed ................................................................................................................... 31
   4.9 Summary ....................................................................................................................................... 31

5. Overview of the Proposed Mitigation Bank Sites .................................................................................. 33
   5.1 The Bear Creek Corridor Mitigation Bank Site ............................................................................ 34
   5.2 McCormick Creek Headwaters Mitigation Bank Site—Summary ................................................ 42
   5.3 Valley of the Forks Mitigation Bank Site—Summary .................................................................... 46
   5.4 Squalicum Lake Mitigation Bank Site .............................................................................................. 51
   5.5 Summary of Bank Site Designs, Activity, and Anticipated Credits ............................................... 56

6. Bank Site Implementation—Phasing Considerations ............................................................................. 57
   6.1 Bank Site Implementation—Phasing Considerations ..................................................................... 57

7. Qualifications .......................................................................................................................................... 59
   7.1 Qualifications of the Bank Sponsor ............................................................................................... 59
   7.2 Qualifications of the Main Design Team and their Areas of Expertise ........................................ 60

8. References .............................................................................................................................................. 60

APPENDIX A. Checklist and City of Bellingham Prospectus Page References ........................................... 64
APPENDIX B. City of Bellingham Mitigation Program Steering Committee Members ................................ 66
APPENDIX C. Resource Documents Consulted in Support of Bank Program Development .................... 68
List of Tables
Table ES-1. Umbrella Mitigation Bank Program Sites ................................................................. 5
Table 1. WRIA 1 Aquatic Resource Impacts ..................................................................................... 16
Table 2. Bear Creek Corridor Mitigation Bank Site ............................................................................. 34
Table 3. Bear Creek Corridor Mitigation Bank Site: Proposed Bank Activity and Anticipated Credits ................................................................. 42
Table 4. McCormick Creek Headwaters Mitigation Bank Site ............................................................. 42
Table 5. McCormick Creek Headwaters Proposed Mitigation Bank Site: Activity and Anticipated Credits ........................................................................ 46
Table 6. Valley of the Forks Mitigation Bank Site ................................................................................. 46
Table 7. Valley of the Forks Wetland Mitigation Bank Site ................................................................. 51
Table 8. Squalicum Lake Mitigation Bank Site ..................................................................................... 51
Table 9. Squalicum Lake Wetland Mitigation Bank Site: Activity and Anticipated Credits ................................................................. 55
Table 10. Proposed Credit Ratios for Activities at Mitigation Bank Sites ........................................... 56
Table 11. Proposed Credit Generation at Mitigation Bank Sites ......................................................... 56

List of Figures (see accompanying PDF files) Referenced on
Figure ES-1. Proposed Bank Sites and Service Area (page 6)
Figure 1. Vicinity Map (pages 7 and 14)
Figure 2. Ecologic Context (page 14)
Figure 3. WRIA 1 (page 14)
Figure 4. Watersheds in Bellingham and Vicinity (page 14)

City of Bellingham Watersheds
Figure 5. North Bellingham Development (pages 15, 23)
Figure 6. Protected Lands in the Bear Creek Corridor (pages 15, 35, 40)

Bear Creek Habitat Corridor
Figure 7. Projects with Aquatic Resource Impacts (page 16)
Figure 8. Twenty (20) Potential Mitigation Bank Sites (page 18)

Potential Mitigation Bank Sites
Figure 9. Proposed Bank Sites and Service Area (page 19)

Proposed Mitigation Bank Sites
Figure 10. Proposed Service Area (pages 20, 22, 25, 28, 29, 30, 31)

Proposed Service Area
Figure 11. Bank Sites and Natural Resource Corridors (pages 26, 32, 37, 55)

Bank Sites and Connectivity to Natural Resource Corridors
Figure 12. Bank Site Locations & Parks Pro Plan Corridors (page 32)

Bank Sites and Parks Corridors
Figure 13. Bear Creek Corridor Mitigation Bank Site--Existing Conditions (page 35)
Figure 14. Bear Creek Corridor Mitigation Bank Site--Conceptual Design (page 40)
Figure 15. McCormick Creek Headwaters Mitigation Bank Site--Existing Conditions (page 42)
Figure 16. McCormick Creek Headwaters Mitigation Bank Site--Conceptual Design (page 45)
Figure 17. Valley of the Forks Mitigation Bank Site--Existing Conditions (page 46)
Figure 18. Valley of the Forks Mitigation Bank Site--Conceptual Design (page 49)
Figure 19. Squalicum Lake Wetland Mitigation Bank Site--Existing Conditions (page 51)
Figure 20. Squalicum Lake Wetland Mitigation Bank Site--Conceptual Design (pages 54, 55)
Executive Summary

The City of Bellingham is pursuing an Umbrella Mitigation Bank Program in order to provide ecologically functional mitigation to offset permitted wetland and aquatic resource and buffer impacts within its jurisdiction and the region. Umbrella Mitigation Banks are acknowledged as a viable option for providing a programmatic approach to mitigation in the Federal Rule on Compensatory Mitigation for the Losses of Aquatic Resources (33 CFR 332.8(8)(h). This Prospectus is prepared to comply with state and federal rule requirements regarding Mitigation Bank Proposals.¹

The City of Bellingham is proposing four bank sites located on 607 acres to implement its Umbrella Mitigation Bank Program (Table ES-1). The sites include the Bear Creek Corridor Mitigation Bank Site in the Silver Creek Watershed, and the McCormick Creek Headwaters, Squalicum Lake, and Valley of the Forks mitigation bank sites in the Squalicum Creek Watershed. Analysis of mitigation demand over the next ten years supports bank site location within these watersheds.

Table ES-1. Umbrella Mitigation Bank Program Sites

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Mitigation Bank Site</th>
<th>Site Acreage</th>
<th>Anticipated Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Creek</td>
<td>Bear Creek Corridor</td>
<td>95.6</td>
<td>14.70</td>
</tr>
<tr>
<td>Squalicum Creek</td>
<td>McCormick Creek Headwaters</td>
<td>158.7</td>
<td>28.36</td>
</tr>
<tr>
<td></td>
<td>Squalicum Lake</td>
<td>271.4</td>
<td>35.19</td>
</tr>
<tr>
<td></td>
<td>Valley of the Forks</td>
<td>81.9</td>
<td>25.91</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>607.6</strong></td>
<td><strong>104.16</strong></td>
</tr>
</tbody>
</table>

The City of Bellingham has been actively researching a programmatic approach to mitigation since 2012. The mitigation bank sites proposed in this Prospectus have been selected based on extensive analysis conducted by the City of Bellingham and its consultants, including:

- Detailed research on existing ecological conditions, development patterns, and growth projections within the City and region;
- Identification of specific project impacts (both to wetland and aquatic resources and their buffers); and
- Quantification of those impacts by watershed and impacts to wetland and aquatic resource functions.

The Prospectus presents conceptual designs for the proposed mitigation bank sites, including proposed credit generation estimates. The proposed credit conversion rates are consistent with the ranges in Washington State’s Wetland Mitigation Banking Rule.² The credit generation strategy is also consistent with both state and federal rule considerations for credit generation. The Prospectus documents how the proposed sites will provide ecologically appropriate and functional mitigation and meet the City’s projected mitigation demand over the next decade.

¹ See WAC 173-700-211 Content of the Prospectus and 33 CFR Part 332.8(d)(2) Prospectus.
² WAC 173-700-313 Wetland credit conversion rates.
The proposed service area for the bank is approximately 82,543 acres in size (129 square miles). It represents 9% of Water Resource Inventory Area (WRIA) 1. The proposed service area includes the following watersheds:

- Ten Mile Creek
- Silver Creek
- Squalicum Creek
- Whatcom Creek
- Little Squalicum Creek
- Bellingham Bay
- Padden Creek
- Chuckanut Creek and Bay
- Samish Bay

Figure ES-1 shows the location of the four proposed bank sites with respect to the proposed service area. The Prospectus documents that the proposed service area is ecologically based and appropriate to offset anticipated impacts within the City’s jurisdiction and adjacent lowland drainages.
Figure ES-1. Proposed Bank Sites and Service Area

Legend:
1. Bear Creek Corridor Mitigation Bank Site
2. McCormick Creek Headwaters Mitigation Bank Site
3. Valley of the Forks Mitigation Bank Site
4. Squalicum Lake Mitigation Bank Site

- Proposed City Service Area
- Water Resources Inventory Area (WRIA) 1 Boundary
Introduction

The City of Bellingham, approximately 30 square miles in size, is located along the coast in the northwest corner of Washington State. A vicinity map is included as Figure 1. Bellingham’s current population is estimated at 86,720. The City’s population has doubled since 1980. During that time, population growth rates have ranged between +0.75% and +2.54%.³

Based on its lowland ecological setting with extensive wetlands and multiple independent watersheds and sub-watersheds that connect local headwaters to the coast, the City recognizes that proposed growth and infrastructure improvements will result in unavoidable impacts to local aquatic resources. Since 2012, the City of Bellingham has been actively researching a programmatic approach to mitigation. Consolidated approaches to mitigation such as wetland mitigation banks or in-lieu fee programs are the preferred approach to mitigation in the Federal Rule on Compensatory Mitigation for the Losses of Aquatic Resources.⁴ Both mitigation banks and in-lieu fee programs are regulatory options that allow for programmatic approaches to mitigation requirements. Because they avoid the temporal losses typically associated with permittee responsible mitigation, banks are the preferred option. In Washington State, approved wetland mitigation banks have a high ecological success.

The City of Bellingham has adopted a Comprehensive Plan policy that encourages the development of a range of mitigation options, including banks⁵. In establishing a mitigation program, the City desires to provide ecologically functional mitigation to offset permitted wetland and aquatic resource impacts within its jurisdiction and the region. By consolidating mitigation efforts, the City aims to provide a program that meets its regulatory mitigation requirements while complementing regional restoration goals and ensuring consistency with City and County Comprehensive Plan goals and policies, Shoreline Master Programs, and Regional Parks and Open Space planning efforts, including building on recommendations made in the City’s Habitat Restoration Technical Assessment⁶. The City believes that a consolidated approach to mitigation is preferable to the standard permittee-responsible mitigation for several reasons:

• Mitigation can be sited in such a way as to complement regional restoration and open space priorities.
• Consolidated mitigation carries the promise of providing ecologically significant and functional mitigation at a cost savings, as compared to the standard permittee-responsible mitigation process.
• Once established, a programmatic approach to mitigation has the potential to save the City time and money in meeting regulatory requirements related to mitigation at the local, state and federal level.

After significant analysis of the City’s mitigation needs, the City is pursuing an Umbrella Mitigation Bank Program. This program is based on a watershed approach to mitigation. Four sites are identified in this Prospectus to be established as Mitigation Bank Sites under the City’s Mitigation Bank Program.

³ This data was taken from the City of Bellingham’s website: www.cob.org
⁴ 33 CFR Parts 325 and 332
⁵ Specific Comprehensive Plan Policies and Goals are listed later in this section.
⁶ Bellingham Habitat Restoration Technical Assessment, 2015. More detail on this document is included later in this section.
This Prospectus document is prepared to comply with Washington State’s Rule on Wetland Mitigation Banks (WAC 173-700\(^7\)) as well as the Federal Rule on Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332\(^8\)). Included in Appendix A of this document is a Prospectus Checklist for Federal and State Wetland Mitigation Banks that the agencies with jurisdiction have provided for bank Sponsor use. This checklist provides page numbers identifying where specific required elements of the Prospectus can be found. It is included to facilitate agency review and to ensure compliance with state and federal Prospectus submittal requirements.

This Prospectus:

- Provides an overview of the analysis that led the City to pursue implementation of an Umbrella Wetland Mitigation Bank Program.
- Presents conceptual designs for the proposed mitigation bank sites, including proposed credit generation estimates for each site. The proposed credit ratios are consistent with the credit conversion rates in Washington State’s Wetland Mitigation Banking Rule.\(^9\) The credit generation strategy is also consistent with both state rule considerations and federal rule considerations for credit generation.
- Documents how the proposed sites will provide ecologically appropriate and functional mitigation and meet the City’s projected mitigation demand over the next decade. Mitigation demand was quantified by analyzing impacts to wetland and aquatic resources and their buffers.

The analysis presented in this Prospectus is firmly grounded in a watershed-based approach to wetland and aquatic resource mitigation. The Prospectus also presents a proposed Service Area for the banking program and documents that the proposed Service Area is ecologically based and appropriate to offset anticipated impacts.

The Prospectus is organized as follows:

1. Umbrella Mitigation Bank Program—How did we get here?
2. Impact Analysis
3. Mitigation Site Selection
4. Proposed Service Area
5. Overview of proposed Mitigation Bank Sites—Existing Conditions, Conceptual Designs, Credit Generation Strategies
6. Bank Site Implementation—Phasing Considerations
7. Bank Sponsor Qualifications

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\(^7\) The content of the Prospectus is addressed at WAC 173-700-211.

\(^8\) Prospectus submittal requirements for mitigation banks are listed at 33 CFR Part 332.8(2)

\(^9\) WAC 173-700-313 through WAC 173-700-319.
1. Umbrella Mitigation Bank Program—How did we get here?

As noted in the Executive Summary, the City of Bellingham has been actively pursuing the development of a programmatic approach to mitigation since at least 2012. At that time, a study prepared by a local consultant evaluated the following options:

- Establish an In-Lieu Fee Program
- Establish a Mitigation Bank Program
- Maintain a local government approved mitigation program

The first two approaches are authorized in the Federal Rule on Compensatory Mitigation for the Losses of Aquatic Resources (33 CFR Parts 332 and 325). At the time, an In-Lieu Fee Program was suggested as the preferred option. This suggestion was based, in part, on the economic recession and on the fact that the City could spread mitigation costs out over time, using a ‘pay as you go’ approach that would meet mitigation obligations within the regulatory framework and guidance provided for the In-Lieu Fee Program by the Federal Rule on Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 332 and 325).

In 2015, the City hired dedicated staff with the intention of actively pursuing a Citywide Mitigation Program. In establishing a Mitigation Program, the City’s goals were to:

- Provide consolidated mitigation in an ecologically successful way.
- Provide an alternative to permittee-responsible mitigation for both public and private sectors.
- Build on existing City of Bellingham and regional environmental protection and restoration policies and programs that identify regional restoration, open space, and recreation corridors and opportunities.
- Establish a program that is cost-effective and self-sustaining in the long run.
- Ensure that mitigation sites are ecologically sustainable and selected based on a watershed approach, and that they appropriately offset anticipated impacts to wetland and aquatic resource functions within the City and region.
- Minimize time and effort needed to meet mitigation permitting obligations.
- Meet local, state, and federal regulatory requirements for mitigation.

With respect to meeting local regulatory requirements, the City of Bellingham has a long history of adopting progressive environmental policies. Its Mitigation Program is no exception. The Mitigation Program is a new program under the City’s Natural Resources Division that will complement a long-standing Restoration Program. The Natural Resources Division’s Restoration Program, includes over 70 sites throughout the City and the Lake Whatcom Watershed. The Restoration Program is also responsible for the long-term maintenance and monitoring for all mitigation projects associated with the City’s capital construction. The Restoration Program has successfully obtained and fulfilled reporting requirements for millions of dollars in grant funding and is the long-term recipient of trust funds from the 1999 Olympic Pipeline Incident, which provides sustained program funding. Due to the depth and longevity of the program, the Restoration Program operates a permanent shop with maintenance equipment, a nursery, and vehicles necessary for year-round maintenance and monitoring activities.
In addition to providing strong infrastructure in the form of dedicated staffing and experience in site management, the City has adopted broad policies to support the development of a Mitigation Program.

The City’s vision for its future is spelled out in its Comprehensive Plan, as prepared in compliance with Washington State’s Growth Management Act (RCW 36.70A). The Comprehensive Plan includes an Environment Chapter with nine goals that mirror the City’s Legacies and Strategic Commitments and emphasize the protection and restoration of resources. With respect to a mitigation program, the following goals and policies are most relevant:

**Goal EV-3** Protect and restore ecological functions and habitat.

**Goal EV-4** Limit urban sprawl and promote sustainable land use planning.

*Policy EV-9* Use best available science to preserve and enhance the functions and values of critical areas through policies, regulations, programs and incentives.

*Policy EV-11* Promote the use of the Bellingham Habitat Restoration Technical Assessment and other natural resource assessments conducted by the City in project design, development review, restoration and mitigation project selection to achieve the maximum benefits for preservation and restoration of critical areas.\(^{10}\)

*Policy EV-12* Safeguard the long-term functions and values of critical areas through effective mitigation measures when avoidance is not feasible.

*Policy EV-13* Select wetland mitigation sites for unavoidable impacts based on current state mitigation guidance documents and on the watershed approach with an emphasis on the ecologically-preferable site.

*Policy EV-14* Encourage the development of mitigation options such as a mitigation bank or in-lieu fee program.

*Policy EV-15* Protect, enhance, or restore ecological functions such as flood storage, habitat, and conveyance in frequently flooded areas.

**Goal EV-5** Protect and improve the health of lakes, streams and the Salish Sea.

The City’s Comprehensive Plan Environment Chapter also addresses Fish and Wildlife Habitat. As the Comprehensive Plan notes:

“Bellingham is home to a wide variety of wildlife, from the great blue heron colony at Post Point to chinook salmon in Whatcom Creek, and many more species not always associated with urban areas. The unique geographical setting of Bellingham between

\(^{10}\) This study (Bellingham Habitat Restoration Technical Assessment, 2015), along with the Water Resource Inventory Area (WRIA) 1 Nearshore Use and Estuarine Assessment and Restoration Prioritization, as well as Citywide wetland inventories, and the North Bellingham and Urban Growth Boundary Wetland, Stream, Habitat Conservation Area and Buffer Assessment (NES, 2015), and other studies listed in Appendix C were all used to inform mitigation demand in support of the City’s Mitigation Program establishment.
mountains and marine waters, combined with intentional efforts of preservation, afford a wide range of habitats and the wildlife that depends on them.

Bellingham is a community that values wildlife, including protection for and restoration of wildlife habitat. Unlike many urban areas, Bellingham is fortunate to have functioning wetlands, streams, and forests within City limits. Nevertheless, fragmentation and loss of habitat have occurred over the decades. Therefore, the City recently developed the first Bellingham Habitat Restoration Technical Assessment (November, 2015), a science-based document meant to guide habitat restoration and preservation efforts.

The main way in which wildlife habitat is sustained in urban environments is through preservation and restoration of both site-specific and interconnected habitat corridors and blocks. Through planning, connections can be preserved even as development occurs.\textsuperscript{11}

The Comprehensive Plan goes on to discuss protection and restoration of the City’s water quality and water quantity through a combination of stormwater regulations to control pollutants as well as restoration and acquisition strategies.

Per the Comprehensive Plan:

\textit{“The goal of restoration is to re-establish ecological processes and functions into a persistent, resilient system. Re-establishing ecological processes creates habitat structure that results in improved habitat function. Restoration in urban areas presents several challenges, including limited site availability, contamination, fragmented habitat and/or competing needs for land resources.”}

With respect to acquisition:

\textit{“Fish and wildlife habitat is retained, in part, through the City’s purchase and management of parks, open spaces, trail corridors…. Acquisition has been an important tool in preserving habitat, retaining habitat connectivity and corridors, and providing the opportunity for restoration.”\textsuperscript{12}}

In September of 2016, a private consultant with extensive experience in programmatic approaches to mitigation in Washington State was hired by the City to provide support for the development of a Mitigation Program. The appropriate permit pathway to establishing a programmatic approach to mitigation depends on the following information:

- Understanding the ecological and watershed context of the City and region.
- Quantifying mitigation demand by identifying specific projects with impacts to wetlands and aquatic resources.

