

# KELLER FARM MITIGATION BANK

## Project Prospectus



Redmond, Washington

Submitted to the Interagency Bank Review Team By:

Habitat Bank, LLC  
P.O. Box 354  
Kirkland, WA 98083

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### **BANK SPONSOR CONTACT INFORMATION**

Habitat Bank, LLC  
PO Box 354  
Kirkland, WA 98083  
425.785.8428 / 425.205.0279

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## Chapter 1. INTRODUCTION

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### 1.1 Overview

The proposed Keller Farm Mitigation Bank (KFMB) is a joint wetland and endangered species conservation bank sponsored by Habitat Bank, LLC (HB). HB, a private mitigation banking company based in Washington State, will act as the Bank Sponsor and will oversee all bank development and management responsibilities such as bank site design, project permitting, construction, maintenance, monitoring and eventual bank credit transfers.

The bank site area, known locally as ‘the Keller Farm’, has been identified as a high priority stream and wetland restoration project for the last twenty-five years, beginning with the Bear Creek Basin Plan in the 1980’s. The bank site is identified as a ‘Near Term Action’ important to regional salmonid habitat restoration efforts as part of the Lake Washington/Cedar/Sammamish Salmon Conservation Plan for Water Resource Inventory Area (WRIA) 8 adopted by NOAA Fisheries and implemented by local stakeholders to achieve Chinook salmon recovery consistent with the Endangered Species Act (Chinook Salmon Conservation Plan (CSCP), 2005; ESA 16 U.S.C. S 1531). All parcels within the project are located within an area that the City of Redmond’s zoning code designates as Bear Creek Design District 2 and RA-5 (Redmond Zoning Code (RZC) 21.14.070). The two largest parcels within the bank site are specifically designated as set aside for establishment as a wetland mitigation bank (RZC 21.14.070). The project is therefore not located on Agricultural Lands of Long-term Commercial Significance. Water rights are not required to establish the bank site plantings, as City of Redmond water will be used if necessary for irrigation.

Establishing a wetland mitigation bank on the property has been proposed since the mid 1990’s. Most recently, HB submitted a Prospectus to establish a wetland mitigation bank in 2008, in a joint partnership with other development projects occurring adjacent to the bank property. That proposal was ultimately put on hold until more suitable economic conditions in the region were realized. Despite the fact that the 2008 Prospectus did not lead to the establishment of a wetland mitigation bank project, the City of Redmond had long identified the area in their planning documents as an appropriate area for stream and habitat restoration through banking, as well as providing a critical link to trail connections within the City and region (Bear Creek Basin Plan, 1995, City of Redmond, PARCC 2010). Bear Creek is also designated as a ‘Highest Restoration Watershed’ within the City’s recently adopted Watershed Management Plan (WMP, 2013a), which presents the City’s integrated approach to stormwater and watershed management within its jurisdiction. The Watershed Management Plan is based on landscape and ecological principles, and represents the City’s commitment to maintaining water quality and restoring its watersheds by rehabilitating the City’s surface waters, and the ecological processes on which they depend, over the next fifty to one hundred years (WMP, 2013a). Surface waters within the Highest Restoration watersheds, such as Bear Creek, are to be rehabilitated by 2060 in compliance with the strategies proposed in the plan (WMP, 2013a). The Watershed Plan is consistent with the City’s Water Resources Strategic Plan which establishes the City’s vision and goals, and identifies near term project funding (for project implementation from 2014-2017) (City of Redmond, 2013b). Consistent with the City’s planning goals as established in their Comprehensive Plan, and supported by a number of planning documents, the City purchased the property from the Keller family in 2015, with the intent of facilitating establishment of a mitigation bank on site (Redmond 2030, City of Redmond Comprehensive Plan, 2011).

The Keller family were the original homesteaders of the property in the late 1880’s. The site was managed as a dairy farm through the 1980’s and since dairy operations ceased the site has been rented in small patches for row crop production. The site is still affected by historic agricultural use, and has been extensively ditched, drained, tilled, and tilled annually for crop

production. Invasive species, such as Himalayan blackberry, Japanese knotweed, and giant hogweed are present on site. The riparian zone is dominated by non-native grasses and blackberry, with little to no native tree or shrub cover.