\textsuperscript{11} Bellingham Comprehensive Plan, Environment Chapter, Fish and Wildlife Habitat Section, page 8 of 19, November 14, 2016.

• Analyzing those impacts in detail, considering watershed, landscape position, and quantifying wetland and aquatic resource functions to be lost.
• Identifying projected growth and development patterns.
• Identifying regional restoration and protection needs.
• Understanding the existing planning, regulatory, and permitting framework and how that regulatory framework affects wetland and aquatic resource protection in the region.

The Mitigation Program establishment process began with a Steering Committee kick off meeting. The Steering Committee is composed of City, County, and State agency staff who came together to understand stakeholders’ mitigation needs and to foster a collaborative approach to Mitigation Program establishment. An extensive list of public and private sector entities was contacted to determine stakeholders’ mitigation needs. (See Appendix B for a list of Steering Committee members and a partial list of contacted stakeholder entities). In addition, local plans and policies were researched and consulted in order to ensure compliance with City and County environmental protection programs. These policies and plans included City and County Critical Areas Ordinances, Shoreline Master Programs, Comprehensive Plans, Parks and Open Space Plans, Transportation and Capital Improvement Project Plans, Salmon Recovery Plans, and local and regional watershed restoration plans, including the City of Bellingham’s Habitat Restoration Technical Assessment. The Department of Ecology’s Puget Sound Watershed Characterization results for WRIA 1 were also consulted. Economic development plans and patterns were also analyzed to understand growth patterns and projections and to understand what effect these growth patterns might have on existing natural resources within the City.

In addition, technical studies on the status and trends of environmental resources in the City were analyzed to understand how and where existing resources occur, the types of environmental degradation that exist (e.g., water quality, 303(d) listed waters), and what restoration and protection efforts are being planned or implemented to address these issues. A list of technical reports, resource documents, and plans and policies consulted to inform this effort is included in Appendix C.

In December of 2016, based on the project team’s findings that approximately 30+ acres of wetland impacts were anticipated from over 40 identified projects, the City decided to pursue an Umbrella Mitigation Bank Program rather than the previously recommended In-Lieu Fee Program approach. During 2017 the City further refined its mitigation impact analysis and found 42+ acres of wetland and aquatic resource impacts across 62 projects. Impact analysis also included quantification of direct buffer impacts of 12.95 acres. These findings further supported pursuit of an Umbrella Mitigation Bank Program.

Compared to other consolidated mitigation approaches, an Umbrella Mitigation Bank approach allows the bank sponsor to establish a regulatory framework that:

• Allows consolidated mitigation to be permitted before it is needed;
• Reduces temporal loss of ecological function; and
• Affords the City more flexibility in program management.

13 Bellingham Habitat Restoration Technical Assessment, 2015.
The site management action of wetland and aquatic resource management—whether it is wetland or stream restoration (including rehabilitation, and re-establishment), creation, enhancement, preservation, or some combination thereof—generates mitigation ‘credit’ which can be used to offset permitted impacts to wetlands and aquatic resources.\textsuperscript{14} Historically, banks have often been sited at a single location. In the City’s case, given the urban and urbanizing nature of Bellingham and its surroundings, no one site was sufficient to meet the projected mitigation demand. In addition, the City is committed to providing ecologically appropriate mitigation that functionally offsets permitted impacts within its jurisdiction and the region. Given that these impacts occur in a number of different watersheds, the City is committed to offsetting these impacts in a consolidated way, but also ensuring that the functions are replaced either within the impacted watersheds or in landscape positions that provide functionally appropriate replacement. Finally, urban mitigation bank sites are expensive to purchase and maintain. It would be impractical and cost-prohibitive to attempt to find one mitigation bank site within the City’s jurisdiction to meet mitigation demand. However, several sites, located in a variety of the City’s watersheds, could meet mitigation demand and provide ecologically significant and successful mitigation. All of these factors lead to the City’s decision to pursue an Umbrella Mitigation Bank Program.\textsuperscript{15}

An Umbrella Mitigation Bank allows the City to identify multiple bank sites in multiple watersheds throughout its jurisdiction and the region. Sites can be permitted as needed over time by the City to offset anticipated mitigation needs. Taken together, the four sites in this Prospectus would fully offset the anticipated mitigation needs over the next 10 years.

In addition, the Umbrella Mitigation Bank approach allows for flexibility to add sites over time once the regulatory framework of the Mitigation Bank Program is established. The City can propose four bank sites to establish its Mitigation Bank Program, but it can develop these bank sites as mitigation demand dictates and based on other considerations—such as the economic cost and availability of bank sites. The Umbrella Mitigation Bank Program allows the City to grow its program over time to meet mitigation demand. However, because Wetland Mitigation Banking is a voluntary Program, the City is not obligated to implement Mitigation Bank sites unless it chooses to do so. The schedule for Bank site implementation is at the City’s discretion. A discussion on Bank Site Phasing considerations is included in Section 6. Bank Site Implementation—Phasing Considerations.

Mitigation Banking is a voluntary approach to meeting mitigation requirements. The City is choosing to pursue this approach because it believes that an Umbrella Mitigation Bank Program is the most ecologically and economically successful way to meet its regulatory mitigation requirements.

\textsuperscript{14} More detail on the definitions of these terms is provided later in this document as a part of the credit generation strategy for each site.

\textsuperscript{15} Umbrella Mitigation Banks are acknowledged as a viable option in the Federal Rule on Compensatory Mitigation for the Losses of Aquatic Resources (33 CFR 332.8(8)(h)). Submittal of the Prospectus provides the agencies with an overview of the proposed program. Details of the program are negotiated in a Mitigation Bank Instrument, which is the equivalent to a contractual agreement on the substantive issues of each proposed bank site. Under an Umbrella Mitigation Bank Program Approach, sites can be added as addenda to the Mitigation Bank Instrument over time. See specifically 33 CFR 332.8(8)(h) “Umbrella mitigation banking instruments. A single mitigation banking instrument may provide for authorization of additional mitigation bank sites. As additional sites are selected, they must be included in the mitigation banking instrument as modifications....”
Over 20 potential mitigation bank sites were identified and investigated. This Prospectus identifies the final four mitigation bank sites that are proposed to establish the City’s Umbrella Mitigation Bank Program. What follows is a summary of the analysis that occurred during 2016 and 2017.

1.1 City of Bellingham Setting and Ecological Context

The City of Bellingham is located in Whatcom County, in the northwest corner of Washington State (Figure 1—Vicinity Map). It is bounded to the north, east, and south by Whatcom County and to the west by Bellingham Bay and the Salish Sea. From an ecological context, the City of Bellingham is heavily influenced by the Fraser River Valley, as seen in Figure 2. Major rivers in Whatcom County include the Nooksack River. The geology of the region is heavily influenced by this river floodplain and glaciation. Soils are generally poorly drained, and there is a seasonally high water table. The Watershed Resource Inventory Area (WRIA) is designated as WRIA 1. A map of the watersheds within WRIA 1 is shown in Figure 3.

The watersheds which drain wholly or partially within the City’s jurisdiction include, from north to south:

- Silver Creek
- Bellingham Bay
- Little Squalicum Creek
- Squalicum Creek
- Whatcom Creek
- Lake Whatcom
- Padden Creek
- Chuckanut Creek

These watersheds are shown in Figure 4.

Coastal drainages within these watersheds generally flow from east to west, draining into Bellingham Bay.

Wetland systems within these watersheds are extensive, due to the poorly draining soils and seasonal high water tables in the region. As a result, wetlands often persist unless intentionally filled for development. Very few wetlands have been effectively drained; when drainage is attempted, wetlands often remain in a degraded condition. City of Bellingham wetland inventories from 1992, 2003, and 2015 were analyzed to identify existing resources. In addition, the City maintains a database of site specific wetland delineations. Wetland functions provided by these systems include flood storage, water quality, and inland habitat corridors.

A detailed discussion of existing watershed conditions is presented in Section 4. Proposed Service Area. More details on existing wetland functions at each of the proposed mitigation bank sites are provided in Section 5. Overview of Proposed Mitigation Bank Sites.
2. Impact Analysis

Understanding potential adverse impacts to wetlands and aquatic resources requires understanding growth and development patterns in the region. With respect to the City of Bellingham, a number of studies have documented anticipated growth in the North Bellingham area. This area includes the Bellingham Airport, the Interstate-5 Corridor, and surrounding areas. Bear Creek, tributary to Silver Creek within the Silver Creek Watershed, flows through this area. The zoning in this area is a mix of commercial, light industrial, and residential, depending on the parcel location. Figure 5 shows development projects in this area. Projects that have either been recently permitted or are in the permitting process are shown in pink. City annexation of two areas, shown in green within the Urban Growth Boundary, is pending. Based on its review of local development patterns, the City has identified a need to prioritize wetland and habitat protection in this area. In establishing its Mitigation Bank Program, the City will protect approximately 95.6 acres as the Bear Creek Corridor Mitigation Site, shown in yellow on Figure 5.

Approximately 10 years ago, the parcels situated to the north of Mahogany Road, a portion of which is currently permitted to accommodate 134 apartments and 300 townhomes, was a mature forested wetland mosaic located along two forks of the Bear Creek riparian corridor. Private wetland mitigation banking companies were contacted to determine whether the site could be established as a mitigation bank site. At that time, the site was in such good ecological condition that the mitigation bankers did not feel that it would generate sufficient mitigation credit—it was all preservation of existing high quality wetland and streams; wetland functions could not be improved upon.

The site was subsequently logged under a Forest Practices Application, which lowered the wetland functional performance and eliminated one of the stream forks. The site was later converted and developed in compliance with existing regulatory requirements. The existing regulatory framework allows for reasonable use as part of the development process. Off-site mitigation was required to offset development impacts; however, this example illustrates the development pressure and potential for conversion in the northern portion of the City and Urban Growth Area (UGA).

If not purchased with the intent for providing long-term protection, the remaining undeveloped forested parcels within the Bear Creek corridor, subject to development pressure and conversion to other uses in compliance with existing regulations, will result in further wetland degradation and habitat fragmentation. Because of zoning and proximity to the urban core, land costs in this area are relatively high. Due to the patterns of land use history and development, wetland and riparian restoration within this corridor is not feasible; however, wetland and riparian preservation and enhancement are critical to protecting and maintaining wetland and riparian functions in this corridor.

In total, over 300 acres of land in this corridor is currently in public ownership and protected. This includes lands owned by the Port of Bellingham to the east of the proposed bank sites, a regional stormwater facility and private mitigation to the south of the proposed bank sites, and the Riley Open Space to the north. Contiguous forested area around this corridor encompasses approximately 600 acres. The proposed bank sites, if acquired, would add approximately 95.6 acres of protected area to this forested corridor, an increase of nearly 25% of protected lands within the corridor. Figure 6 shows:

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17 Many of the protected sites are existing mitigation sites, which are protected in perpetuity.
Lummi Nation Proposal: Truck Stop, Retail & Hotel 1 Million Sq Ft

- 148 Apts
- 111 Duplexes
- 128 Single-Family

- 134 Apts
- 300 Townhomes

- 260 Apts

- 174 Apts
- 146 Single-Family

- 177 Apts
- 288 Apts

- 248 Apts
- 140 Townhomes

- 150K Sq Ft Retail
Figure 6. Protected Lands in Bear Creek Corridor

Legend
- Contiguous Forest Patch FP-126*
- Proposed Bear Creek Corridor Mitigation Bank Site
- Existing Public Owned or Protected Sites
- Watersheds

publicly owned and protected lands within this urban and urbanizing corridor along the West Fork of Bear Creek to its confluence with the mainstem of Bear Creek. If permitted as proposed, the Bear Creek Corridor Mitigation Bank Site significantly enhances the degree of connectivity to other habitats and open space within this corridor. This is an explicit consideration for determining credit conversion rates in the State Rule on Wetland Mitigation Banks.\(^{18}\)

During 2017 the City undertook an extensive analysis to document projects proposed over the next 10 years with wetland and aquatic resource impacts by watershed and sub-watershed. This impact analysis was not restricted to watersheds just within the City’s jurisdiction. Rather, the idea was to understand the full picture of projected impacts within Whatcom County, and based on that analysis, to determine a proposed service area that would appropriately offset identified impacts. This analysis is written up in detail under separate cover and summarized here for the purposes of this Prospectus.\(^{19}\)

The City identified sixty-four (64) projects with the potential to directly impact approximately 48 acres of wetland and aquatic resource areas throughout Water Resource Inventory Area (WRIA) 1 in the next ten years. The analysis also quantified potential impacts to wetland and aquatic resource buffers. In total, 12.95 acres of direct buffer impacts were identified. The process by which the City identified these projects included reviews of public sector resource documents, such as Capital and Transportation Improvement Project budgets and the City’s Parks plans, and by consultation with other agency staff and private sector development professionals. As compared to the public-sector impacts, the private-sector impacts were more difficult to forecast. As a result, the impact analysis provides an indication of private sector impact location and impact type (to wetland and aquatic resource category and function, including buffer impacts), but likely underestimates the total private sector impact acreage.

### Table 1. WRIA 1 Aquatic Resource Impacts

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Impact (Acreage)</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Creek:</td>
<td>18.69</td>
<td>17</td>
</tr>
<tr>
<td>Squalicum Creek:</td>
<td>7.88</td>
<td>17</td>
</tr>
<tr>
<td>Whatcom Creek:</td>
<td>7.50</td>
<td>6</td>
</tr>
<tr>
<td>Drayton Harbor:</td>
<td>4.50</td>
<td>4</td>
</tr>
<tr>
<td>Other Watersheds (10):</td>
<td>Each &lt;1 acre</td>
<td>20</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>48.57</strong></td>
<td><strong>64</strong></td>
</tr>
</tbody>
</table>

As illustrated in Figure 7, the proposed projects are located within 15 watersheds throughout WRIA 1, including the mainstem and north, middle and south forks of the Nooksack River. The majority of the project-associated impacts are concentrated in the North Bellingham area (18.69 acres in Silver Creek watershed and 7.88 acres of impact in the Squalicum Creek watershed).

In order to assess the types of aquatic resources and associated functions likely to be impacted and therefore mitigated in the next 10 years, the City analyzed a subset of 18 of the identified projects, each representing aquatic resource impact areas greater than 0.49-acres in the Silver Creek, Squalicum Creek,

\(^{18}\) WAC 173-300-314(7). The rule also notes: “The site’s contribution to the protection, recovery, or both of federally listed threatened or endangered species, protection of state priority species and habitats, and locally significant habitats” (WAC 173-300-314(6)). The Bear Creek Corridor Mitigation Bank Site meets both of these considerations, as well as others listed at WAC 173-300-314. More detail on the site is provided in Section 5 of this Prospectus.

\(^{19}\) City of Bellingham Public Works Department, Technical Memorandum: Mitigation Program—Analysis of Proposed Aquatic Resource Impacts. March 2017.
Whatcom Creek and Drayton Harbor watersheds. The size threshold was selected as a practical matter, since the analysis included wetland rating and use of the Credit-Debit Method to quantify impacts to wetland functions. The analyzed projects include eight (8) City parks, six (6) public-sector projects and four (4) private developments. Details regarding these 18 projects are provided in the City’s Technical Memorandum. This subset of projects represents approximately 30 acres of aquatic resource impact area in total. Information on the types of wetland and aquatic resource functions to be impacted by these projects is summarized by watershed and included in Section 4. Proposed Service Area of this Prospectus.

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20 This size threshold was chosen to limit the scope of analysis of these impacts of these projects. The City intends to use the banks to offset permitted impacts below this size threshold.
3. Mitigation Site Selection

Based on the results of the Technical Memorandum on Impact Analysis, the City developed a list of potential mitigation bank sites to offset permitted impacts to wetlands and aquatic resources in the region. The City worked with Northwest Ecological Services, LLC (NES) to identify potential mitigation sites. NES, a locally based consulting firm, is knowledgeable of wetland and aquatic resources in Bellingham and the vicinity. NES has completed wetland inventories for the City of Bellingham Planning and Community Development Department and was involved in the Habitat Restoration Technical Assessment, completed in 2015. Most recently, NES completed an analysis of the North Bellingham area to identify potential mitigation sites for the City. This knowledge was leveraged to develop a list of potential wetland mitigation bank sites. The City also worked with Freeland & Associates, Inc., a local civil engineering firm, to develop conceptual site designs and determine construction costs. A list of twenty (20) sites was analyzed for availability, credit generation potential, cost, landscape position/location, threat of development, zoning, and general suitability as potential mitigation bank sites. The potential mitigation bank sites are shown in Figure 8.

The primary drivers in bank site selection included:

- Watershed location/landscape position—is the proposed bank site located in a watershed within which impacts are anticipated to occur?
- Does the bank site have the potential to provide ecologically equivalent or better functions to mitigate anticipated impacts?
- Is the bank site located in close proximity to an open space or biodiversity corridor? Does it support or contain significant local or regional resources such as riparian corridors for species listed under the Endangered Species Act?
- Does it protect or complement protection for other listed species or habitats (Washington Department of Fish and Wildlife Priority Habitats and Species designated Biodiversity Corridors, for example).
- Does protection of the bank site complement existing local and regional restoration goals?
- Is the bank site available?
- Can the bank site(s) generate sufficient mitigation credits to meet demand?
- Are the credits to be generated from the bank site ecologically sustainable?
- Are the wetlands and aquatic resources at the bank site under threat of development?
- What is the zoning of the bank site and surrounding area? Could development of the surrounding area adversely affect how the bank site is to be managed or the ecological functions of the bank site?
- Is the cost of generating wetland mitigation bank credits competitive?
- Is the cost of bank site acquisition and development economically feasible for the city?

Many of the potential mitigation bank sites that were initially identified were wetlands that occur across multiple parcels and ownerships, complicating both acquisition and restoration actions. To be viable, banks need to be fairly large—50+ acres is ideal. This eliminates many potential sites within the Urban Growth Area. Bank sites also need to be protected by perimeter buffers which do not generate credit. For many of the potential bank site parcels analyzed for this study, this buffer area included the area of highest restoration potential, especially if the site was linear (a degraded stream and riparian wetland corridor, for example). Sites that met this criterion are ecologically attractive because they can be
City of Bellingham Umbrella Mitigation Bank Program
Prospectus Figures

Potential Mitigation Bank Sites

Legend
- Jurisdiction Boundaries
- City Limits
- Watersheds
- City, County, State, Port, WLT
- Potential Mitigation Bank Sites

Figure 8. Twenty (20) Potential Mitigation Bank Sites
Page 18
significantly restored or enhanced, but not suitable for bank site development; if area that is to be restored is located within a perimeter buffer area, it doesn’t generate any credit.

Almost all of the potential wetland mitigation bank sites involved using preservation as a credit generation strategy. While it is not unusual to have some component of preservation as a credit-generating strategy, it is somewhat unusual for preservation to be a primary credit generating strategy. However, preservation is a significant component of credit generation for all of the proposed sites. This is because of the underlying ecological conditions in the Bellingham area and vicinity. The area is underlain by the glacial till soils. As such, there is a high water table, and the seasonally saturated soils and extensive wetlands are common in the area. These conditions are especially true in the undeveloped north end of Bellingham, which is zoned for future growth and under threat of development. Through the process of mitigation site selection, it became apparent that preservation would likely be at least a component of the credit generation strategy for all of the bank potential sites. From a credit generation strategy, this is not ideal, since wetland preservation generates the least amount of credit of any management activity from a bank site. It also became apparent that restoration—the highest credit generating strategy for banks—was unlikely to be possible for significant acreages in any of the proposed sites.21

A typical wetland mitigation bank site elsewhere in Washington State is often several hundred acres in size, sits in a broad riparian floodplain, and has been effectively drained by ditching or tiling—often to accommodate agricultural use of some kind. This type of parcel or extensive riparian floodplain area does not exist within the urbanizing headwater wetlands and coastal watersheds in North Bellingham and Whatcom County, which drain into and through the City of Bellingham. As mentioned above, wetlands in WRIA 1 often persist unless intentionally filled for development. Very few wetlands have been effectively drained; when drainage is attempted, wetlands often remain in a degraded condition. Yet it was within these watersheds that impacts were anticipated to occur, and therefore potential mitigation bank sites needed to be identified that could provide ecologically appropriate mitigation for anticipated impacts.

Following extensive field work and analysis, four sites were identified as being the most suitable potential wetland mitigation bank sites. Figure 9 shows the location of the proposed sites.

The Bear Creek Corridor bank site is located in the headwaters of the Silver Creek Basin. The other bank sites, Valley of the Forks, McCormick Creek Headwaters and Squalicum Lake bank sites, are located within the Squalicum Creek watershed.

21 More detailed information on credit generation strategy and proposed ratios is provided for each site in Section 5 of this document.
Legend

1. Bear Creek Corridor Mitigation Bank Site
2. McCormick Creek Headwaters Mitigation Bank Site
3. Valley of the Forks Mitigation Bank Site
4. Squalicum Lake Mitigation Bank Site

- Proposed City Service Area
- Water Resources Inventory Area (WRIA) 1 Boundary
4. Proposed Service Area

4.1 A Watershed-Based Approach

The Service Area is the area within which mitigation credits can be used to offset permitted impacts to aquatic resources. The Service Area is based on consideration of anticipated impacts by watershed, watershed boundaries within the region, the types of wetlands and aquatic resources that are to be impacted, and the types of aquatic resource functions to be provided at the proposed mitigation bank sites. The City’s proposed Service Area is shown in Figure 10.

The total size of the City’s proposed service area is 82,543 acres (roughly 129 square miles), or 9% of the WRIA 1 watershed. Generally, the watersheds in the proposed Service Area include headwater systems of coastal drainages that run from east to west, through the City of Bellingham, flowing into Bellingham Bay. These drainages are distinctly different from the Nooksack River watershed. In addition to these coastal drainages, the Service Area include Silver Creek and Ten Mile Creek. Although Silver and Ten Mile Creeks are tributaries to the Nooksack River, the portion of Silver Creek that lies within the City’s jurisdiction is primarily the headwaters of this system, and the anticipated impacts in the Ten Mile watershed are in similar headwater landscape positions. The headwater wetlands provide water quality, flood storage and habitat functions that the City wishes to protect.

The City is committed to providing ecologically functional mitigation to offset permitted impacts within its own jurisdiction and the region. The City’s proposed service area includes, from north to south:

- Ten Mile Creek and Silver Creek, which are tributaries to the Lower Nooksack River located in the North Bellingham area
- Squalicum Creek and its tributaries
- Whatcom Creek and its tributaries
- Bellingham Bay watershed and its tributaries, and
- Samish Bay and its tributaries.

With the exception of Ten Mile Creek and Silver Creek, these are coastal drainages that drain to Bellingham Bay. As noted above, the driver for the City’s proposed Service Area is to provide ecologically functional and successful mitigation that appropriately mitigates for anticipated impacts to wetlands and aquatic resources. The City also considered its proposed mitigation bank sites, their landscape position within the WRIA, the functions that will be provided at these bank sites, and how far the ecological and hydrological benefits of the proposed bank sites extend beyond the bank site locations.

In addition, the City considered existing Mitigation Bank Sites and their approved Service Areas. The Lummi Nation Wetland and Habitat Mitigation Bank is approved by the state and regulatory agencies with jurisdiction. Their bank sites are located at the mouth of the Nooksack River and associated Nooksack and Lummi River Deltas. The Lummi Nation Wetland and Habitat Mitigation Bank Service Area extends east to encompass portions of the Upper and Lower Mainstem of the Nooksack River and the independent coastal drainages within the City of Bellingham and UGA. Permitted impacts to wetlands and aquatic resources may be approved to use credits available from the Lummi Nation Wetland and Habitat Mitigation Bank Service Area, subject to the regulatory process for bank use.
The City’s anticipated impacts are projected to occur in headwater wetlands, primarily in coastal drainages and extending to the North Bellingham area. The City’s proposed Service Area and its bank sites have been selected to offset these impacts. The City’s proposed Service Area is designed to provide ecologically appropriate mitigation to offset permitted impacts within its jurisdiction and the region. The proposed bank sites were also selected based on consideration of the elements listed in the State Wetland Mitigation Bank Rule at WAC 173-700-303\textsuperscript{22}, which includes the following considerations:

- The proposed bank sites are located and designed in such a way as to be consistent with watershed restoration priorities.
- The proposed bank sites are located and designed to allow for ‘the protection and restoration of ecological processes within the ... watershed’
- The proposed bank site locations and designs protect and enhance wetland functions over time
- The proposed bank site locations are ecologically sustainable in the long-run
- The proposed bank sites have a high potential to connect to existing wetlands (and other natural resource corridors)

Originally, the City considered a larger service area, as well as a separate service area for Lake Whatcom. However, the anticipated impact locations and functional losses identified in the Impact Analysis Technical Memorandum did not support including these areas. The Lake Whatcom watershed protects the City’s drinking water supply and has long been the focus of concentrated environmental protection, including water quality protection. The City has the Lake Whatcom Management Program to manage the Lake Whatcom watershed, which includes land acquisition for water quality protection in the watershed. Identified wetland impacts within the Lake Whatcom watershed were few and small in acreage. During its analysis of projects anticipated to result in aquatic resource area impacts in the next 10 years, the City only identified one project proposed to occur within Lake Whatcom watershed. City planners considered the amount of impact associated with this Silver Beach stabilization project to be minimal or self-mitigating. Impacts associated with private development in the watershed are not as likely to occur directly in a waterbody as they would be within the regulated upland buffer areas protecting the Lake, its tributaries and associated wetlands. Mitigation for buffer impacts is anticipated to be accommodated on site; therefore projects within the Lake Whatcom watershed requiring off-site mitigation are considered to be minimal.

In addition, few impacts were identified outside of the City’s proposed Service Area. The City has chosen to request a service area that is ecologically based and most closely offsets anticipated impacts within the City and the region. Based on this analysis, the City believes that the proposed Service Area complies with state and federal rule considerations for the service area.\textsuperscript{23}

\textsuperscript{22} The WAC 173-300-303 includes several more considerations—the most directly relevant are listed here. All elements listed in the rule were considered in bank site selection.

\textsuperscript{23} See specifically WAC 173-700-302 and 33 CFR 332.8(6)(ii)(A) “The service area must be appropriately sized to ensure that the aquatic resources provided will effectively compensate for adverse environmental impacts across the entire service area.” While this citation refers specifically to the service area in the Mitigation Bank Instrument, it is also relevant to service area considerations overall. With respect to the Prospectus, the federal rule requires that the proposed service area be included. See 332.8(d)(2)(iii).
A description of existing conditions in these watersheds and basins, summarized from existing information, is included below.  

4.2 Ten-Mile Creek Watershed

The Ten Mile Creek watershed is shown in Figure 10. Ten Mile Creek is a 7.5 mile lowland drainage tributary to the Lower Mainstem of the Nooksack, located north of the City of Bellingham, within Whatcom County. It is included in the proposed Service Area because impacts anticipated to occur within this watershed could be adequately compensated at one of the proposed bank sites. This watershed is similar in landscape position and function to the Silver Creek watershed (a detailed description of which follows). It also has similar land use and development patterns to the Silver Creek watershed. Five projects with the potential to result in 1.15 acres of aquatic resource area impacts within the Ten Mile Basin were identified by the City during its analysis in 2016. The impact analysis included quantification of wetland functions. Impacts are anticipated to flood storage, and water quality functions to Category III and IV wetlands located in the Ten-Mile Creek watershed.

This watershed drains a 35 square mile area in the southern portion of the lower Nooksack to the northeast outskirts of the City of Ferndale. Major tributaries include Fourmile Creek and Deer Creek. The riparian corridors of the mainstem and its tributaries support riparian wetland complexes. The Fourmile creek corridor contains less riparian wetland, relative to other systems in the watershed. Land use is rural to semi-rural with relatively large parcel sizes. The land is primarily pasture and crop farms. In 2006, less than 25% of the watershed was forested.

Ten-Mile Creek supports a fall run of Chinook and coho salmon, and steelhead/rainbow and cutthroat trout. Fazon Lake, located in the northeastern portion of the watershed, and surrounded by extensive wetlands, has been documented as important habitat for waterfowl during winter, spring and fall. Trumpeter swans and Little Brown Bat are also documented as occurring in this area. Ten-Mile Creek is listed by Ecology as a 303(d) listed or degraded Category 5 water for water temperature, dissolved oxygen, and pH. Fourmile Creek is listed as a Category 5 water for dissolved oxygen and pH. Deer Creek is listed as a Category 5 water for dissolved oxygen, pH, and ammonia-N.

4.3 Silver Creek Watershed

The Silver Creek watershed is shown in greater detail in Figure 10. The Silver Creek watershed is tributary to the Nooksack River. Portions of the cities of Bellingham and Ferndale and their associated Urban Growth Areas boundaries are within the watershed. As noted above, development pressure in this area is significant. In February 2017, while characterizing the types of aquatic resources likely to be impacted within the watershed, City staff and its consultant observed several residential sub-divisions in active construction. This type of high density residential development is indicative of active

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24 The primary source of summary watershed information is the City’s 2015 Habitat Restoration and Assessment Technical Memorandum (2015). Information for the 10-Mile Watershed was summarized from Whatcom County’s Shoreline Master Program Update, Background Information Volume III, Restoration Plan. 2007. This document was written by Jennifer Thomas, the primary author of this Prospectus, in collaboration with Parametrix, ESA Adolfson, and Coastal Geologic Services.
26 WDFW 2018b.
27 Ecology, Water Quality Atlas
development in the area. The permitted developments shown in Figure 5 are characteristic of the urbanizing environment and increasing urban density in the North Bellingham area and neighboring City of Ferndale.

The Silver Creek watershed had 18.69 acres of identified impacts over the next ten years. The City analyzed seven of these projects that are anticipated to impact approximately 16.5 acres of aquatic resource area within the Silver Creek watershed. The County’s proposed jail site may result in 3.0 acres of wetland impacts situated within the mainstem drainage basin of Silver Creek. Six of the analyzed projects will occur within the Bear Creek sub-watershed. These projects, representing an estimated 13.5 acres in proposed aquatic resource area impacts, include four roadways, a City park and a private development.

The Bear Creek sub-watershed, representing approximately 2,891 acres of the larger Silver Creek watershed, encompasses the entire Bear Creek drainage network that consists of approximately 13.3 stream miles within the east, west and mainstem Bear Creek riparian corridors and approximately 654 acres of NWI mapped wetlands.\textsuperscript{28} The Bear Creek sub-watershed is one of four sub-watersheds situated within or adjacent to the western City of Bellingham limits and its associated western Urban Growth Area. The other local sub-watersheds include Silver Creek Tributary #1, Silver Creek Tributary #2, and Lost Creek.\textsuperscript{29}

High-density residential land use is present in the eastern portion of the Bear Creek sub-watershed. This area includes the Cordata neighborhood. High density industrial and commercial land uses are present along the western portion of the basin adjacent to I-5 and the Port of Bellingham’s International Airport. The interior portion of the Bear Creek sub-watershed, representing approximately 600-acres situated between I-5 and Northwest Road, remains relatively undeveloped. A large tract of contiguous forest with numerous wetlands present characterize this area zoned for industrial development. Low-density residential and low-intensity agricultural and forestry uses are present within the remainder of the Baker Creek sub-watershed.\textsuperscript{30} The local sub-watersheds adjacent to the Bear Creek sub-watershed also include open pastures and forested lots with low-density rural residential land use.

With exceptions to the high land use intensity sites associated with the proposed City neighborhood park and WSDOT’s I-5/Bakerview Road improvement project site, existing land use intensities at the analyzed project impact sites within the Bear Creek sub-watershed were evaluated as low to moderate. Low and moderate intensity land uses include parks, trails, forestry, utility corridors and residential development of one-unit per acre.\textsuperscript{31} High intensity land uses include commercial, urban, industrial, institutional, retail sales, residential (More than one unit/acre), high-intensity recreation (golf course, ball fields, etc.) and high-intensity agriculture (dairies, nurseries, greenhouses, harvesting crops requiring annual tilling, and raising animals). The local sub-watersheds adjacent to the Baker Creek sub-watershed include open pastures and forested lots with low-density rural residential land use.

During the City’s Impact Analysis process, mentioned in detail above, proposed projects with wetland and aquatic resource and buffer impacts were identified. The majority of analyzed impact projects that

\textsuperscript{28} Bellingham Habitat Restoration Technical Assessment, 2015.
\textsuperscript{29} Ibid.
\textsuperscript{30} Ibid.
\textsuperscript{31} Hruby, 2014.
Lummi Nation Proposal: Truck Stop, Retail & Hotel
1 Million Sq Ft

- 148 Apts
- 111 Duplexes
- 128 Single-Family

- 134 Apts
- 300 Townhomes

- 260 Apts
- 248 Apts

- 177 Apts
- 288 Apts

- 174 Apts
- 146 Single-Family

150K Sq Ft Retail

Legend

- Bear Creek Corridor Mitigation Bank Site
- Proposed Development
- Pending Annexations
- Future Arterial Streets

Figure 5. North Bellingham Development
are anticipated to be constructed within the Silver Creek watershed, including the Bear Creek sub-watershed, will result in impacts to disturbed depressional and slope palustrine emergent (PEM) wetlands. If not currently maintained as open pasture and/or managed for livestock grazing, the herbaceous vegetation within the emergent wetlands and adjacent buffer areas is dominated by reed canarygrass. Small patches of forest dominated by deciduous broadleaf trees and shrubs are present within the wetland and buffer areas at the proposed project sites and in their immediate vicinities. Natural habitat features such as snags and large woody debris are generally lacking within the proposed project impact areas.

Silver Creek, the mainstem of Bear Creek, and a branch of West Bear Creek that flows northeast from the airport are classified by Ecology as 303(d) listed or degraded Category 5 waters. The parameters for the listings include bacteria and dissolved oxygen. A Water Quality Improvement plan has not been developed for the Silver Creek watershed. Water quality improvement provided by a site that discharges to or is located within a basin or sub-basin where an aquatic resource or waterbody is on Ecology’s 303(d) list is considered to be rated highly valuable to society. These conditions contributed to the moderate to high ratings for water quality functions for the sites analyzed for impact within the Bear Creek watershed.

Coho salmon and resident coastal cutthroat trout are present in Bear Creek and its tributaries. Whatcom County’s proposed Larrabee Road flood mitigation project will result in impacts to Larrabee Creek, a tributary to Bear Creek, and associated wetlands. The proposed development of Slater Road East to connect with Aldrich Road will result in impacts associated with a tributary to Silver Creek. The creeks at the proposed project sites are classified as fish bearing or Type F waters. Partial barriers to fish passage are identified for the culverts located along a tributary to Silver Creek that is associated with the County’s proposed Slater Road connection to Aldrich Road project. Coho is documented within the tributary. Bull trout is presumed to be present, and the tributary is modeled for the presence of fall chum.

A total blockage for fish passage within the Bear Creek sub-watershed is documented within the right of way of Northwest Road, at approximate milepost 1.70. WDFW’s SalmonScape indicates modeled presence for fish (coho, fall chum, winter steelhead, and bull trout) in association with the upstream segment of Larrabee Creek. Partial blockages to fish passage, including culverts and debris, are documented within the proposed Whatcom County project vicinity on Larrabee Creek. Drainages and wetlands located directly adjacent to and south of Larrabee Road are mapped as non-fish-bearing or

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33 Hruby, 2014.
34 WDFWc. 2018.
37 WDFW 2018c. Salmonscape.
38 WDFW 2018a. Barriers to fish passage.
Type N waters. Special habitat features, such as large woody debris and snags, were recorded in association with Whatcom County’s proposed Larrabee Creek project site.

### 4.4 Squalicum Creek Watershed

The Squalicum Creek watershed is shown in Figure 10. The Squalicum Creek watershed encompasses several sub-basins. Local sub-watersheds, situated within the City of Bellingham limits and or its associated Urban Growth Area boundary. All of these sub-watersheds are experiencing considerable development pressure.

Overall, the Squalicum watershed had 7.88 acres of identified wetland impacts over the next ten years. The City analyzed five neighborhood parks and one private development project proposed to occur within Squalicum Creek watershed. Future park sites are proposed in each of the following sub-watersheds: Lower Toad Creek, Baker Creek Tributary and Lower Baker Creek, Lower Spring Creek and Lower Squalicum Creek. The private development project is proposed within the Lower Baker Creek sub-watershed. Together, these projects are anticipated to impact approximately five acres of Category III wetlands within the Squalicum Creek watershed.

Typically, the wetlands in this sub-basin include only one or two Cowardin vegetation classification communities. Special habitat features, such as large woody debris and snags, are generally lacking. There is no undisturbed habitat directly adjacent to or within the vicinity of the project area wetlands due to the existing high intensity land use that characterizes this sub-basin. Due to down-gradient flooding, stormwater run-off and discharges from adjacent high intensity land use areas, hydrologic functions for the development sites within the Squalicum Creek watershed are important.

Over the last four years the Squalicum Creek watershed has been the focus of $6.8 million in City and WSDOT-funded restoration efforts. An additional $3.6 million in City restoration funds are currently in design and planned to be implemented over the next several years within this watershed. Three of the proposed four mitigation bank sites are located within this watershed and will further contribute to regional restoration goals. If implemented as proposed, the bank sites in the Squalicum Creek watershed will add an additional $11.2 million investment to meet regional restoration and mitigation needs, and to protect these sites in perpetuity for their ecological functions.

**Lower Squalicum Creek**

Approximately 2,571 acres in size, this sub-watershed includes approximately 8.5 stream miles and 388 acres of wetland area. The central and lower portions of the sub-basin are characterized by a mix of industrial and high density residential development, with a high degree of impervious surface and untreated stormwater runoff.

Endangered Species Act-listed Chinook salmon and steelhead, as well as coho, chum and pink salmon and cutthroat trout are documented in Squalicum Creek. Fall Chinook is documented in Squalicum Creek.