This Prospectus proposes to establish a wetland and conservation bank on approximately 91 acres of land at the confluence of Bear and Evans Creeks. The site will be restored from an expanse of old ditched, drained, and maintained fields to a complex and dynamic riparian floodplain that re-establishes wetland hydrology by disabling agricultural drainage of the site, reconnecting the incised channel of Bear Creek to its floodplain, and re-establishing a network of off-channel rearing and refuge habitat types for salmonids, consistent with local, state, and federal salmon recovery goals. The site will be entirely re-vegetated with native riparian upland and wetland vegetation, which will significantly enhance both the habitat structure and function of the site, both in the riparian zone, as well as in the surrounding floodplain and restored wetlands. The goal is to maximize the increase in wetland area and function by re-establishing wetland hydrology on site, as well as to establish significant off-channel rearing and refuge area for salmonids.

Additional lands adjacent to the City of Redmond's Keller Farm site may be added to this Bank project if those areas are ecologically connected with the primary site, would benefit from inclusion in the restoration project and contractual agreements can be made with the land owners to participate in the project.

## 1.2 Project Description

As part of a public/private partnership between the City and HB, this Prospectus proposes the establishment of a wetland and conservation bank on approximately 91 acres located within the City limits and at the confluence of two regionally significant salmon bearing streams (**Figure 1**, vicinity map). The site is located in portions of Section 1, Township 2 N, Range 5 East, and of government lots 6 and 7 of Section 1 of Township 25 N., Range 5 E., Willamette Meridian and bounded to the north by private property, to the east and south by Lower Bear Creek, and to the west by Avondale Road. Perrigo Creek enters the site from the northwest corner, and is ditched along Avondale Road. (**Figure 2**, Proposed Bank Site).

## 1.3 Regulatory Framework

### 1.3.1 Federal

This Prospectus is prepared in compliance with the federal rule on Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Parts 325 and 332) with respect to the establishment and use of wetland mitigation banks. It is also consistent with federal guidance issued by the United States Department of the Interior for the establishment and use of Conservation Banks under the Endangered Species Act (U.S. DOI, May 2, 2003; ESA 16 U.S.C. S 1531). The bank site is proposed as both a wetland and conservation bank for Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*), which were listed as threatened by National Marine Fisheries Service of the National and Oceanic Atmospheric Administration in 1999 (64 Federal Register 14308, 1999).

Restoration of the proposed bank site meets regional salmon recovery goals as documented by WRIA 8 2014 Three Year Work Plan projects N-206, N-208, N-209, N-211, N-212, N-213, N-214, N-215A, N-216, N-339, N-346 and N432 in the Lake Washington/Cedar/Sammamish Salmon Conservation Plan for Water Resource Inventory Area (WRIA) 8 (CSCP, 2005)<sup>1</sup>. It also contributes to desired Ecosystem Recovery Targets as identified by the Puget Sound Partnership's Action Agenda (Puget Sound Partnership, 2011).

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<sup>1</sup> A brief overview of each of these projects is provided in Section 2.3.3 of this document.

### 1.3.2 State

At the state level, this Prospectus is in compliance with Washington State's Mitigation Banking Program Guidance on Prospectus Submittal (Ecology, 2013), and follows Washington State's Wetland Mitigation Banking Statute and Rule (RCW 90.84 and WAC 173-700). Development of the proposed site is also consistent with the state's Shoreline Management Act (RCW 90.84) and the state process for Watershed Planning (RCW 90.82) as implemented by the City of Redmond's Watershed Plan (WMP, 2013a).

### 1.3.3 Local

Local governments implement land use regulations, which control the type and intensity of development within a given jurisdiction. Local governments within Washington State regulate their environmental resources, such as streams and wetlands, in compliance with state and federal statutes and rules. Within Washington State, the primary statutes governing local land use are the State Environmental Policy Act (SEPA, RCW 43.21, WAC 197-11), the Growth Management Act (RCW 36.70A and rules<sup>2</sup>), and Shoreline Master Programs, implemented consistent with the state's Shoreline Management Act (RCW 90.58).