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41 WDNR 2017.
43 Analiese Burns, City of Bellingham, personal communication, March 7, 2018. Email to Jennifer Thomas. The implemented projects include Squalicum Phase 1 and 2 and Willow Spring. The planned projects include Squalicum Phase 3 and 4.
44 Bellingham Habitat Restoration Technical Assessment, 2015.
for approximately 6.07 miles upstream from the Bay to where a culvert at Dewey Road is a partial barrier to fish passage. Winter steelhead is documented in Squalicum Creek for approximately 7 stream miles upstream of the Bay. Various reaches representing an estimated 3.25 stream miles cumulatively within Squalicum Creek are mapped as spawning habitat for winter steelhead. Coho is documented as present in Squalicum Creek for approximately 6.9 miles upstream of the Bay. Coho is presumed to be present from the Bay upstream from the Mt. Baker Highway for an additional 2 miles. Chum is documented as present within Squalicum Creek for approximately 2.07 miles upstream of the Bay. Chum is presumed to be present in the upstream reaches of Squalicum Creek from Squalicum Parkway and Bug Lake for an additional 4.0 miles to Dewey Road. Chum is modeled to be present upstream for an additional 2.35 miles of Squalicum Creek. Pink salmon are limited to lower 0.5 reach of Squalicum Creek to the Bay.

The extent of salmonid species access within the watershed is shown on Figure 11. Figure 11 also documents the relationship of the proposed bank sites to existing mitigation sites, restoration sites, publicly owned lands, and WDFW Priority Habitats and Species-designated Biodiversity Corridors. As previously noted, connectivity with other habitats and corridors is an important consideration in bank site selection, and was considered for all of the proposed mitigation bank sites.

One occurrence of bull trout was documented in the 1970’s in the lower reach of Squalicum Creek; however, no bull trout have been documented since. Although extremely rare or absent, WDFW lists bull trout as presumed present to the upper reaches, outside the City limits.

Lower Squalicum Creek is listed on Ecology’s 303(d) list as a Category 5 impaired water for dissolved oxygen and bacteria. The Squalicum Creek watershed has an approved Total Maximum Daily Load (TMDL) for temperature and a multi-parameter bacteria and bio-assessment TMDL is in development. (Ecology, 2017).

Lower Baker Creek
This sub-watershed to Squalicum Creek, encompassing 887 acres, includes approximately 58 acres of wetland area and 5.8 stream miles associated with the mainstem of Baker Creek and Irongate Creek. Primary land uses within this sub-watershed include residential, commercial, and industrial.

Baker Creek’s confluence with Squalicum Creek is approximately 0.75 miles downstream of I-5. Coho and chum salmon, steelhead and cutthroat trout are present within this segment of Baker Creek, which flows through the Bellingham Golf and Country Club (WDFW, 2018). Partial blockages to fish passage at I-5 may restrict upstream use by chum and steelhead. Coho is documented upstream of I-5 for an additional 1.16 stream miles where a culvert on James Street presents a partial barrier to fish passage. Bull trout is presumed to be present in the same segments of Baker Creek where coho is documented.

45 WDFW, 2018a.
46 WDFW, 2018c.
47 WAC 173-700-303 Site Selection includes a number of considerations including the proposed bank site location with respect to watershed restoration priorities, existing habitat and riparian corridors, and existing protected lands. These relationships are illustrated in Figure 11.
48 Bellingham Habitat Restoration Technical Assessment, 2015.
49 Bellingham Habitat Restoration Technical Assessment, 2015.
Washington State Department of Fish and Wildlife (WDFW), 2017. Salmon Scape Available at: http://apps.wdfw.wa.gov/salmonscape/map.html

Sources: Habitat Restoration Technical Assessment, ESA, Northwest Ecological Services and Veda, 2015.
The segments of Baker Creek located upstream of the James Street culvert are indicated by WDFW as modeled for the presence of coho, chum, bull trout and steelhead (WDFW, 2018).

Lower Baker Creek is listed on Ecology’s 303(d) list of Category 5 impaired waterways for dissolved oxygen and bacteria.\(^{50}\)

**Lower Spring Creek**

This sub-watershed to Squalicum Creek, representing 1,056 acres in total area, includes approximately 4.6 miles of stream associated with the mainstem of Spring Creek and its West and Middle Forks and an additional 68 acres of wetland area.\(^{51}\) The primary land use within the sub-watershed is commercial, including the Bellis Fair Mall and adjacent commercial developments. Residential development is also present.

Winter steelhead is documented within Spring Creek for approximately 1.1 miles upstream of its confluence with Baker Creek where a culvert documented as a partial blockage to fish passage is documented at Kellogg Road. Modeled presence for steelhead is mapped along an additional 3+ miles of Spring Creek and its East Fork reaches.\(^{52}\) Coho is documented within the lower mainstem of Spring Creek and the Middle Fork of Spring Creek for approximately 0.4 mile upstream from the confluence with Baker Creek. Modeled presence for coho is mapped by WDFW for approximately 2.2 miles within the upstream reach of the Middle Fork of Spring Creek. Coho is presumed to be present within the upstream reaches of Spring Creek for approximately 3.0 miles where two total blockages to fish passage are documented on private properties near North King Mountain Road.

**Spring Creek and its Forks**

Spring Creek and its Forks are not listed by Ecology as impaired waters on the 303(d) list (Ecology, 2017) However, these drainages contribute towards the overall water quality of Baker Creek and Squalicum Creek where temperature, bacteria and dissolved oxygen are parameters of concern.

**Baker Creek Tributary**

Approximately 887 acres in size, this sub-watershed to Squalicum Creek includes approximately 2.7 stream miles associated with Cammack and North Fork Baker Creeks and approximately 88 acres of wetland.\(^{53}\) The sub-watershed is located entirely within the City limits. Primary land uses include residential and small-scale agriculture, with commercial development concentrated in the downstream reaches within the City of Bellingham, near the confluence with the mainstem of Squalicum Creek. Coho are documented within the North Fork of Baker Creek for approximately 1.0 mile upstream of its confluence with Baker Creek. North of East Bakerview Road for approximately 0.71 mile upstream, modeled presence for coho is mapped by WDFW.\(^{54}\) Although not documented, WDFW maps also indicate presumed and modeled presence for bull trout for these reaches of the North Fork of Baker Creek located upstream and downstream, respectively, of East Bakerview Road.

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\(^{50}\) Ibid.

\(^{51}\) Ibid.

\(^{52}\) WDFW, 2018a.

\(^{53}\) Ibid.

\(^{54}\) WDFW 2018c.
Modeled presences for chum and steelhead are mapped by WDFW for the entire reach of the North Fork of Baker Creek, approximately 1.76 miles upstream of its confluence with Baker Creek. No fish species are mapped by WDFW as being present in Cammack Creek.\textsuperscript{55}

There are no exceedances for water quality standards documented for Cammack and North Fork Baker Creeks (Ecology, 2018). These streams are not listed on Ecology’s 303(d) list for impaired Category 5 waters, however their water quality contributes to overall water quality within the Squalicum Creek watershed.

**4.5 Whatcom Creek Watershed**

The Whatcom Creek watershed is shown in Figure 10. The Whatcom Creek watershed includes several sub-basins, including Fever Creek, Upper and Lower Whatcom Creek, Hannah Creek, Cemetery Creek and Lincoln Creek. These sub-watersheds are each located within the City limits. The upper reach of Cemetery Creek is situated with the City’s southwestern Urban Growth Boundary.

Identified private development on multiple properties in the Barkley and North Yew/Samish Hill areas within the City is anticipated to directly impact approximately 6.5 acres of aquatic resources in the Whatcom Creek watershed. Development in the Barkley area is subject to the City’s Master Plan, which accommodates high intensity mixed residential, commercial and industrial land uses. The Barkley Neighborhood occurs within the Fever Creek sub-basin of Whatcom Creek, however its northern boundary overlaps the southern portion of the Squalicum Creek watershed. Full build-out of the Barkley area may encompass over 40 acres of the Whatcom Creek watershed. Future impacts associated with the development of a neighborhood park for this area were included in the Squalicum watershed impact assessment.

Existing high intensity development within the Barkley area limits accessible and undisturbed habitat within this portion of the watershed. Undeveloped properties consist primarily of mowed open fields. Deciduous broadleaf trees, native rose and spiraea shrubs and reed canarygrass dominate the disturbed forest and scrub-shrub vegetation within the Fever Creek riparian, wetland and buffer corridor.

Fever Creek is listed by Ecology as a 303(d) water for bacteria, dissolved oxygen, and zinc. A TMDL for temperature is approved for the Whatcom Creek watershed and a TMDL for bacteria is in development.

Anticipated development in the North Yew/Samish Hill area will be primarily residential, representing approximately 3.5 acres of aquatic resource impacts in the southern portions of the Lincoln Creek and eastern edge of the Cemetery Creek sub-watersheds. The Cemetery Creek sub-watershed, encompassing 1,587 acres, includes 99 acres of NWI mapped wetlands and 6.9 stream miles consisting of the mainstem of Cemetery Creek, West Cemetery Creek and Racine Creeks.\textsuperscript{56} Residential land use is present along the northern and eastern ends of the basin. Forestry land predominates in the remainder of the basin. Industrial land use dominates the northern (downstream) extent of the sub-watershed at the confluence of Cemetery Creek and Whatcom Creek.

\textsuperscript{55} Ibid.

\textsuperscript{56} City of Bellingham Habitat Restoration Technical Assessment, 2015.
A neighborhood park proposed for the North Yew/Samish Hill area may result in approximately 0.49 acres of impact to a depressional Category II Palustrine Forested (PFO) wetland. Native mixed coniferous and deciduous canopy species, shrubs and ground cover plants dominate the forest vegetation within the potential wetland impact areas.

New residential development is starting to encroach along the edges of the existing mixed deciduous and coniferous forest habitat in this area, which currently remains as a relatively intact unit approximately 600 acres in size. The City has preserved over 100 acres within the core area of this forest as Open Space.

The lower reaches of Cemetery Creek include 303(d) listings for temperature, dissolved oxygen and fecal coliform bacteria. The lower reaches of Cemetery Creek support Chinook salmon, coho salmon, chum salmon, coastal cutthroat trout and steelhead.57

### 4.6 Padden Creek Watershed

#### Padden Watershed

The Padden watershed, approximately 3,952 acres in size, extends from the foot of Galbraith Mountain and the crest of Samish Hill west to the Padden Creek estuary on Bellingham Bay. Approximately 3,000 acres of the watershed is located within City boundaries. The watershed includes three drainage basins: Lake Padden, Padden Creek and Connelly Creek. Padden Creek and its tributaries are shown in Figure 10.

The watershed is primarily residential with a core of commercial use. Forested park and single-family residential use dominate the upper reaches of the watershed. Outside the City boundary commercial forest is a major use, higher density (multi-family) residential, commercial and light industrial land uses are more prevalent west of 1-5.

The wetlands in the upper portion of the watershed are generally forested and in good condition, except for those that have been impacted by forestry and residential development. Undisturbed wetlands are dominated by a western red cedar and western hemlock canopy with salmonberry and skunk cabbage understory.

The headwaters of Padden Creek are located within Lake Padden Park. The Park is laced with trails and is generally forested. The Park also includes the Lake Padden Golf Course. Wetlands in Lake Padden Park are forested and in good condition, dominated by native plant species. Wetlands tend to be associated with drainages or are shallowly pooled, supporting amphibians. While in relatively good condition ecologically, some wetlands are indirectly impacted by park uses.

West of Interstate 5, the lower watershed has been impacted by decades of residential development as well as urban development along the downstream reach of the Padden Creek corridor. The wetlands in this portion of the watershed tend to be associated with the narrow riparian corridor and floodplain of Padden Creek. Shrubs and herbaceous native and non-native vegetation dominate the vegetation. Representative native species include red alder, spiraea, and salmonberry.

57 WDFW, 2018c.
Legend
- Proposed City Service Area
- Watershed
- Watershed Subbasin
- City Limits
- City Limits Over Water
- Urban Growth Boundary
- Urban Growth Boundary Over Water
- City Limits
- UGA
The mainstem of Padden Creek, as well as its largest tributary, Connelly Creek, travel through residential, commercial and public areas. The Padden watershed contains the greatest protected park and open space area in the City. Over 1,140 acres consist of public parks and Greenways including: Lake Padden Park and Natural Area, Connelly Creek Nature Area, Sehome Hill Arboretum, Fairhaven Park and Padden Lagoon. The outlet of Lake Padden is controlled by a dam with a weir. Downstream of the lake, much of the drainage to Padden Creek occurs via storm drains. Padden Creek is listed on Ecology's 303(d) list for fecal coliform and dissolved oxygen. A single TMDL has been developed for Whatcom, Squalicum and Padden Creeks for temperature.

According to WDFW, Padden Creek currently supports runs of chum and coho salmon, and occasionally is used by Chinook salmon. Spawning surveys have also documented a population of resident and sea-run cutthroat trout as well as occasional use by steelhead trout.

### 4.7 Chuckanut Creek Watershed

#### Chuckanut Creek and Chuckanut Bay

The Chuckanut Creek and Chuckanut Bay sub-watersheds are approximately 13,500 acres in total area. An estimated 2,000 acres of the Chuckanut Creek and Chuckanut Bay watershed lies within the City boundary and 11,500 acres in Whatcom County (Nakeeta Northwest, 2003). The wetlands in the watershed are of good quality and are generally undisturbed or lightly impacted. Wetlands are generally forested or scrub-shrub and often are associated with streams. Canopy trees include western red cedar, western hemlock and red alder. Understory species include salmonberry, skunk cabbage, and slough sedge. Wetlands are structurally diverse with good connectivity to terrestrial habitats. Habitat features, such as woody debris and snags, are common.

Chuckanut Creek and its tributaries are shown in greater detail in Figure 10. Chuckanut Creek drains an area of approximately 7.2 square miles, originating in the Chuckanut Mountains south of the City. The creek flows into Chuckanut Bay; adjacent marine shoreline areas encompass 240 acres. In addition to the mainstem of Chuckanut Creek, tributaries within the sub-watersheds include Hoag's Creek, Chuckanut Ridge Creek, Old Smith Creek, Cedar Creek and Toad Creek.

Approximately 83% of the land cover within the Chuckanut Creek sub-watershed is forested. Fragmented by the I-5 corridor and secondary roads Old Samish Way and Chuckanut Drive, impervious surfaces associated with scattered residential land uses, primarily along the western portion of the basin, represent approximately 5% of the total land cover within the watershed. The creek is not listed as a 303(d) impaired water and has the highest score of all City of Bellingham streams (“good”) under benthic index of biotic integrity (B-IBI) monitoring.

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60 City of Bellingham, 2018. accessed at www.cob.org/services/environmental/habitat restoration, 2018
61 City of Bellingham Habitat Restoration Technical Assessment, 2015.
63 Puget Sound Stream Benthos www.pugetsoundstreambenthos.org
According to WDFW, Chuckanut Creek currently supports runs of chum and coho salmon, and winter steelhead trout. Spawning surveys have also documented occasional adult Chinook salmon as well as sea-run and resident cutthroat trout.64

### 4.8 Samish Bay Watershed

The Samish Bay watershed is shown in Figure 10. The Samish Bay watershed encompasses the area south of Chuckanut Bay and into Skagit County to the south. Within Whatcom County, this area is primarily covered in forest, which drains west into Samish Bay, along the marine shoreline. Although residential land use is prominent around the shoreline of Lake Samish, the major portion of the watershed located within Whatcom County is dominated by forestry land uses. Except those impacted by logging, wetlands in the forested areas are generally in good, native condition. Wetlands tend to be forested or shrub dominated. Wetlands around and near Lake Samish include disturbed wetlands where mixed native and non-native shrub and/or herbaceous vegetation classes are dominant.

Within Skagit County, this area encompasses 498 acres, including 18.9 miles of marine shoreline and .2 miles of freshwater shoreline. Within Skagit County the area includes the following Priority Habitat Areas: 46.4 acres of Biodiversity corridor, .8 acres of Cliffs, 10.3 acres of estuarine habitat, 7 acres of slough, 60 acres of designated waterfowl concentration habitat and 199.9 acres of wetlands. In Skagit County, the area land use is dominated by agricultural use (39.1%).65 Coho and chum salmon and coastal cutthroat spawn and rear in the small streams along Samish Bay, and other anadromous fish species use the marine nearshore habitat. Steep slopes occur within this drainage, covering 3.4% of the shoreline area. The 2014 Shoreline Analysis Report prepared for Skagit County documented that 82% of the shoreline in this watershed is in the coastal zone floodplain, with much of the shoreline comprising the channel migration zone of the Skagit River. This watershed is included in the City’s Proposed Service Area because it is a coastal drainage similar in landscape position and function to the watersheds described above.

### 4.9 Summary

As noted above, during 2017 the City undertook extensive analysis to identify projects and quantify potential impacts within the proposed service area. The greatest amount of impact is anticipated to occur within the Silver Creek and Squalicum Creek watersheds (63% of anticipated impacts or 26.57 acres). Impacts anticipated in the Silver Creek and Ten Mile Creek watersheds are expected to occur in the upper portion of these watersheds in rural and semi-rural landscapes. These impacts will adversely affect freshwater wetlands and their buffers, perched wetlands and their buffers, flood storage, and water quality functions of wetlands, streams, and their buffers within 303(d) listed waters and habitat corridors within these watersheds.

Impacts to flood storage, water quality, and habitat functions are most appropriately mitigated for in headwaters of these watersheds—thus the proposed bank site locations in Bear Creek/Silver and Squalicum Creek watersheds. By establishing bank sites in the headwaters of Silver and Squalicum Creeks, wetland and watershed functions related to flood storage, water quality, and habitat can be protected in perpetuity. The proposed bank sites also connect habitat, riparian, and open space

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64 City of Bellingham, 2018. Accessible on-line at: COB Home
65 Skagit County, 2011.
corridors within these watersheds and the region. The extent of salmonid species is shown in Figure 11. This figure also documents location of the proposed bank sites in relation to publicly owned lands, including PHS Biodiversity Corridors, Conservation Easements, and City-sponsored restoration and mitigation sites. Figure 12 shows the location of the bank sites with respect to City of Bellingham Parks Pro Plan Open Space Corridors. The Parks Pro Plan Open Space Corridors were analyzed for both synergies and conflicts; typically mitigation bank sites are not well-suited for including trails, for example, although exceptions can be made for urban sites in particular.66 All bank sites have been sited to leverage existing and planned habitat and water quality protection acquisitions and open space corridors along riparian zones. The bank sites are also consistent with locally developed regional restoration plans, including the City’s Habitat Restoration Technical Assessment, and Comprehensive Plan policies, and will increase the quantity and quality of habitat available to locally significant fish and wildlife populations. All of these considerations are consistent with State Rule considerations for Bank Establishment enumerated at WAC 173-700-300 through WAC 173-700-319.

The mitigation bank sites, if permitted as proposed, would meet anticipated mitigation demand over the next ten years. The City's intention is to make mitigation bank sites available for use by both the public and the private sectors. The Proposed Service Area will provide ecologically appropriate and functional mitigation to offset anticipated impacts. The Proposed Service Area is consistent with State and Federal Rule Service Area considerations.67

66 Although each bank site is unique, bank sites are often established to protect habitat and habitat corridors. Trails can adversely affect habitat connectivity. However, the State Rule specifically includes the possibility of trails in urban areas: “Integrated public education and directed access for passive recreation opportunities, where appropriate....” WAC 173-700-317(6) Considerations for determining credit conversion rates for banks in urban areas.