Under the Growth Management Act, jurisdictions planning under the Act are required to adopt Comprehensive Plans, which identify the jurisdictions' vision for the future, for both the built and natural environment. The City of Redmond adopted its Comprehensive Plan in 2011 (City of Redmond, 2011). The Comprehensive Plan establishes the jurisdiction's goals, consistent with the goals as stated in the Growth Management Act, and allows the City to chart a path for growth through the year 2030. The City of Redmond's Comprehensive Plan includes numerous goals in the Natural Environment, Water Quality, and Parks and Recreation Elements that directly support establishment of a wetland and conservation bank at the proposed bank site (each Element of the Comprehensive Plan is a subject-specific chapter).

The City's planning goals are further specified in plan documents which establish the budget and project priorities of the City's departments for the near term planning horizon, as defined by each plan. The City's Water Resources Strategic Plan (2013b) and PARRC Plan (2010) are also consistent with the City's Watershed Plan, which establishes Bear Creek as a Highest Restoration watershed, and identifies specific site rehabilitation strategies for the proposed bank site (City of Redmond, 2013a). These rehabilitation strategies will be discussed in greater detail later in this Prospectus. The City's Watershed Plan was also developed in consultation with the Muckleshoot Tribe, who has Tribal Treaty Rights in the region. Washington Department of Fish and Wildlife was also consulted in the City's Watershed Plan, and is supportive of the watershed-based approach to restoration, and the Plan overall. In addition, the Washington State Department of Ecology (Ecology) is supportive of the City's approach to watershed planning (WMP, 2013a). Furthermore, the proposed bank site is within the designated Bear Creek Design District 2, and identified as a Core Preservation Area in compliance with City of Redmond's Fish and Wildlife Habitat Conservation Areas code, as a part of the City's adopted Critical Areas Ordinance under the GMA (RZC 21.64.020.A.2.a). Bear Creek is designated as a Class I stream by the City, while Perrigo Creek is designated as a Class II stream (RZC 21.68)

The planning approach taken by the City of Redmond is a holistic and integrated approach that reflects the best available science, and seeks to manage the driving ecological processes that establish habitats which are used by species within the City. The WMP approach is hierarchical, and aims to restore hydrologic processes as well as hydraulic, geomorphic, physiochemical and biologic aspects of the watersheds within the City's jurisdiction. The proposed bank site is consistent with the City's holistic approach to watershed management,

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<sup>2</sup> See WAC 365-185; WAC 365-190; WAC 365-195; WAC 365-196; and <http://www.commerce.wa.gov/Services/localgovernment/GrowthManagement/Pages/LawsRules.aspx>

and is one of many such projects that the City is undertaking. Combined, these projects chart a path to achieving the City's goal of sustainable restoration, and restored surface waters by the year 2060 (WMP, 2013a).

#### 1.4 Bank Certification Process

Upon certification by the Interagency Bank Review Team (IRT), the proposed Bank project will provide compensatory mitigation for unavoidable impacts to wetlands and other aquatic resources, as well as provide conservation credits for impacts to salmonid species listed under the Endangered Species Act as well as other anadromous and resident fish or their habitats.

#### 1.5 Ownership and Legal Restrictions

The primary parcels in the proposed bank site are owned by the City of Redmond. The city-owned parcels are designated as Bear Creek Design District 2, a zone that was specifically established to allow for the establishment of a mitigation bank on site. No parcels within the proposed bank site are zoned as Agricultural Lands of Long-term Commercial Significance.

Restrictions on the site include an easement for a water main, and a designated location for a connector trail through the site, as shown on **Figure 2**. The location of the trail has not yet been finalized. Small portions of other parcels with access from Union Hill Road (located to the south of the site) extend across Bear Creek. The owners of these properties are considering including their properties in this proposal. These properties are shown in **Table 1** as "pending".