67 WAC 173-700-302 Considerations for Determining Service Area and 33 CFR 332.8(6)(ii)(A). See also footnote 18 of this document.
5. Overview of the Proposed Mitigation Bank Sites

In the following section, each site is presented individually. A discussion of existing conditions is followed by a brief overview of the proposed conceptual design, proposed credit generation strategy and credit ratios. This discussion is intended to provide the agencies with jurisdiction and the Inter-Agency Review Team (IRT), co-chaired by the Corps of Engineers and the Department of Ecology, with a conceptual overview of the City’s Mitigation Bank proposal to generate feedback and discussion.

Design details, including precise physical details such as wetland and aquatic resource area and acreages, performance standards, credit generation, credit release schedule, and maintenance and monitoring requirements will be determined in consultation with the IRT agencies during the Mitigation Bank Instrument coordination and review process. The content of the Instrument is specified at WAC 173-200-222. Considerations for Mitigation Banks are addressed in the Federal Rule on Compensatory Mitigation for the Losses of Aquatic Resources CFR Part 332.8. Following Prospectus review and acceptance by the IRT co-chairs, and after consultation with the IRT, the next step in the process is for the City to submit Basis of Design reports for the Mitigation Bank Sites that it proposes to carry forward into its Mitigation Bank Instrument. Once accepted by the co-chairs, in consultation with the IRT, the Basis of Design reports form the substantive basis of the Mitigation Bank Instrument with respect to credit generation and release. The Mitigation Bank Instrument includes other substantive elements related to Bank Site Establishment, Maintenance and Monitoring.

For the proposed bank sites, the City is either acquiring the sites via fee simple acquisition, or possibly, in one instance (Valley of the Forks), acquiring a conservation easement to allow for site design as proposed in this Prospectus. The City proposes to own, maintain, and manage the sites as part of a new Mitigation Program that compliments the existing Habitat and Restoration Program (Restoration Program). This program is described in greater detail in Section 7. Qualifications. Long-term site protection will be specified in the Mitigation Bank Instrument, specific to each site, and will comply with both the state rule on permanent protection (WAC 173-700-421) as well as the federal rule considerations on site protection (33 CFR 332.7 Management (a) Site protection).

All of the bank sites are currently in private ownership. As part of its acquisition process, the City completes Phase I Environmental Assessments to identify sources of contaminants (if any), for all sites. If these Environmental Assessments identify any potential constraints, conflicts, or known risks that could adversely affect bank development or function the City will re-evaluate bank site acquisition.

No known encumbrances exist on the sites with the exception of the Wahl Road right-of-way located within the McCormick Creek Headwaters site. This right-of-way would be vacated as part of the Bank development process, but that has not yet occurred, so the right-of-way is shown in the Figures for that site.

The City does not expect to need water rights to implement any of the proposed bank sites. All of the proposed bank site designs rely on using existing hydrology and restoring processes that support the restoration or rehabilitation of naturally occurring hydrologic functions on site, in compliance with State Rule Considerations on Bank Site Selection (WAC 173-700-303).

68 Mitigation banks and in-lieu fee programs.
Whatcom County’s designation of Agricultural Lands of Longterm Commercial Significance (ALLCS) is discussed in its Comprehensive Plan Chapter (Chapter 8 Resource Lands). All bank sites are located on soils designated as Agricultural Lands of Long-term Commercial Significance in either the City of Bellingham or Whatcom County. If developed and permitted as proposed, all bank sites would be protected by site specific conservation easements in perpetuity.

Acreages described below are approximate and expected to be reasonably accurate. Wetland acreages are based on site wetland reconnaissance. Detailed wetland delineations will follow for each site as they move forward in the process. The acreages and areas included in the Prospectus are meant to accurately describe existing conditions and management strategies based on which credit ratios will be requested. Acreages described herein may vary slightly from the City’s description of parcel size in the City database. Acreages used within this document are based on GIS-mapping of credit generating areas on each bank site. For the Prospectus, such accuracy is adequate.

The first site, the Bear Creek Mitigation Bank Site, is partially located within the City’s UGA, and the area in and around this proposed urban bank site has been the focus of significant analysis and study. As a result, there is significantly more information available on this site, as compared to the other sites. A summary of this information is presented below.

### 5.1 The Bear Creek Corridor Mitigation Bank Site

#### Bear Creek Corridor Mitigation Bank Site—Summary

**Table 2. Bear Creek Corridor Mitigation Bank Site**

<table>
<thead>
<tr>
<th>Bank Site</th>
<th>Watershed</th>
<th>Acreage</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bear Creek Corridor</td>
<td>Silver Creek</td>
<td>95.6</td>
<td>14.7</td>
</tr>
</tbody>
</table>

#### Site Ecologic Goals

- Preserve 40 acres of headwater wetlands under threat of development
- Enhance 17.5 acres of wetlands to improve structure and function
- Enhance six (6) acres of upland to improve habitat structure and function
- Preserve the existing one (1)- acre riparian zone in the lower reaches of the northeast parcel
- Preserve the 0.7- acre upland forest that does not require conifer under-planting on the northeast parcel
- Preserve the 30.4-acre mitigation site buffer
- Protect and add 95.6 acres to an existing identified biodiversity corridor of over 500 acres within the UGA

#### The Bear Creek Corridor Mitigation Bank Site—Existing Conditions

Existing conditions at the Bear Creek Corridor Mitigation Bank Site are shown in Figure 13. The Bear Creek Corridor Mitigation Bank Site consists of four parcels located along the riparian corridor of Bear...
Creek. Three of the parcels that comprise the bank site are located in the southwestern portion of the riparian corridor and one is located to the northeast. The parcels are labeled A, B, C and D in Figure 13. While the City maps water bodies on parcels B, C and D, the location of these has not been verified. Verification of these habitats will occur as part of the Mitigation Bank Instrument.

The West Fork of Bear Creek runs northeast, following the topography, through parcel B. The mainstem of Bear Creek runs northwest through parcel D where it is joined by West Bear Creek at the confluence just west of Northwest Drive. From here the mainstem flows west and north through parcel A. The zoning of the wetlands and riparian corridor to the west of Northwest Drive is Light Impact Industrial. This zoning permits food manufacturing and processing, light fabrication, printing, rail and truck terminals, contractor yards, restaurants, churches, and various other light-industrial type uses.

Collectively, these parcels are considered one proposed mitigation bank site because their functions are complementary and they occur within the same riparian corridor. The management approach for these sites is also similar. The primary credit generation strategy is preservation complemented by riparian and wetland enhancement where possible, and upland habitat enhancement to provide increased structure and function to these sites.

In total, the proposed Bear Creek Corridor Mitigation Bank Site encompasses four parcels, two private ownerships (currently—both are planned to be purchased by the City via fee simple acquisition), and approximately 95 acres of area that is vital to connecting a larger existing corridor that, in total, encompasses approximately 400 acres of protected lands. This open space corridor is shown in Figure 6.

Due to the existing forested wetland conditions, there are limited opportunities for wetland enhancement on parcel B, which includes the West Fork of Bear Creek. Wetlands on this parcel are mapped by the Washington Department of Natural Resources Natural Heritage Program as High Conservation Value Wetlands.70

Parcels C and D encompass two approximately 20-acre parcels on the south-eastern portion of the proposed bank site. These parcels are composed entirely of existing palustrine forested (PFO) wetland, and include a portion of the mainstem of Bear Creek. The wetlands on site are dominated by palustrine forested wetlands, but also include portions of palustrine emergent (PEM) wetlands, with riverine wetlands occurring in limited areas along the riparian zone. All of the wetlands are depressional flow-through systems. They are located within the headwaters of the Bear Creek watershed. Soils throughout the proposed Bear Creek Corridor Wetland Mitigation Bank sites are mapped as Whatcom-Labounty silt loams on 0 – 8% slopes.71 The USDA classifies this as a Group C soil. While the Whatcom silt loams are not hydric, are poorly drained with a depth to water table of 0 to 12 inches.72 Labounty silt loams are hydric. However, because USDA soil mapping is done at a course scale, these mapped soil types often include non-mapped hydric inclusions.

By purchasing the properties proposed for the Mitigation Bank Site, the City can ensure preservation and management of the wetlands and riparian corridor on these sites. This management strategy is

70 See https://www.dnr.wa.gov/NHPwetlandviewer
71 USDA NRCS Web Soil Survey accessible on-line at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm
72 Ibid.
Legend
- Contiguous Forest Patch  
  FP-126*
- Proposed Bear Creek Corridor  
  Mitigation Bank Site
- Existing Public Owned or  
  Protected Sites
- Watersheds

City of Bellingham Umbrella Mitigation Bank Program

Prospectus Figures

Figure 13. Bear Creek Corridor Mitigation Bank Site

Existing Conditions

Bear Creek Corridor Mitigation Bank Site

SW Parcels: 380202 064077; 380211 165469, 231475
NE Parcel: 38020 209221

City of Bellingham Mitigation Bank Program

Note: Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.
consistent with the City’s 2015 Habitat Restoration Technical Assessment, and is discussed in more detail below.

Parcels C and D, 40 acres encompass the mainstem of Bear Creek. The wetlands on parcels C and D are a mosaic of wetland interspersed with small hummocks of upland forest. The area has been logged, and the forest is relatively young and dominated by a mix of alder and Douglas fir. Sword fern grows on the upland hummocks, but the interspersion of the upland/wetland area is such that the entire area is considered wetland at a reconnaissance level and for the purposes of developing a conceptual restoration design. A full wetland delineation, following the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* and applying the tools for mosaic wetland delineations, will be used to determine exact wetland area for the Mitigation Bank Instrument.\(^{73}\)

![Typical conditions of wetland area within Bear Creek Corridor Mitigation Bank Sites. Photo taken 12/12/17.](image)

Parcel D contains a portion of the mainstem of Bear Creek, which flows offsite to the north around an existing industrial area. From there, the mainstem runs through 20 acres of newly implemented wetland and stream mitigation projects. The mainstem of Bear Creek joins the West Fork before crossing under a culvert along Northwest Drive and flowing offsite to the north, through parcel A of the proposed Bear Creek Corridor Mitigation Bank Site, which is described in more detail below. Bear Creek is a fish-bearing stream providing habitat to coho salmon and resident coastal cutthroat trout; however, a culvert at Northwest Drive appears to be a partial barrier to upstream fish passage onto the proposed mitigation site parcels. The documented extent of salmonids is shown on Figure 1. During site visits in December 2017, the field team was told that salmonid juveniles had been seen at the location of the culvert at Northwest Drive. While this information is anecdotal, it points to the possibility of salmonids at least

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74 WDFW, 2018a.
75 The field team accessed the site from the church parking lot located to the south of the northeast parcel. During site access the field team spoke with the maintenance supervisor of the Church site who relayed the information regarding the presence of salmonids. Additional studies will be required to document fish use at all bank sites. This data collection will take place in preparation for submittal of the City’s Mitigation Bank Instrument. However, this level of data collection is not required for Prospectus submittal.
to this location. Field work to document the presence of salmonids and other species in the area will be completed as part of the mitigation bank site development process.

Parcel B is a 39-acre parcel that encompasses the west fork of Bear Creek. This parcel also contains a mixed upland and wetland forest and riparian corridor. A portion of the riparian corridor on this parcel contains a relatively small wetland area dominated by reed canarygrass. This area is called out and the attached conceptual design figure as proposed wetland enhancement area. This area could be structurally and functionally enhanced with native plantings, but most of the parcel is composed of the existing upland/wetland palustrine forested complex that is likely suitable primarily for preservation.

The Bear Creek Mitigation Bank site also includes parcel A, a 23.6 acre parcel located towards the northeast, east of Northwest Drive. The zoning of this parcel is Designated Forest Land (DFL). The parcel is currently undeveloped. This parcel is along the same riparian corridor as parcels B, C, and D, but is downstream, further north and east. It connects the Bear Creek riparian corridor to the City of Bellingham’s 80-acre Riley Open Space property to the north. Parcel A of the Bear Creek Corridor Bank site provides a critical link in the larger riparian corridor that together encompasses approximately 400 acres, most of which is with the City’s UGA. Parcel A is bounded on the west by Northwest Road, and to the south by a recently developed Native Growth Protection Easement and mitigation site for the church located on the parcel to the south. The property is a mix of wetland and upland forest and riparian zone. Portions of the riparian zone have been cleared and are dominated by reed canarygrass. However, the northern-most riparian zone is in better condition ecologically, with a riparian zone that includes second or third growth Douglas fir and western red cedar, and significant canopy cover in the riparian zone. The wetland and riparian zone that are reed canarygrass dominated, towards the southern portion of the parcel, can be enhanced by planting appropriate native vegetation to provide shade, cover, structure, and allochthonous input to the stream.

A photograph of the enhancement area on Parcel A is included below. By itself, this 23.6 acre site is not developable as a wetland mitigation bank site because it is too small and, given its current condition, would not generate enough mitigation credit to justify the expense of mitigation bank site development. However, by including this site as part of an overall strategy aimed at maximizing riparian, wetland, and open space corridor preservation, it becomes feasible as a component of the proposed Bear Creek Corridor Wetland Mitigation Bank site. It is privately owned, and the land-owner is willing to sell to the City.
Riparian zone of Bear Creek Corridor Bank Site – Parcel A. Photo taken 12/12/17. Area shown as wetland enhancement along Bear Creek in Conceptual Design Map.

The functions of the wetlands on the western portion of the site were rated as a part of the City’s Habitat Restoration Technical Assessment. In their existing condition, these wetlands provide the highest functional scores for nitrogen removal, sediment/phosphorus removal, and wildlife habitat. They provide higher scores for surface water storage, pathogen removal, organic matter and export and a medium score for carbon sequestration.

The Habitat Restoration Technical Assessment also ranked the relative value of forested blocks in the Bear Creek watershed. The methodology is described in the Habitat Restoration Technical Assessment document. The forested areas on the proposed bank site are identified and ranked. The forested areas to the southwest are ranked higher for biodiversity function score, lower for system maturity attribute score, higher for lifeform diversity attribute score and habitat community attribute score. The forest in

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76 Bellingham Habitat Restoration Technical Assessment, City of Bellingham, 2015
77 Ibid
this area also ranked highest for Habitat Maintenance function score, Habitat Connection and Fragmentation attribute score, and higher for Vegetation Structure attribute score.\textsuperscript{78}

The forest that encompasses the Bear Creek Mitigation Bank Parcel A is identified in the Habitat Restoration Technical Assessment as being part of forest block FR-128, which includes the forested area to the east towards Spring Creek, generally along the East Bear Creek tributary and north just beyond the Riley Open Space. (FR-126 is the forest to the west, which is shown on Figure 6 of this document). The area mapped as FR-128 forest was ranked higher for Biodiversity function score, lower for system maturity attribute score, lower for lifeform diversity attribute score, and higher for Habitat Community Attribute score. It ranked median for Habitat Maintenance function score, median for Habitat Connection and Fragmentation Attribute Score and median for Vegetation Structure Attribute Score in the Technical Assessment. Generally, parcel size to the east of Northwest drive decreases, and therefore the forest patches are smaller than those that comprise the forest between I-5 and Northwest drive.

The Habitat Restoration Technical Assessment recommended that the wetlands in and around the proposed Bear Creek Corridor Mitigation Bank site located between I-5 and east to Northwest Drive be protected.\textsuperscript{79}

With respect to the riverine Habitat Group, the Technical Assessment notes that instream complexity within Bear Creek “showed potential for creating significant functional lift.”\textsuperscript{80}

The wetlands within this area all scored as higher or highest, when compared to other sub-watersheds analyzed. As a result, protection of existing wetland with some enhancement was recommended.

Recommended actions included acquisition “with a goal of maintaining a contiguous forested wildlife corridor that provides north-south connectivity and contains functioning forested stream and wetlands within the corridor. Maximum effectiveness can be achieved through coordinating the specific locations of applied forest protection actions with wetland protection and enhancement locations and possible riparian buffer protection and enhancements on Bear Creek and West Bear Creek.”\textsuperscript{81}

The conceptual design for the Bear Creek Corridor Mitigation Bank Sites is shown in Figure 14. The intent of establishing a Wetland Mitigation Bank along the Bear Creek Corridor is to preserve and protect the wetlands within this riparian corridor from development, and to manage appropriate native forested upland and wetland vegetation by underplanting with conifer to enhance structure and function of the forest and riparian zone, and to control for invasive species. This management strategy is consistent with the recommendations of the City’s Habitat Restoration Technical Assessment.

\textsuperscript{78} See forest block 126 in the Bear Creek Sub-watershed (FR-126), page 141 of the Habitat Restoration Technical Assessment.

\textsuperscript{79} Figure 26 Recommended Restoration and Protection Actions in the Bear Creek Subwatershed, Habitat Restoration Technical Assessment, 2015.

\textsuperscript{80} Bellingham Habitat Restoration Technical Assessment, 2015.

\textsuperscript{81} Bellingham Habitat Restoration Technical Assessment, 2015.
**Bear Creek Corridor Mitigation Bank Site**

**Conceptual Design**

**ECOLOGICAL NORTHWEST**

*Bear Creek Corridor Mitigation Bank Site*

SW Parcels: 380202 064077; 380211 165469, 231475

NE Parcel: 38020 209221

**City of Bellingham Mitigation Bank Program**

*Note:* Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.
Optional: Conservation Easements to the north and east of the Northeast Parcel

To further protect the Bear Creek Corridor Northeast Mitigation Bank Site, a conservation easement could be extended to the east. Immediately adjacent to the proposed Bank Site, along its eastern border, is an existing 30-foot right-of-way. This area could be vacated by the City. There is also a 30-foot undeveloped right-of-way located to the north of this parcel that connects it to the Riley Open Space to the north. In addition to vacating these rights-of-way, protection could be further extended both to the north (on City-owned Riley Open Space) and to the east via conservation easements. The adjacent property owner to the east could be approached to see if they would consider providing a conservation easement across the eastern 100 feet of their property. These easements are not shown or reflected in the current conceptual design, because they occur offsite, but extending conservation easements to the north and east of the proposed Bank Site may be added at a future date.

Collectively, the proposed Bear Creek Corridor Mitigation Bank site properties, will add approximately 95 acres of protected lands managed for habitat and preservation to an existing open space corridor encompassing approximately 400 acres along Bear Creek.