**Table 1: Summary of Bank Site Parcel Information**

Property Owner	Parcel Number	Zoning	Mitigation Permitted	Acreage
City of Redmond	Keller Farm Revised Parcel A (0125059051)	BCDD2, (Bear Creek Design District, 2)	Yes	44.35
City of Redmond	Keller Farm Revised Parcel B (0625069013)	BCDD2,	Yes	38.93
City of Redmond	0125059189	RA-5	Yes	1.98
City of Redmond	0125059038	RA-5	Yes	2.31 (estimate 1.7 ac. in bank)
Huang, Jong & Tien (Pending)	0125059081	RA-5, BP (Business Park)	Yes	1 (estimate 0.5 ac. in bank)
RSRC Bear Creek LLC (Pending)	0125059040	RA-5, BP	Yes	4.47 (estimate 2 ac. in bank)
G&J Bear Creek Properties LLC (Pending)	0125059045	RA-5, BP	Yes	3.52 (estimate 2 ac. in bank)
Total Estimated Bank Site Area				91.00 <sup>3</sup> ac.

<sup>3</sup> Some of the properties along the southwestern portion of the bank site are in private ownership, and bisect Bear Creek. Habitat Bank LLC is in conversation with these property owners regarding their interest in participating in the bank site proposal. However, because these conversations are on-going,

The parcels listed in **Table 2** are owned by the City of Redmond and are located east of the proposed bank site, contiguous with the WSDOT Mitigation Site, and along the Bear Creek corridor. They are identified here to show the extent of publicly owned open space contiguous with the bank site.

**Table 2: City of Redmond Adjacent Parcel Ownership**

Property Owner	Parcel Number	Zoning	Mitigation Permitted	Acreage
City of Redmond	0625069152	RA-5	Yes	14.63
City of Redmond	0625069025	RA-5	Yes	9.60
City of Redmond	0625069065	UR (Urban Recreational)	Yes	8.78
City of Redmond	0625069126	RA-5	Yes	4.46
<b>Total</b>				<b>34.47</b>

Water rights are not required to establish or maintain the bank project. Plantings will be watered if necessary using City of Redmond water, during plant establishment (0 to three years following planting). After the establishment period, no additional watering is anticipated at the bank site.

### 1.6 Sponsor Qualifications

Since 2001, Habitat Bank, LLC has been the leader in mitigation banking in Washington State. Habitat Bank proposed the State's first private mitigation bank (Snohomish Basin Mitigation Bank) to be certified under the Wetland Mitigation Banking Pilot Program in 2005. Habitat Bank has since permitted the Columbia River Wetland Mitigation Bank in Vancouver, Washington, the East Fork Lewis Mitigation Bank in Amboy, Washington, the Remy Mitigation Project in Battle Ground, Washington and is currently permitting the Coweeman Mitigation Bank in Kelso, Washington. Together with local project consultants, and other experts in the field, Habitat Bank will utilize their specific experience, technical expertise, and local knowledge to successfully establish and operate a mitigation bank on the project site.

Habitat Bank is working with a variety of consultants on the Keller Farm Mitigation Bank Project, all of whom have previous experience both working with HB, and in the establishment and use of wetland and conservation banks in Washington State.

## Chapter 2. WATERSHED CONDITIONS AND REGIONAL RESTORATION GOALS

### 2.1 WRIA-8: Lake Washington, Cedar, and Sammamish Watershed Overview

The bank site is located within the Lake Washington/Cedar/Sammamish Water Resource Inventory Area (WRIA) 8, as designated by RCW 90.82 (Figure 1). Water Resource Inventory Areas (WRIAs) were designated by the state of Washington in 1997 to establish common

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this Prospectus assumes that approximately 91 acres of area is proposed as a bank site. Of this estimated area, 86.96 acres is owned by the City of Redmond.



drainage boundaries as the basis for watershed planning by local and state governments (WAC 173-500). The Lake Washington/Cedar/Sammamish Watershed contains two major river systems (the Cedar River and the Sammamish River) and three large lakes – Lake Washington, which connects to the Puget Sound through the Ballard Locks, Lake Sammamish, and Chester Morse Lake, which contains the impounded headwaters of the Cedar River. Lake Washington has over 80 miles of shoreline, in addition to 30 miles of shoreline around Mercer Island (CSCP, 2005). Lake Washington is the second largest natural lake in the state. Lake Washington is connected to the Puget Sound through the Ballard Locks, which were constructed in the early 20<sup>th</sup> century. Construction of the locks greatly altered the naturally occurring river systems by dropping the levels of Lake Washington approximately 9 feet, and cutting off the source of the Black River, which, until that time, flowed south out of Lake Washington into the Duwamish River and Elliott Bay.