Bear Creek Corridor Mitigation Bank Site Credit Generation Strategy

The primary credit generation strategy for the Bear Creek Corridor Mitigation Bank sites is preservation, with some wetland and upland enhancement to increase structure and function of portions of the bank site that have been logged and cleared in the past. Preservation credit is requested at the highest credit ratio due to the threat of development of wetlands in the Silver Creek watershed, given the zoning and development in the immediate area. The wetlands to be protected by this proposed Bank Site clearly provide important physical, chemical, and biological functions that benefit the watershed and the region. As part of an overall corridor of protected open space, the wetland mitigation bank site area significantly contributes to the ecological sustainability of the watershed. If not preserved, the wetlands and riparian zone are under threat of destruction and adverse modification. This is specifically called out as a consideration for preservation credit value in the federal rule on Compensatory Mitigation for the Losses of Aquatic Resources.\textsuperscript{82} Washington State’s Rule on Wetland Mitigation Banking includes credit conversion rates and provides for a range of ratios to guide bank sponsors. Considerations for determining credit conversion rates are addressed at WAC 173-700-314. The State Rule also allows for the use of preservation as a credit generating strategy.\textsuperscript{83} Considerations include:

\begin{itemize}
  \item [(a)] The degree to which the preservation area contributes to the ecological functioning of the overall bank site and the protection of watershed processes;
  \item [(b)] The site is located in an area identified as a high priority for preservation and restoration in a watershed plan….
  \item [(c)] The area proposed for preservation is a high quality wetland system…
  \item [(d)] The area proposed for preservation is at risk because the wetland is under demonstrable threat of loss or substantial degradation….
\end{itemize}

Finally, the state rule has a specific provision that is applicable to the Bear Creek Corridor Mitigation Bank site at WAC 173-700-317. Considerations for determining credit conversion rates at urban banks

\textsuperscript{82} See 33 CFR Part 332.2(h)(i), (ii) and (iii).
\textsuperscript{83} WAC 173-700-315
sites. This portion of the rule allows for credit conversion rates at the more favorable rates within WAC 173-700-313 and 173-700-318. These considerations include, but are not limited to:

(2) local land use zoning, anticipated future build-out, with of the buffer and its ability to protect the wetland or other aquatic resource from further degradation;
(4) Whether the bank provides multiple functions
(5) the degree to which the bank helps implement local restoration priorities, ...local land use management plans, and watershed plans.

All of the considerations above are met at the Bear Creek Corridor Mitigation Bank Site. Therefore, and in compliance with the ranges of mitigation ratios at WAC 173-700-314, the following credit generation is requested from the proposed Bear Creek Corridor Mitigation Bank.

Table 3. Bear Creek Corridor Mitigation Bank Site: Proposed Bank Activity and Anticipated Credits

<table>
<thead>
<tr>
<th>Bank Activity</th>
<th>Area in Acres</th>
<th>Requested Credit Generation Ratio</th>
<th>Anticipated Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Enhancement</td>
<td>17.5</td>
<td>3:1</td>
<td>5.8</td>
</tr>
<tr>
<td>Wetland Preservation</td>
<td>40</td>
<td>5:1</td>
<td>8.0</td>
</tr>
<tr>
<td>Upland Preservation</td>
<td>.7</td>
<td>14:1</td>
<td>.05</td>
</tr>
<tr>
<td>UplandEnhancement</td>
<td>6</td>
<td>10:1</td>
<td>.6</td>
</tr>
<tr>
<td>Riparian Preservation</td>
<td>1</td>
<td>4:1</td>
<td>.25</td>
</tr>
<tr>
<td>Non-creditable buffer</td>
<td>30.4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>95.6 acres</td>
<td></td>
<td>14.7 acre/credits</td>
</tr>
</tbody>
</table>

5.2 McCormick Creek Headwaters Mitigation Bank Site—Summary

McCormick Creek Headwaters Mitigation Bank Site—Summary

Table 4. McCormick Creek Headwaters Mitigation Bank Site

<table>
<thead>
<tr>
<th>Bank Site</th>
<th>Watershed</th>
<th>Site Acreage</th>
<th>Anticipated Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>McCormick Creek Headwaters</td>
<td>Squalicum Creek</td>
<td>158.7</td>
<td>28 +/-</td>
</tr>
<tr>
<td>Mitigation Bank Site</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ecologic Goals:
- Enhance approximately 43 acres of wetlands on site
- Create 4+ acres of wetland on site
- Preserve 29.5 acres of wetland on site
- Enhance and preserve the surrounding 45.7 acres of upland
- Enhance the 3.8 acre riparian corridor on site

McCormick Creek Headwaters Mitigation Bank Site—Existing Conditions

Figure 15 shows existing conditions at the proposed McCormick Creek Headwaters Mitigation Bank Site. Zoning on site is R5A, which allows for five acre rural residential lot development. An existing structure is located in the northeast parcel. This structure would be removed if the site is acquired by the City. This site, which is located in the headwaters of the mainstem of McCormick Creek within the Squalicum Creek watershed, has been logged and replanted in the last decade. Despite the recent logging, the site still supports over 70 acres of palustrine emergent wetlands which occur in swales throughout the site,
Figure 16. McCormick Creek Headwaters Mitigation Bank Site Existing Conditions

Existing Conditions
McCormick Creek Headwaters Mitigation Bank
390336 219362, 332340, 367460, 042360, 080340
City of Bellingham Mitigation Bank Program

Note: Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.
as well as wetland/upland mosaics on site and the upper extent of McCormick Creek. Wetlands within the interior of this site were severely disturbed and degraded by relatively recent logging activity. As a result, existing vegetation is dominated by emergent species, such as slough sedge, soft rush, and tufted hairgrass, interspersed with open water and downed woody debris, including slash piles left from the logging activity. Small patches of spiraea are also present within the wetlands. A representative photo shows the typical wetland condition of the palustrine emergent wetlands on site in the central portion of the site. Evident in the background of the photo are the mature cottonwood trees that still occur on site along the site perimeter. The logged forest was likely dominated by Western Red Cedar as evidenced by the many stumps of this species that remain.

The wetlands on the western portion of the site occur in broad swales that are topographically lower than the upland areas that surround them. The swales are relatively broad and gentle, and carry flow roughly from the Wahl Road right of way west, draining towards the riparian area on site.

The riparian zone sits in a ravine that appears not to have been logged during the most recent logging activity. The riparian zone is in relatively good shape, and supports mature second growth western red cedar and Douglas fir, with scattered cottonwoods. The ravine walls are relatively steep and well-vegetated with an understory of sword fern, vine maple and big leaf maple also providing canopy cover along the riparian zone. Immediately adjacent to the stream salmonberry is common. The USDA NRCS
maps the primary soils on site as Whatcom silt loam (0 to 3 percent slopes). This soil type underlies the majority of wetlands and the riparian zone on site. In addition, Whatcom-Labounty silt loams occur around the site perimeter and are mapped along the southwestern portion of the riparian zone. The on-site reach of McCormick Creek has presumed presence of coho, chum, and steelhead.

Additional wetlands on site include pockets of palustrine emergent to palustrine scrub-shrub wetlands located to the east of Wahl Road, which was used as an access road for logging. These wetlands appear to be perched on soils disturbed during logging operations and contain pockets of open water to depths of up to two feet. In some areas these wetlands are surrounded by spiraea. In other areas they are surrounded by alder and cottonwood saplings. The wetlands on the eastern portion of the site are also palustrine emergent wetlands. All of the wetlands on site, if left undisturbed, would likely transition to forested wetlands over time. The wetlands in the eastern portion of the site drain to the southeast.

The forest along the site perimeter retains mature cedar, fir and cottonwood, while the site interior was recently logged. The interior has been replanted with Douglas fir, which appear to be doing well. The area along Wahl Road within the site’s interior is dominated by alder saplings.

Photo taken of McCormick Headwaters Mitigation Bank site. Typical upland interior, looking west, towards Wahl Road right-of-way. 12/12/18.

84 USDA NRCS Web Soil Survey accessible on-line at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm
85 ibid.
The wetlands on site are currently providing some functions related to water quality (sediment trapping, nutrient cycling) and water quantity (flood storage). They also provide habitat for local wildlife including small mammals and passerine bird species in the area, and likely provide amphibian breeding habitat.

The proposed conceptual design for the McCormick Creek Headwaters Mitigation Bank Site is shown in Figure 16. The structure and function of wetlands on site can be enhanced by planting a mix of trees and shrubs, and a roughly 4 acre area could be graded to create more wetlands on site. The area proposed for wetland creation is shown in Figure 16. The entire site would be managed to protect and enhance the wetland and riparian functions of the site. If not established as a wetland mitigation bank, portions of the site offer dramatic views of Mount Baker to the east, and would likely be converted from forest land to residential land and subdivided into 30 five-acre residential lots. Establishing a mitigation bank site would allow this approximately 160-acre site to be permanently protected and managed for habitat, water quantity, and water quality functions, and would generate approximately 28+ mitigation credits.

**McCormick Creek Headwaters Mitigation Bank Site Credit Generation Strategy**

The credit generation strategy at the McCormick Creek Headwaters Mitigation Bank site is to preserve, protect, and enhance headwater wetlands, uplands and the riparian zone that have been recently degraded by logging activity. Wetland creation can be accomplished on site to further enhance the structure and function of onsite wetlands in a way that is ecologically sustainable and that complements the functions of the existing habitats. The riparian zone can be further protected and enhanced. The existing wetlands provide water quality, water storage, and habitat within the headwaters of the Squalicum Creek corridor. If not protected by mitigation bank site establishment, this area would likely be developed as a housing subdivision.

The type of bank management activity, requested credit generation ratios, and anticipated number of credits are shown below. These numbers are tailored to existing on-site conditions and proposed functional lift to be obtained by site management activity. Some of the requested credit ratios, such as those for wetland preservation and upland enhancement, are on the higher end of the credit generation ratio ranges suggested by the State Rule on Wetland Mitigation Banking (higher ratios generate less credit). The rationale is that site conditions vary from site to site, and credit generation ratios should reflect this difference. For example, this site is not under the same threat of imminent development as the Bear Creek Corridor Mitigation Bank site, which is located within the City’s UGA. The forest on this site has already been logged and replanted, and while the wetlands were disturbed and degraded in that process, if left undisturbed, they would eventually re-establish functioning forested wetland, upland and riparian zones on site. The proposed credit generation ratios requested are not the lowest possible credit generation ratio to accommodate these considerations.

Establishing a Wetland Mitigation Bank site on the McCormick Creek Headwaters would create, enhance, preserve, and protect the habitats on site. Proposed Bank Site activity and requested credit generation ratios are below.

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87 See WAC 173-700-313 et seq
City of Bellingham Umbrella Mitigation Bank Program

Prospectus Figures

Conceptual Design
McCormick Creek Headwaters Mitigation Bank

390336 219362, 332340, 367460, 042360, 080340
City of Bellingham Mitigation Bank Program

Note: Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.

*Includes Wahl Road r.o.w.
Table 5. McCormick Creek Headwaters Proposed Mitigation Bank Site: Activity and Anticipated Credits

<table>
<thead>
<tr>
<th>Bank Activity</th>
<th>Area in Acres</th>
<th>Requested Credit Generation Ratio</th>
<th>Anticipated Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Creation</td>
<td>4.5</td>
<td>1:1</td>
<td>4.5</td>
</tr>
<tr>
<td>Wetland Enhancement</td>
<td>43</td>
<td>3:1</td>
<td>14.33</td>
</tr>
<tr>
<td>Wetland Preservation</td>
<td>29.5</td>
<td>7:1</td>
<td>4.21</td>
</tr>
<tr>
<td>Riparian Rehabilitation</td>
<td>.8</td>
<td>4:1</td>
<td>.2</td>
</tr>
<tr>
<td>Upland Preservation</td>
<td>10</td>
<td>15:1</td>
<td>0.67</td>
</tr>
<tr>
<td>Upland Enhancement</td>
<td>35.7</td>
<td>9:1</td>
<td>3.97</td>
</tr>
<tr>
<td>Riparian Preservation</td>
<td>3.8</td>
<td>8:1</td>
<td>.48</td>
</tr>
<tr>
<td>Non-creditable buffer</td>
<td>30.1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wahl Road existing right-of-way</td>
<td>1.3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>158.7</td>
<td></td>
<td>28.36</td>
</tr>
</tbody>
</table>

5.3 Valley of the Forks Mitigation Bank Site—Summary

Table 6. Valley of the Forks Mitigation Bank Site

<table>
<thead>
<tr>
<th>Bank Site</th>
<th>Watershed</th>
<th>Site Acreage</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valley of the Forks Mitigation Bank Site</td>
<td>Squalicum Creek</td>
<td>81.9</td>
<td>25.91</td>
</tr>
</tbody>
</table>

Ecologic Goals:

- Rehabilitate riparian hydrology to 23.1 acres of floodplain wetlands by re-connecting both the mainstem and tributary to their floodplain
- Enhance an additional 2 acres of wetland on site
- Rehabilitate/Re-establish 1.4 acres of riparian floodplain
- Create 8.5 acres of riparian wetland in the floodplain
-Enhance 20.5 acres of upland in the floodplain
- Preserve 5.5 acres of existing forested upland
- Remove degradation (no grazing)
- Remove on-site barrier to fish passage

Valley of the Forks Mitigation Bank Site—Existing Conditions

This proposed bank site is comprised of two privately owned parcels. One of these parcels changed ownership in March of 2018 (as shown in Figure 17). Because this change occurred close to the time of Prospectus submittal, the description of this bank site maintains inclusion of both parcels but offers a caveat that site design and acreage details may be subject to change. The City has initiated communication with the new property owner regarding the proposed Mitigation Bank Program and site location; any forthcoming changes to the proposed bank site will be tracked carefully and reflected at the time of Mitigation Bank Instrument submittal.

Zoning for the site is R5A, which allows for five-acre residential lot development. Historically the site, which sits in a valley floor, was riparian floodplain stream and wetland. The site contains the mainstem and the East Fork of McCormick Creek, with documented presence of coho and steelhead and presumed
City of Bellingham Umbrella Mitigation Bank Program

Prospectus Figures

Figure 17. Valley of the Forks Mitigation Bank Site

Existing Conditions

Valley of the Forks Mitigation Bank

380303 476215, 477224, 330090, 373054

City of Bellingham Mitigation Bank Program

Note: Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.
presence of chum.\textsuperscript{88} The WDFW culvert inventories also acknowledge the potential presence of resident and sea-run cutthroat trout.\textsuperscript{89} The Priority Habitats and Species (PHS) program documents on-site presence of big brown bat and, immediately upstream, an expansive wood duck breeding area. The mainstem of McCormick Creek and its tributaries have been ditched through the site since the early 20\textsuperscript{th} century. In addition, Noon Road was built during the 20\textsuperscript{th} century. Culverts run under Noon Road, which establishes the eastern site boundary. The existing wetlands on site are highly degraded, as they have been drained and grazed throughout the twentieth century. Wetland areas that are not actively grazed are palustrine emergent wetlands dominated by reed canarygrass, with no shrub or tree cover. The existing wetlands on site provide minimal functions, due to their level of degradation. The USDA NRCS maps soils in the valley floor as Bellingham silty clay loam on 0 to 2 percent slopes. The upland areas on site are mapped primarily as Everett complex on 2 to 8 percent slopes. Bellingham is a group D soil and is hydric. Everett soils are group A and B soils and are not hydric.\textsuperscript{90} It is likely that the wetlands on site are providing some water quality functions, as well as providing seasonal habitat for waterfowl.

The mainstem of McCormick Creek has been ditched and dredged and flows through the center of the site. It is incised and disconnected from its floodplain. There is little to no riparian cover aside from the reed canarygrass in the channel. The steep side walls of the ditch are fenced at the top of bank. The tributaries are also ditched through the site, and are in similar condition to the mainstem, though not as deeply incised. An existing on-site tributary culvert provides farm access in the center of the property but is also a potential fish passage barrier. The site topography in the valley is gently undulating rolling upland hills. The valley rises to Douglas fir-dominated upland forest both to the north and south. Vegetation in the uplands that occur within the valley floor is currently composed of grazed pasture grasses. The valley floor is bounded by ditches on either side of the valley which run along the toe of slope.

\textsuperscript{88} WDFW, 2018c. See WDFW’s Salmonscape accessible on-line at: http://apps.wdfw.wa.gov/salmonscape/map.html
\textsuperscript{89} WDFW 2018a.
\textsuperscript{90} USDA NRCS Web Soil Survey accessible on-line at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm
Photo of the Valley of the Forks Wetland Mitigation Bank Site. 12/12/17. Photo taken from the southeast portion of the site, looking west towards the confluence of the East Fork McCormick Creek with the mainstem of McCormick Creek.

Valley of the Forks Wetland Mitigation Bank Site—12/12/17. Confluence of the mainstem of McCormick Creek with the East Fork McCormick Creek, looking downstream (west).
The conceptual design for the site is shown in Figure 18. The design proposes to re-establish a more natural riparian corridor and floodplain, and re-habilitate wetlands and the stream on site by creating connectivity between the stream, wetlands, and adjacent uplands. The existing stream and wetlands are disconnected and severely degraded. The uplands are grazed pasture. Hydraulic modeling and engineering and earthwork are required to re-establish a more natural floodplain and to reconnect the stream with its riparian wetlands. The tributaries would be re-established to flow into the site following newly graded channels, to mimic historically present riparian confluence areas. The potential fish passage barrier would also be removed. In addition, the design proposes to create some wetland on site through grading. If implemented as proposed, this site would generate roughly 25 credits. The design creates an opportunity to re-establish a more natural riparian zone with connected floodplain and wetlands. The entire site would be graded and replanted to create a forested riparian valley floor with interconnected stream, wetlands and uplands. The potential functional lift over existing conditions is significant.

**Valley of the Forks Mitigation Bank Site Credit Generation Strategy**

The proposed site design is intended to provide rehabilitated stream corridors with functional and connected wetlands and riparian zones throughout the site. With respect to the action of rehabilitation, the Department of Ecology provides the following guidance:

"Re-establishment and rehabilitation are the preferred approaches for compensatory mitigation when available. Applicants should strive to compensate for wetland area and/or functions through re-establishment, rehabilitation, or creation before considering the use of enhancement or preservation."

Ecology’s Mitigation Guidance further defines re-establishment and rehabilitation as components of restoration, within the following parameters, consistent with federal guidance on these terms:

"**Restoration**: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into:

**Re-establishment**: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Re-establishment results in rebuilding a former wetland and results in a gain in wetland acres [and functions]...

**Rehabilitation**: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions [and processes] of a degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres...

---

COLOGICALORTHWEST

Migaon Boundary (81.9 ac)
Credit Generating Area (61.0 ac)
Wetland Creation (8.5 ac)
Wetland Rehabilitation (23.1 ac)
Wetland Enhancement (2.0 ac)
Upland Enhancement (20.5 ac)
Preservation: Upland (5.5 ac)
Riparian Rehabilitation (1.4 ac)
Change in Ownership (will pursue only with landowner authorization)

Note: Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.

City of Bellingham Mitigation Bank Program
380303 476215, 477224, 330090, 373054
City of Bellingham Umbrella Mitigation Bank Program

Figure 18. Valley of the Forks Mitigation Bank Site
Conceptual Design
**Creation**: The manipulation of the physical, chemical, or biological characteristics present to develop a wetland on an upland or deepwater site, where a wetland did not previously exist. Establishment results in a gain in wetland acreage [and function]...

**Enhancement**: The manipulation of the physical, chemical, or biological characteristics of a wetland to heighten, intensify or improve specific function(s) or to change the growth stage or composition of the vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in wetland function(s) and can lead to a decline in other wetland functions, but does not result in a gain in wetland acres. [Examples are planting vegetation, controlling non-native or invasive species, and modifying site elevations to alter hydroperiods.]

These definitions are important because they inform both the conceptual design strategy and the requested credit generation ratios for the site. It would be far more simple, and considerably less expensive, to simply propose to enhance the existing wetlands on site by planting them with appropriate native species. The enhanced wetlands would have a high likelihood of ecological success and would provide significantly improved structure and function over existing conditions. However, re-habilitating the stream and wetlands on site to re-establish floodplain connectivity is significantly more complicated, more expensive, and more of a process-based approach to site restoration design.

The conceptual design proposes a combination of rehabilitation, creation where feasible, and a combination of riparian rehabilitation/re-establishment. The uplands to be enhanced in the riparian floodplain will provide habitat interspersion and complexity to the wetland and riparian zone.

Functionally, these upland areas are significant, and will be enhanced to improve their ecological structure. Ecologically, the design attempts to recreate functions and systems historically present on site, rather than just replanting existing degraded wetlands and the riparian zone. The conceptual design is consistent with the regulatory definitions for restoration of wetland and riparian rehabilitation and re-establishment. For this reason, higher credit generation ratios are requested for successfully completing these actions. Requested credit generation ratios are presented below.
### Table 7. Valley of the Forks Wetland Mitigation Bank Site: Proposed Bank Activity and Anticipated Credits

<table>
<thead>
<tr>
<th>Bank Activity</th>
<th>Area in Acres</th>
<th>Assumed Credit Generation Ratio</th>
<th>Anticipated # of Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Creation</td>
<td>8.5</td>
<td>1:1</td>
<td>8.5</td>
</tr>
<tr>
<td>Wetland Rehabilitation</td>
<td>23.1</td>
<td>2:1</td>
<td>11.55</td>
</tr>
<tr>
<td>Wetland Enhancement</td>
<td>2</td>
<td>3:1</td>
<td>0.67</td>
</tr>
<tr>
<td>Upland Enhancement</td>
<td>20.5</td>
<td>5:1</td>
<td>4.1</td>
</tr>
<tr>
<td>Upland Preservation</td>
<td>5.5</td>
<td>14:1</td>
<td>0.39</td>
</tr>
<tr>
<td>Riparian Rehabilitation</td>
<td>1.4</td>
<td>2:1</td>
<td>0.7</td>
</tr>
<tr>
<td>Non-creditable buffer</td>
<td>20.9</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>81.9</strong></td>
<td></td>
<td><strong>25.91</strong></td>
</tr>
</tbody>
</table>

### 5.4 Squalicum Lake Mitigation Bank Site

#### Squalicum Lake Mitigation Bank Site—Summary

#### Table 8. Squalicum Lake Mitigation Bank Site

<table>
<thead>
<tr>
<th>Bank Site</th>
<th>Watershed</th>
<th>Acreage</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squalicum Lake</td>
<td>Squalicum Creek</td>
<td>271.4</td>
<td>35+</td>
</tr>
</tbody>
</table>

Ecologic Goals:

- Preserve and protect 32 acres of headwater wetlands, 150 acres upland forest, including riparian zones
- Rehabilitate approximately 29 acres of farmed wetland in the valley floor by removing grazing and disabling drainage tiles
- Rehabilitate existing cleared and ditched riparian zones in the valley floor
- Remove on-site barrier to fish passage

#### Squalicum Lake Mitigation Bank Site—Existing Conditions

Existing site conditions are shown in Figure 19. The Squalicum Lake Mitigation Bank site has been in the same family ownership for over 50 years. Most of the site is zoned Rural Forestry (RF); approximately 20 acres of the site, just west of Squalicum Lake, is zoned Rural 5 acre (R5-A) which allows one dwelling unit per five acres. The site is a working farm and forest, and the open grassy area on site has been used for pasture for decades. The property contains the western edge of Squalicum Lake, the lake's outlet, and several hillside tributaries and upland forest that form the headwaters to Squalicum Creek. The on-site reach of Squalicum Creek, though severely degraded and devoid of riparian cover, has the potential to support anadromous and resident fish species, including ESA-listed steelhead.\(^{92}\)

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Figure 19. Squalicum Lake Mitigation Bank Site
Existing Conditions

Note: Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.
Historical aerial photos suggest the outlet from Squalicum Lake has been ditched since at least 1943. The outlet was further altered in the 1960’s by hand-sawing sections of peat to drain the lake and create more useable land. The stream was dredged through the 1980’s. A farm road crosses the stream, creating a partial fish passage barrier (ID 1285215, 33% passability). The emergent wetlands in the valley floor have been tiled in an attempt to drain them. The southern portion of the property sits on a steep hill that rises above the valley floor and contains the headwater streams which drain to Squalicum Lake and Squalicum Creek. The hillside is known locally as Squalicum Mountain and encompasses the northern extent of a designated Priority Habitats and Species (PHS) Biodiversity/Area Corridor associated with Squalicum Mountain. The hillside on site is entirely forested and has been managed for timber production throughout the 20th century. The site’s existing forest, representing approximately 194 acres in total area, is classified into two timber stands (the non-credit generating buffer area is included within this acreage). A merchantable timber stand, representing approximately 46.6 acres of well stocked 55+ year old red cedar and big leaf trees with pockets of Douglas and grand firs and red alder, is present on the moderately steeply sloping hillside to the south of a protective 50-foot no-

93 Merle Foster, personal communication with Jennifer Thomas and Tina Mirabile, November 29, 2017.
harvest zone associated with Squalicum Creek. Large cedars, approximately 115 feet in height and measuring up to 55 inches diameter-at-breast height (dbh) are present within the stand. Ice storm damaged maples and over-mature alder trees in decline and or as snags are present. Western hemlock and cottonwood are present, but less common. A sub-merchantable, pre-dominantly hardwood, timber stand representing approximately 147.5 acres in total area, is present on the forested southern portion of the site. Red alder with pockets of Douglas fir and other widely scattered conifer species, approximately 75-feet in total height and measuring 10 inches dbh, are present. The terrain on the southern portion of the site ranges from 10% to 100% in cliff areas. Native western sword fern dominates the ground cover in the upland forest. With the exceptions of along the edges of and within clearings of the forest canopy where non-native blackberry is present, native shrub species such as salmonberry and vine maple dominate the shrub-layer of vegetation within the forested portions of the site.

An access road from the farm property located on the northern portion of the site has been created to cross Squalicum Creek. The access road is located along a topographic break which separates the forested portion of the site from the cleared valley floor. A ditch runs along the upland side of this road and drains water to the east, towards Squalicum Lake.

Existing wetlands on site occur primarily in the valley floor. This area supports an estimated 29 acres of degraded palustrine emergent wetlands. Soils in the valley floor include Pangborn muck which extends in a lobe from Squalicum Lake towards the western third of the wetland area, Labounty silt loam (0 to 2 percent slopes) within the rest of the valley floor wetland area. The area has been used as pasture for many decades, and the wetlands have been actively grazed throughout this time. The wetlands, which are dominated by soft rush and wet-tolerant grasses, provide limited functions due to their degraded condition. Riparian wetlands also occur in pockets along the hillside streams that drain off of Squalicum Mountain. The riparian wetlands provide habitat, water quality, and water storage functions. The primary soils on Squalicum Mountain are mapped as Squalicum gravelly loam (15 to 30 percent slopes) with Nati loam (5 to 60 percent slopes) underlying the southern-most portions of the site. Nati are group C soils while Squalicum are group B soils. Neither soil is hydric.
The Conceptual Design for the Squalicum Lake Mitigation Bank Site is shown in Figure 20. The conceptual design involves breeching the farm access road to re-establish the historic drainage patterns into the valley floor from the hillside. The existing drainage tile would be disabled, allowing wetland hydrology to re-establish in the valley floor. Grazing would cease. The currently cleared valley floor would be replanted to a mixed riparian forest/emergent wetland complex. The farm road fish passage barrier would be removed, opening rearing and spawning habitat benefiting pink, chum, and coho salmon, steelhead, and resident and sea-run cutthroat trout.98 The riparian zone of Squalicum Creek would be planted with appropriate native trees and shrubs to provide shade, cover, and improved habitat over existing conditions. The upland forest would be managed to protect, enhance, and preserve the headwater riparian corridors that currently drain to the valley, and the rest of the forest would be managed for habitat.

This site is just south of the Mount Baker Highway, and lies east of the City’s Urban Growth Area. If it is not protected by fee simple acquisition, it is subject to logging and development in compliance with the existing regulatory process. The existing landowner has been approached by interested developers but would prefer to sell the property for preservation or timber production. Previous attempts to protect

98 See WDFW Fish Passage and Diversion Screening Inventory Database for ID # 1285215.
the property through the County’s Purchase of Development Rights (PDR) Program and forest protection grants have been unsuccessful due in part to the low financial compensation. Establishing a Mitigation Bank site would provide a more financially viable solution for the landowner and, therefore, would allow for the protection and rehabilitation of the sites’ headwater wetlands, streams, and forests in perpetuity.

**Squalicum Lake Mitigation Bank Site Credit Generation Strategy**

The credit generating strategy at the Squalicum Lake Mitigation Bank site is riparian and wetland rehabilitation in the valley floor, in combination with preservation and enhancement of the forest and hillside streams on Squalicum Mountain. This forest contains the headwaters of the tributaries that flow into the valley, and is also the northern most extent of a designated PHS Biodiversity Corridor. The site provides habitat connectivity to the east and south, as shown on Figures 11 and 20. Some wetland preservation is also proposed, but not at the highest credit generating ratio suggested by Washington State’s Rule on Wetland Mitigation Banking.\(^9\) Similarly, the proposed credit generating ratio for upland enhancement and preservation is not as high at this site as at some of the other proposed sites. The existing upland is intact and in relatively good shape, functionally. While it will require some active management to mature to a healthy forest, it will not require as much active management as some of the other proposed wetland mitigation bank site upland areas. This is reflected in the requested credit ratios.

**Table 9. Squalicum Lake Wetland Mitigation Bank Site: Activity and Anticipated Credits**

<table>
<thead>
<tr>
<th>Bank Activity</th>
<th>Area in Acres</th>
<th>Requested Credit Generation Ratio</th>
<th>Anticipated # of Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Rehabilitation</td>
<td>29</td>
<td>2:1</td>
<td>14.5</td>
</tr>
<tr>
<td>Riparian Rehabilitation</td>
<td>1.3</td>
<td>2:1</td>
<td>.65</td>
</tr>
<tr>
<td>Wetland Preservation</td>
<td>32</td>
<td>6:1</td>
<td>5.33</td>
</tr>
<tr>
<td>Riparian Preservation</td>
<td>17</td>
<td>12:1</td>
<td>1.42</td>
</tr>
<tr>
<td>Upland Preservation</td>
<td>150.5</td>
<td>12:1</td>
<td>12.54</td>
</tr>
<tr>
<td>Open Water Preservation</td>
<td>3</td>
<td>10:1</td>
<td>.3</td>
</tr>
<tr>
<td>Upland Enhancement</td>
<td>4.5</td>
<td>10:1</td>
<td>.45</td>
</tr>
<tr>
<td>Non-creditable buffer</td>
<td>34.1</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>271.4</strong></td>
<td></td>
<td><strong>35.19</strong></td>
</tr>
</tbody>
</table>

\(^9\) See WAC 173-700-315.
Figure 20. Squalicum Lake Mitigation Bank Site Conceptual Design

Mitigation Boundary (271.4 ac)
Credit Generating Area (237.3 ac)
Wetland Rehabilitation (29.0 ac)
Non-credit Generating Area (34.1 ac)
Riparian Rehabilitation (1.3 ac)
Upland Enhancement (4.5 ac)
Preservation: Upland (150.5 ac)
Wetland (32.0 ac)
Riparian Preservation (17.0 ac)
Water Bodies (3.0 ac)
Streams
Pipeline Easement (60 ft)
Conservation Easement
Buffer Width 100'

Prospectus Figures

City of Bellingham Umbrella Mitigation Bank Program

ECOLOGICAL
Squalicum Lake Mitigation Bank
380312 400405, 403140; 380407 039319, 051268

City of Bellingham Mitigation Bank Program

Note: Sizes and locations of features are estimates based on field notes, GPS points, aerial imagery, and LiDAR interpretation. Features have not been formally delineated.
## 5.5 Summary of Bank Site Designs, Activity, and Anticipated Credits

Tables 10 and 11 below show the proposed credit ratios and credit generation for all proposed mitigation bank sites.

### Table 10. Proposed Credit Ratios for Activities at Mitigation Bank Sites

<table>
<thead>
<tr>
<th>Bank Activity</th>
<th>Bear Creek Corridor</th>
<th>McCormick Creek Headwaters</th>
<th>Valley of the Forks</th>
<th>Squalicum Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland Creation</td>
<td>1:1</td>
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<tr>
<td>Wetland Rehabilitation</td>
<td>4:1</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
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<tr>
<td>Riparian Rehabilitation</td>
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<td>3:1</td>
<td>3:1</td>
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<tr>
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<td>5:1</td>
<td>7:1</td>
<td>6:1</td>
<td>6:1</td>
</tr>
<tr>
<td>Riparian Preservation</td>
<td>4:1</td>
<td>8:1</td>
<td>12:1</td>
<td>12:1</td>
</tr>
<tr>
<td>Upland Preservation</td>
<td>14:1</td>
<td>15:1</td>
<td>14:1</td>
<td>12:1</td>
</tr>
<tr>
<td>Open Water Preservation</td>
<td></td>
<td></td>
<td></td>
<td>10:1</td>
</tr>
<tr>
<td>Upland Enhancement</td>
<td>10:1</td>
<td>9:1</td>
<td>5.1</td>
<td>10:1</td>
</tr>
<tr>
<td><strong>Total Proposed Credits</strong></td>
<td><strong>14.7</strong></td>
<td><strong>28.36</strong></td>
<td><strong>25.91</strong></td>
<td><strong>35.19</strong></td>
</tr>
</tbody>
</table>

### Table 11. Proposed Credit Generation at Mitigation Bank Sites

<table>
<thead>
<tr>
<th>Bank Activity</th>
<th>Bear Creek Corridor (95.6 Acres)</th>
<th>McCormick Creek Headwaters (158.7 Acres)</th>
<th>Valley of the Forks (81.9 Acres)</th>
<th>Squalicum Lake (271.4 Acres)</th>
<th><strong>TOTAL</strong></th>
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</thead>
<tbody>
<tr>
<td>Wetland Creation</td>
<td>4.5</td>
<td>8.5</td>
<td>11.55</td>
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<td>26.05</td>
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<tr>
<td>Wetland Rehabilitation</td>
<td>.2</td>
<td>.7</td>
<td>.67</td>
<td>.65</td>
<td>1.55</td>
</tr>
<tr>
<td>Riparian Rehabilitation</td>
<td>6.8</td>
<td>14.33</td>
<td>.67</td>
<td>5.33</td>
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</tr>
<tr>
<td>Wetland Enhancement</td>
<td>8.0</td>
<td>4.21</td>
<td>.39</td>
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<td>Wetland Preservation</td>
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<tr>
<td>Riparian Preservation</td>
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<td>.39</td>
<td>.45</td>
<td>9.12</td>
</tr>
<tr>
<td>Upland Preservation</td>
<td>0.05</td>
<td>.67</td>
<td>.39</td>
<td>.45</td>
<td>9.12</td>
</tr>
<tr>
<td>Total Proposed Credits</td>
<td><strong>14.7</strong></td>
<td><strong>28.36</strong></td>
<td><strong>25.91</strong></td>
<td><strong>35.19</strong></td>
<td><strong>104.16</strong></td>
</tr>
</tbody>
</table>
6. Bank Site Implementation—Phasing Considerations

6.1 Bank Site Implementation—Phasing Considerations

Rationale for Phasing

The City is proposing a Phased approach to Mitigation Bank Program Implementation. The order of phasing will be determined by the City in preparation for Mitigation Bank Instrument submittal. This discussion is included to engage agency feedback on the phased approach to bank site implementation. The rationale for a phased approach is summarized as follows:

- Identify and secure sites in multiple watersheds where greatest impacts are projected to occur
- Establish Mitigation Program with sites that provide high probability of ecologic success
- Secure sites under imminent threat of development first
- Meet mitigation demand
- Spread costs of program establishment out over time
- Generate credit sales and income from the first two sites permitted under Phase 1 to fund implementation of Phase 2 sites.
- Maximize initial credit value in Phase 1
- Minimize initial site costs in Phase 1

The City will need to weigh and balance all of the above considerations in its decision. A phased approach to mitigation site implementation allows the City to establish its Mitigation Program and to begin to generate credits, the sale of which will contribute to growing the program over time. Phasing would allow the City to identify the sites in pairs and to pursue Mitigation Bank Instrument approval on the sites in Phases 1 and 2. The two initial sites to be proposed in Phase 1 would be selected based on the criteria above, and moved forward into the Mitigation Bank Instrument for approval.

Once these sites are approved, the City could then select the additional proposed bank sites to be implemented as Phase 2 sites, and submit an addendum to its Mitigation Bank Instrument. Substantive issues such as the Service Area would not need to be re-negotiated. The City can pursue the Addendum on its own timeline—based on meeting its mitigation needs and economic drivers.

Discussion

Due to the urgency for securing and protecting at least one of the identified umbrella mitigation sites from encroaching development and the overall complications associated with permitting all of the sites at one time, Mitigation Bank Site development could be pursued in phases. When combined, the proposed bank site development activities will meet the City's overall mitigation credit demand, protect the sites in perpetuity, generate needed credit sales to fund the continuation of the City’s Umbrella Mitigation Bank Program, and implement sites over time based on additional economic and ecologic considerations described below.

The City of Bellingham proposes to acquire most of the proposed sites by fee simple acquisition and may consider the acquisition of conservation easements on adjacent properties to supplement bank site protection. A phased approach allows the City some flexibility in how it chooses to finance site acquisition. It also spreads out the capital investment cost of Program establishment over a longer
timeframe. The order of priority of bank site implementation is based on ecologic design considerations, the costs of acquisition, the City’s evaluation of the threat of development at each of the sites, and the estimated credit generation from each site—taken in total. The City needs to use credit sales from Phase 1 sites to generate revenue to acquire sites proposed as part of Phase 2. Those sites that are considered to be most highly under threat of development and located within watersheds that are projected to be developed at a higher rate, as indicated by development patterns in the region over the last decade, could be proposed as part of Phase 1, or the initially proposed Mitigation Bank Sites. Those sites that meet mitigation demand, but may be facing slightly less development threat could be proposed as part of Phase 2.

In addition to the threat of development pressure, the overall costs to implement site design and the proposed range of credits to be generated from each site are also taken into consideration with respect to Phasing. Phase 1 would likely include the Bear Creek Corridor Mitigation Bank Site which is under high development threat. It could be paired with any of the other sites as part of Phase 1, but whichever site is selected should generate significant credit and have a high degree of ecologic success at a relatively low cost.

If not purchased by the City, the Bear Creek Corridor Mitigation Bank site parcels will likely be developed to the extent allowed under current regulation within the next decade. These sites are located within an area that is zoned industrial, therefore the land costs to acquire these sites are high compared to the other sites under consideration. However, if acquired and protected, these sites will add significant acreage to an overall habitat corridor within the City’s jurisdiction. The corridor has been identified in the City’s Habitat Restoration Technical Assessment and is also consistent with the City of Bellingham’s Parks Pro Plan 2014 Open Space Corridor Plan. If acquired, these sites will contribute to a protected riparian and wetland corridor that encompasses over 400 nearly contiguous acres within the Urban Growth Area and some of the last remaining forested parcels in the headwaters of a significant salmon bearing stream.

While the land cost of these initial sites is high, due to zoning, the overall cost to develop and maintain these sites is relatively lower, since these sites are composed primarily of existing wetland along a riparian corridor. The intent is to generate primarily preservation credits from these parcels. Preservation credits have an extremely high likelihood of ecological success.