Lake Sammamish receives tributary waters both from the north and south; main drainages include Issaquah Creek and its tributaries to the south, and Bear Creek and its tributaries to the north. Lake Sammamish drains north into the Sammamish River, flowing north and west through the Sammamish River valley from which it flows into the northeastern portion of Lake Washington. The Sammamish River was ditched and straightened throughout the 20<sup>th</sup> century to prevent flooding and to provide fertile valley floor soils to support local agriculture.

The Cedar River runs from the crest of the Cascades south through the incorporated towns of Maple Valley and Renton, where it flows into the southern shores of Lake Washington. The waters of the Cedar River join those of the Sammamish at Lake Washington. The Cedar River was dammed at the turn of the 20<sup>th</sup> century by the City of Seattle to provide for the City's drinking water supply. Above the dam, the headwaters of the Cedar River are known as Chester Morse Lake. Access to the lake is controlled by the City of Seattle, which purchased the headwaters of the Cedar River around the turn of the 20<sup>th</sup> century. Much of the Cedar River was leveed throughout the 20<sup>th</sup> century to curtail flooding in the valley.

The western boundary of the Lake Washington/Cedar/Sammamish watershed extends to the shores of the Puget Sound and includes several small tributary streams that drain directly to the Sound. The watershed supports a wide variety of native and non-native aquatic species. Salmonid species within the watershed include: chinook, coho, kokanee, sockeye, steelhead, bull trout and rainbow and coastal cutthroat trout. The main drainages of significance to salmon populations in the watershed include those of Lake Sammamish and its tributaries, including Issaquah Creek to the south, and Bear Creek and its tributaries to the northeast, as well as the Cedar River populations (CSCP, 2005).

The watershed occurs within the Puget Lowlands, an area that was formed by glaciation of the Vashon stage, which covered the Seattle area with an ice sheet up to a mile thick until approximately 18,000 to 15,000 years ago (as cited in Booth et al, 2003). The Puget Lowland formation follows a defined topographic pattern which has been classified as moving from the rocky alpine headwaters, following a steep descent into confined mountain valleys, and emerging into broad low-gradient lowland valleys where the channels are walled by unconsolidated fluvial sediments (Booth et al, 2003, Montgomery and Buffington, 1997). Informally, the pattern is referred to as running 'from the snow caps to the white caps', and encompasses the entire Puget Sound drainage, of which this watershed is a subset. The underlying geology in turn influences local hydrology and sediment transport, which establish local hydrologic conditions, including surface and sub-surface hydrology.

Many of the tributaries within the watershed share similar topography, and their ecological characteristics have been shaped by similar driving ecological processes (geology, which created pathways for surface and sub-surface water flows) resulting in similar ecological structure and function of riparian lowland forests, streams, and wetlands. These systems, which run from the crest of the Cascades through lowland forests, to the shores of the lakes,

and then to Puget Sound, provide avenues for migration that are important to a variety of salmonid species. In addition, they also support the most densely populated watershed in the state, including Seattle and surrounding cities and counties. The 2002 population within the watershed was 1.3 million inhabitants, and growth projections at that time anticipated 1.6 million inhabitants by 2016 (CSCP, 2005).

While most of the watershed is located within King County or incorporated cities within the County, 15% of the watershed is located to the north, in Snohomish County. Twenty-seven jurisdictions occur within the WRIA 8 watershed (CSCP, 2005).

Land use within the WRIA reflects the urban and urbanizing environment, with relatively high levels of effective impervious area, flashy urban stream flows, high turbidity and stormwater contributions to many stream systems, as well as lack of forest cover, lack of riparian vegetation or connected corridors, and relatively degraded habitat within the urban area.

The effects of urbanization have resulted in severe impacts to salmon and other species native to the region. In 1999 Chinook salmon were listed as Threatened under the ESA. In compliance with the Act, local jurisdictions and stakeholders throughout Puget Sound worked collaboratively to develop salmon conservation plans, which were adopted by NOAA Fisheries in 2005. Each plan is required to identify habitat and limiting factors significant for species recovery. For WRIA 8, the following limiting factors were identified in the CSCP:

- Altered hydrology
- Loss of floodplain connectivity
- Lack of riparian vegetation
- Disrupted sediment processes (i.e. too much fine sediment deposited in urban streams, or sources of spawning gravel disconnected from river channel)
- Loss of channel and shoreline complexity (e.g. lack of woody debris and pools)
- Barriers to fish passage
- Degraded water and sediment quality

The WRIA 8 CSCP was developed to address limiting factors and chart a path towards species recovery (CSCP, 2005). It is a science-based document that builds on specific ecosystem objectives all of which are aimed at restoring aquatic habitats, and the driving ecological processes that support salmonid habitat. The following goals have been identified, and each goal is tied to a specific acreage objective (listed in parentheses following the goal). Fifty projects located throughout the WRIA have been identified to meet these goals and progress toward each goal is measured on a regular basis:

- **Habitat protection** – “Particular emphasis should be placed on protecting... sources of groundwater and riparian areas to maintain natural hydrologic processes and temperatures that support Chinook”
  - Goal: 2,872 acres
- **Restore wetlands** – “Wetlands act as a biological filter, moderate flows, provide nutrient and invertebrate subsidies to nearby streams, and provide foraging and resting habitats for fish.”
  - Goal: Seven projects; 69 acres
- **Floodplain connectivity** – “Protect and restore floodplain connectivity and increase off-channel habitat by minimizing road crossings, reducing channel confinement, and removing floodplain structures. Floodplains provide off-channel habitats, as well as lower velocity areas during periods of high flow.”
  - Goal: 7 projects, 10,085 lineal feet.

- **Channel complexity** -“Add large woody debris to create pools. Channel complexity provides juvenile Chinook with refuge and foraging opportunities while adult Chinook benefit from areas to rest on their upstream migration.”
  - Goal: 5.11 miles
- **Riparian Vegetation** – “Restore riparian vegetation to improve channel stability, provide sources of Large Woody Debris (LWD) that can contribute to the creation of pool habitat and reduce peak water temperatures that favor non-native species.”
  - Goal: 667 acres

## 2.2 Bear Creek Sub-Basin

Bear Creek is a tributary to the Sammamish River, which in turn flows north approximately 11 miles to its confluence with Lake Washington (**Figure 1**). Bear Creek is a lowland stream system, whose headwaters, located in the Paradise Lake Conservation Area in Snohomish County, retain relatively intact forest cover, and a somewhat rural character, with fewer stream crossings and lower total impervious area than other urbanizing systems, which contributes to higher than average water quality for an urban stream, as evidenced by a population of native freshwater mussels within upper Bear Creek. Freshwater mussels are relatively rare within urban and urbanizing environments and are good indicators of high water quality. Additionally, Bear Creek supports multiple species and runs of salmonids and has long been identified as an important salmonid bearing stream and “Core Chinook Area”, as described in the 2005 CSCP. WDFW’s “Salmonscape” stream mapping website lists chinook, coho, sockeye, steelhead, kokanee, cutthroat and resident trout as fish species present within the reaches of Bear Creek, Evans Creek and Perrigo Creek within the bank site.

According to the City of Redmond’s Watershed Plan, the Bear Creek Watershed covers approximately 32,100 acres (50 square miles). Of that area, 713 acres occur within the City of Redmond’s jurisdictional limits (WMP, 2013a). In terms of land cover in the watershed, 9 percent is in forest, 13 percent is in pasture, 25 percent is categorized as ‘landscape’ (this is area that is not effectively impervious) and 53 percent is Effective Impervious Surface (WMP 2013a). In terms of land use, 26 percent of the basin, within City limits, is zoned for commercial development, 14 percent is zoned industrial, 17 percent is roads, 19 percent is zoned single family residential, 9 percent is multi-family residential and 15 percent is parks and undeveloped land (WMP, 2013a).