Furthermore, the Bear Creek Corridor Mitigation Bank sites are relatively expensive and generate the least amount of credit of any of the proposed bank sites. Therefore it makes sense for the City to pursue a Phased approach to Bank Site implementation by pairing this site with another site that has the potential to generate more credit. Final Phasing and site selection is up to the City as bank sponsor, and will be based on the considerations above, as well as the City’s ability to meet mitigation demand. As noted above, the City wishes to raise the issue of a phased approach to Bank Program implementation within the Prospectus to generate discussion and feedback from the IRT agencies, and to seek their guidance in pursuing an appropriate pathway to establish the City’s Mitigation Banking Program.

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100 Bellingham Habitat Restoration Technical Assessment, November 2015.
7. Qualifications

7.1 Qualifications of the Bank Sponsor

The City of Bellingham is the proposed bank sponsor. The City has the financial resources, staffing, and commitment required to meet all state, federal, and local requirements to successfully establish, monitor, and maintain wetland mitigation bank sites as part of an overall Mitigation Program for the region. Through this Program, the wetland Mitigation Bank sites will be protected in perpetuity.

Currently, the City funds a 0.5 full-time equivalent (FTE) staff position plus an additional 0.3 FTE in management support for the Mitigation Program as part of their Natural Resources Division. In addition, the City has dedicated design funds and $1,300,000 in acquisition funds to begin the program, and is committed to providing additional funding based on the City’s thorough Mitigation Cost Projection analysis.

The City has over 20 years of experience with mitigation stewardship, habitat restoration and aquatic protection, including design, construction, financial management, monitoring and maintenance. All of these services are conducted under the Natural Resources Division and are supported by the City’s Finance Department, Purchasing Division, and Engineering Division.

The Natural Resources Division’s Restoration program employs three permanent staff and has sponsored 12 Washington Conservation Corps members annually for the last 16 years. Since 1999, the City has grown its Restoration program to include over 70 sites throughout the City and Lake Whatcom watershed. The Restoration program is also responsible for the long-term maintenance and monitoring for all mitigation projects associated with the City’s capital construction. The Restoration program has successfully obtained and fulfilled reporting requirements for millions of dollars in grant funding and are the long-term recipients of trust funds from the 1999 Olympic Pipeline incident that provides sustained program funding. Due to the depth and longevity of the program, the Restoration program operates a permanent shop with maintenance equipment, a nursery, and vehicles necessary for year-round maintenance and monitoring activities. Their monitoring experience includes continuous temperature monitoring, shade monitoring, vegetation survival, spawner surveys, smolt traps, B-IBI, amphibian surveys, and avian surveys. They are currently working with the City’s GIS analysts to explore the potential for change detection monitoring using LiDAR and unmanned aerial vehicle (drone) photography.

In addition to the Restoration program, the Natural Resources Division supports the City’s Urban Streams Monitoring Program (USMP). The USMP has conducted monthly water quality monitoring of streams since 1990. Currently, monitoring takes place at 18 sites, on 11 streams: Whatcom, Hanna, Cemetery, Lincoln, Fever, Padden, Connelly, Chuckanut, Squalicum, Baker, and Silver Creeks. The Natural Resources Division’s Lake Whatcom Watershed Group is responsible for managing the Lake Whatcom Management Program, in conjunction with Whatcom County and the Lake Whatcom Water and Sewer District, to protect the drinking water source for over 95,000 citizens. In 2001, the City began a program to purchase available property in the Lake Whatcom Watershed, funded by a monthly surcharge on water user’s bills. To date, the City has been involved in the purchase of approximately 2,168.93 acres at a cost of just over $31 million dollars. As a part of the protected property 164 acres are solely held by conservation easements through restrictive covenants.
7.2 Qualifications of the Main Design Team and their Areas of Expertise

**Analiese Burns**, PWS, Habitat and Restoration Manager, City of Bellingham. Analiese Burns is the Habitat and Restoration Manager with the Natural Resources Division of the Bellingham Public Works Department. Analiese obtained a Bachelors in Science in Biology from the University of Washington and a Masters in Environmental Policy from Western Washington University. She is also a certified Professional Wetland Scientist (PWS, #1618) and a LEED® Accredited Professional. Analiese entered the public sector from her roots in the private sector, where she assisted clients with development and planning-level projects throughout Western Washington for over 15 years.

**Tina Mirabile**, PWS, Environmental Coordinator, Mitigation Program, City of Bellingham. Tina Mirabile is the Environmental Coordinator for the Mitigation Program with the Natural Resources Division of the City of Bellingham Public Works. Tina is a certified Professional Wetland Scientist with over 19 years of natural resources management experience in the Pacific Northwest region. She has Bachelor of Science in Geology from Indiana University and a Masters in Business Administration from the University of Massachusetts, Boston.

**Scott Havill** is the Mitigation Coordinator for the Mitigation Program with the Natural Resources Division of the City of Bellingham Public Works. Scott holds a Master’s degree in Population and Conservation Biology from Texas State University, a graduate certificate in Restoration Ecology from the University of Washington, and a B.S. in Environmental Science from the University of Oregon. Scott has worked across the western U.S. as a plant ecologist, soil scientist, and restoration ecologist for the past 15 years.

**Jennifer Thomas**, MES, Principal Ecologist and Wetland Scientist for Water & Land Natural Resource Consulting, LLC. Jennifer Thomas is an expert in Wetland Mitigation Banking in Washington State. She is managing the City’s Mitigation Bank Program approval process with the state and federal agencies with jurisdiction over wetlands and aquatic resources. From 1995-2003 she managed King County's Wetland Mitigation Banking Program, the first local government wetland mitigation banking program adopted in Washington State. She has been active in the development and use of wetland mitigation policy in Washington State since 1995. She participated in the development of Washington State’s Rule on Wetland Banks (WAC 173-700) as a member of the technical advisory team. She has researched and written more Prospectus and Mitigation Bank Instruments than any other individual in Washington State, for both the public and the private sector. She has 27+ years of experience in wetland delineation, mitigation, and restoration design and implementation.

**Michele Bodtke**, Senior Scientist, Northwest Ecological Services. Michele Bodtke is a senior ecologist and owner of Northwest Ecological Services, with 15 years of experience with wetland delineations, wetland mitigation/restoration plans, and functional assessments throughout Whatcom County and northern Puget Sound. Michele has a Bachelor of Science in Geology from Michigan State University, and a certificate in wetland science and management from the University of Washington. She is a certified Professional Wetland Scientist (PWS #2790) with the Society of Wetland Scientists.

**J.P. Slagle, P.E.**, Associate Engineer, Freeland & Associates. J.P. Slagle, P.E. is an Associate and Partner of Freeland & Associates, Inc. His primary responsibilities include management of civil engineering activities along with completion of studies, reports, project design and preparation of project plans and specifications. J.P. has served as a Project Manager and Engineer for civil engineering projects in the
Pacific Northwest area since 2001. He is experienced in the study and design of stormwater hydrology, erosion and sediment control design, and wetland creation grading.
8. References


# APPENDIX A.
## Prospectus Submittal Procedures for Federal and State Wetland Mitigation Banks in Washington State

### Checklist and City of Bellingham Prospectus Page References

<table>
<thead>
<tr>
<th>Checklist Item</th>
<th>Page(s)</th>
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<tbody>
<tr>
<td>☐ 1 Contact information for the sponsor.</td>
<td>2</td>
</tr>
<tr>
<td>☐ 2 The goals and objectives of the project.</td>
<td>See Section 1, pages 9 et seq</td>
</tr>
<tr>
<td>☐ 3 Proposed bank site location including city or county, proximity to existing roads and other landmarks, and a vicinity map.</td>
<td>See Figures ES-1, 1, 11, 13, 15, 17, 19</td>
</tr>
<tr>
<td>☐ 4 A statement of how the bank meets any watershed restoration needs and how its design and location are ecologically appropriate.</td>
<td>See Sections 3, 4, 5 Bear Creek p 34 et seq McCormick Creek Headwaters, p 42 et seq Valley of the Forks, p 46 et seq Squalicum Lake p 51 et seq</td>
</tr>
<tr>
<td>☐ 5 The rationale for site selection that includes, but not limited to, the following:</td>
<td>See Section 3, Section 4, Section 5 p 33-34</td>
</tr>
<tr>
<td>a. Banks must be sited based on a watershed approach;</td>
<td></td>
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<tr>
<td>b. Banks must be sited, planned, and designed to be self-sustaining over time;</td>
<td></td>
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<tr>
<td>c. Ecological suitability, ecological sustainability, and land use compatibility;</td>
<td></td>
</tr>
<tr>
<td>d. Compatibility of banks and agricultural lands of long-term commercial significance (ALLCS); and</td>
<td></td>
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<tr>
<td>e. Requirements specified in the State Rule, WAC 173-700-303.</td>
<td></td>
</tr>
<tr>
<td>☐ 6 The general need for the proposed bank.</td>
<td>See Sections 1 &amp; 2</td>
</tr>
<tr>
<td>☐ 7 General site map(s) that includes, but is not limited to:</td>
<td>See Section 5 Bear Creek p 34 et seq Figure 13 McCormick Creek Headwaters, p 42 et seq Figure 15 Valley of the Forks, p 46 et seq, Figure 17 Squalicum Lake p 51 et seq, Figure 20</td>
</tr>
<tr>
<td>a. Total area of site;</td>
<td></td>
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<tr>
<td>b. Location, size, and number of existing wetlands;</td>
<td></td>
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<tr>
<td>c. Location of all streams, ponds, and other water features on or adjacent to the site;</td>
<td></td>
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<tr>
<td>d. Location and type of all known water control features on or adjacent to the site; and</td>
<td></td>
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<tr>
<td>e. Presence of rights-of-way, easements, or other encumbrances.</td>
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<tr>
<td>☐ 8 A description of existing conditions of the proposed site including, but not limited to:</td>
<td>See Section 5 Bear Creek p 34 et seq McCormick Creek Headwaters, p 42 et seq Valley of the Forks, p 46 et seq Squalicum Lake p 51 et seq</td>
</tr>
<tr>
<td>a. Land ownership;</td>
<td></td>
</tr>
<tr>
<td>b. Local land use or zoning designation;</td>
<td></td>
</tr>
<tr>
<td>c. Current use;</td>
<td></td>
</tr>
<tr>
<td>d. Presence of liens, rights-of-way, easements, or other encumbrances;</td>
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</tr>
<tr>
<td>e. The landscape position of the site including water resource inventory area (WRIA), basin, and sub-basin location;</td>
<td></td>
</tr>
<tr>
<td>f. Wetland types present on the site including Cowardin classification and hydrogeomorphic (HGM) class of each wetland;</td>
<td></td>
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</tbody>
</table>
**Checklist Item**

<table>
<thead>
<tr>
<th>Checklist Item</th>
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<tbody>
<tr>
<td>g. Other habitat types present;</td>
<td></td>
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<tr>
<td>h. Available information on water sources including surface water features, preliminary ground water information, soil types, and vegetation;</td>
<td></td>
</tr>
<tr>
<td>i. A preliminary analysis of functions provided by on-site wetlands;</td>
<td></td>
</tr>
<tr>
<td>j. Adjacent land uses that might affect the bank’s function;</td>
<td></td>
</tr>
<tr>
<td>k. Site constraints, conflicts, or known risks that could affect bank development or function;</td>
<td></td>
</tr>
<tr>
<td>l. Identification of all buildings, structures, and other built features that would remain on the site after construction; and</td>
<td></td>
</tr>
<tr>
<td>m. Identification of existing mitigation sites and whether they will remain on site after construction.</td>
<td></td>
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<tr>
<td>□ 9</td>
<td>Description of conceptual site design, including but not limited to:</td>
</tr>
<tr>
<td></td>
<td>a. Proposed types and approximate sizes of wetlands;</td>
</tr>
<tr>
<td></td>
<td>b. Other proposed habitat types to be provided;</td>
</tr>
<tr>
<td></td>
<td>c. Proposed functions that the bank is anticipated to provide;</td>
</tr>
<tr>
<td></td>
<td>d. Description of alterations to hydrology;</td>
</tr>
<tr>
<td></td>
<td>e. Location of grading, if applicable; and</td>
</tr>
<tr>
<td></td>
<td>f. Proposed structures (e.g., perch poles, weirs, trails, etc.).</td>
</tr>
<tr>
<td>□ 10</td>
<td>Figures illustrating the conceptual bank design.</td>
</tr>
<tr>
<td>□ 11</td>
<td>The proposed service area and accompanying watershed-based rationale that demonstrates the service area is ecologically appropriate.</td>
</tr>
<tr>
<td>□ 12</td>
<td>Discussion of whether water rights have been applied for or secured for the site, if needed.</td>
</tr>
<tr>
<td>□ 13</td>
<td>Identification of a proposed permanent protection mechanism.</td>
</tr>
<tr>
<td>□ 14</td>
<td>The proposed ownership arrangements and long-term management strategy for the bank.</td>
</tr>
<tr>
<td>□ 15</td>
<td>Description of how the proposed bank project meets federal, state, and local laws and rules.</td>
</tr>
<tr>
<td>□ 16</td>
<td>Identification of whether the bank site is fully or partially located on ALLCS.</td>
</tr>
<tr>
<td>□ 17</td>
<td>The qualifications of the sponsor to successfully complete the bank project(s) proposed, including information describing any past such activities by the sponsor.</td>
</tr>
<tr>
<td>□ 18</td>
<td>The qualifications of the main design team and their areas of expertise.</td>
</tr>
</tbody>
</table>
APPENDIX B.
City of Bellingham Mitigation Program Steering Committee Members

The following individuals participate in the City of Bellingham’s Mitigation Program Steering Committee:

Kristin Murray          WSDOT Area Habitat Biologist
George Carlson          WSDOT Mt. Baker Area Environmental Manager
Analiise Burns          City of Bellingham Habitat Restoration Manager, Public Works
Renée LaCroix           City of Bellingham Assistant Director, Public Works Natural Resources
Craig Mueller, P.E.     City of Bellingham Project Engineer
Chris Behee             City of Bellingham, GIS Analyst
Lisa Pool               City of Bellingham Senior Planner, Long Range
Kim Weil                City of Bellingham, Environmental Planner, Current Planning
Gina Austin, P.E.       City of Bellingham Parks, Project Engineer
Tina Mirabile           City of Bellingham, Environmental Coordinator, Mitigation Program
Ryan Ericson            Whatcom County Planning and Development Services
Cliff Strong            Whatcom County Critical Areas Planner
Gary Stoyka             Whatcom County, Natural Resources Program Manager

The following individuals were contacted regarding mitigation needs in and around Bellingham:

Gail Terzi               US Army Corps of Engineers (retired)
John Graves             FEMA, Natural Hazards Program Manager
David Hirsch            NOAA Fisheries
Wendy Cole              WDFW Area Habitat Biologist
Teri Granger            Department of Ecology
Lauren Driscoll         Department of Ecology
Patricia Johnson        Department of Ecology
Kate Thompson           Department of Ecology
Diane Hennessy          Department of Ecology
Leslie Bryson           City of Bellingham Parks and Recreation, Director
Steve Sundin            City of Bellingham Planning and Community Development, Planner II
Kurt Nabbefeld         City of Bellingham Planning and Community Development, Development Services Manager
Moshie Quinn            City of Bellingham Planning and Community Development, Planner II
Chad Schulhauser        City of Bellingham Public Works, City Engineer
Paula Harris            Whatcom County River & Flood Division Manager
John Thompson           Whatcom County Public Works River & Flood Division, ESA Coordinator
Mark Personius          Whatcom County Planning and Development Services, Assistant Director/Supervisor
Erin Page               Whatcom County Planning and Development Services, Planner/Critical Areas
Sarah Watts             Whatcom County Planning and Development Services, GIS Specialist
Chris Elder             Whatcom County Planning and Development Services, Planner/Agriculture-PDR
Jori Burnett            City of Ferndale, Community Development Director
Megan McNeil            King County ILF Coordinator
Ron Cowan               Bellingham School District, Executive Director
Brian Gouran            Port of Bellingham
Sunil Harman            Port of Bellingham, Director of Aviation
Becky Peterson          Whatcom LIO Coordinator
Fred Likkel             Whatcom Family Farmers, Executive Director
Henry Bierlink          Red Raspberry Commission, Executive Director
Rachel Vasak            Nooksack Salmon Enhancement Association
Mitch Waterman          Sudden Valley Community Association, Managing Director
George Boggs            Whatcom Conservation District
Sue Padelford           Jacobs Biologist for Burlington Northern Santa Fe Railroad in the region
Jeremy Ogden            Cascade Natural Gas
Jeff McMeekin           Puget Sound Energy
Peter Sim               British Petroleum
Chris Thorn             Williams Pipeline
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Kris Faucett</td>
<td>Kinder Morgan</td>
</tr>
<tr>
<td>Joe Stone</td>
<td>Olympic Pipeline</td>
</tr>
<tr>
<td>Michele Bodtke</td>
<td>Northwest Ecological Services</td>
</tr>
<tr>
<td>Linda Twitchell</td>
<td>BIAW</td>
</tr>
<tr>
<td>Danielle Johnson</td>
<td>P.E. Wilson Engineering</td>
</tr>
<tr>
<td>Bill Cantrell</td>
<td>Senior Ecologist, Cantrell &amp; Associates</td>
</tr>
<tr>
<td>Ed Miller</td>
<td>Miller Environmental Services</td>
</tr>
<tr>
<td>Sharon Robinson</td>
<td>Zervas Architects</td>
</tr>
<tr>
<td>Adam Morrow</td>
<td>Pacific Surveying and Engineering</td>
</tr>
<tr>
<td>Jaime White</td>
<td>Whatcom Land Use Consulting</td>
</tr>
<tr>
<td>Larry Stoner</td>
<td>Larry Stoner Land Development Consultants</td>
</tr>
<tr>
<td>Ali Taysi</td>
<td>AVT Planning</td>
</tr>
<tr>
<td>Jay Irwin</td>
<td>Irwin Land Use Consulting</td>
</tr>
</tbody>
</table>
APPENDIX C.
Resource Documents Consulted in Support of Bank Program Development

City of Bellingham Comprehensive Plan
City of Bellingham Transportation Improvement Plan
City of Bellingham Capital Improvement Plan
City of Bellingham Parks Pro Plan
City of Bellingham Mitigation Program Review and Recommendations (Northwest Ecological Services, 2012)
City of Bellingham Habitat Restoration Technical Assessment (ESA, Veda Environmental and Northwest Ecological Services, LLC, 2015)
City of Bellingham Shoreline Master Program, Restoration Plan, 2015
City of Bellingham Wetland Inventories, Wetland delineation mapping, and Stream reports and maps
City of Ferndale GIS wetland inventory
Lummi Nation Habitat and Mitigation Bank Instrument and Appendices
Whatcom County wetland inventory maps
Whatcom County Comprehensive Plan
Whatcom County code v.v. wetland mitigation banking requirements
Whatcom County Shoreline Master Program
WRIA 1 Limiting Factors Analysis and Salmon Recovery Plans
WRIA 1—4 Year Habitat Work Schedule
WRIA 1 Nearshore and Estuarine Assessment and Restoration Project, 2013