A portion of Bear Creek is listed as a Category 4A waterbody for high fecal coliform bacteria concentrations, high temperature, and low dissolved oxygen concentrations (Ecology 2008c as cited in WMP, 2013a). Generally, the lower portions of Bear Creek are more degraded than the headwater areas (as is reflected in the poor water quality conditions within the lower basin); much of the lower portion of Bear Creek has little to no riparian vegetation, and large woody debris and channel complexity are lacking. Much of the lower portion of Bear Creek is disconnected from its floodplain, and there is little to no off-channel habitat. The riparian vegetation present and dominant within the lower portions of the basin and at the proposed bank site are non-native invasive species, such as blackberry and reed canarygrass. Despite the dominance of invasive species, there are sparsely scattered alders, Oregon ash, and willow groves along the stream channel as well as occasional cottonwood trees along the fringes of riparian corridor.

## 2.3 Connectivity with Other Projects:

### 2.3.1 WSDOT SR-520 Mitigation

In 2013 WSDOT permitted the restoration and enhancement of 30 acres of land to the east of Bear Creek, and north of Evans Creek as mitigation for permitted unavoidable adverse impacts to wetlands and aquatic resources resulting from the construction and expansion of State Route

520. This site is immediately east of the proposed bank site, across the Bear Creek channel. The historic channel of Evans Creek was re-created through the site as a part of this project. This project was coordinated with King County, the City of Redmond, and other stakeholders as part of a long-term effort to re-route Evans Creek into its historic channel, which runs east of its current location.

### **2.3.2 Bear Creek Rehabilitation**

Also in 2013, a portion of lower Bear Creek along the north side of SR 520 was rehabilitated. The City's website includes the following project description: "*The Bear Creek Rehabilitation project will rehabilitate the lower, channelized part of Bear Creek starting at the Sammamish River and going upstream on Bear Creek to the Bear Creek enhancement work previously completed.*

*About 3,000 feet of Bear Creek will be completely relocated from the mostly straight, channelized "stream" to a meandering, reshaped and re-planted channel in the existing adjacent open space.*

*The project will establish stream buffers consistent with the City's Critical Areas Ordinance with allowance for the Washington State Department of Transportation (WSDOT) "Stage 3" widening of the SR520 freeway adjacent to Bear Creek. The existing asphalt path will be relocated and augmented with a soft-surface parallel path and "side-routes" that will allow people to walk over to the stream and to view and interact with (a much improved) Bear Creek.*

*The rehabilitated overbank areas will address flood conveyance issues and will provide other habitat improvements." (City of Redmond website, accessed January, 2015).*

### **2.3.3 Other Identified Salmon Habitat Projects in the Project Vicinity**

The 2014 WRIA 8 Three Year Work Plan – Capital Project and Program Priorities, listed the following as high priority projects either directly on the bank site (N-208; N-209; N-211; N-212) or in the immediate vicinity of the proposed bank site<sup>4</sup>:

- North Lake Washington (NLW) Tributaries Riparian Restoration (N-206): Riparian restoration and invasive removal in reach. Sponsored by City of Redmond, listed at \$25,000.00, completion date of 2010 shown).
- Avondale Road to Evans Creek Confluence (Reach 4): N-208 – Evans/Bear Creek Restoration – In-channel restoration through the former dairy farm (Reaches 4 and 5).
- Avondale Road to Evans Creek Confluence (Reach 4): N-209 – Install buffer strips to reduce fine sediments (Reaches 4 and 5).
- Evans Creek Confluence to trailer park (Reach 5): N-211 – Evans/Bear Creek Restoration: In-channel restoration through the former dairy farm (spans Reaches 4 and 5).
- Evans Creek Confluence to trailer park (spans Reaches 4 and 5), N-212 – Install buffer strips to reduce fine sediments (spans Reaches 4 and 5).
- Ron Regis Park Acquisition and Protection (N-213): Protect habitat in Reach 4: Protect existing riparian habitat, instream habitat conditions and extensive LWD in reach. Sponsored by King County, \$200,000.00. Completion date of 2013 shown.

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<sup>4</sup>The 'N' numbers following each project are designated by the Approved 2014 WRIA 8 Three Year Work Plan.

- Riparian restoration in Friendly Village (N-214): Adopt-a-stream, City of Redmond, and King County collaborated on a channel enhancement immediately upstream of the bank site project stream reach of Bear Creek in 2012.
- Reduce/Remove Bank Armoring and Restore Riparian Vegetation at NE 95<sup>th</sup> Street (N-215A): Remove existing bridge abutments and rip-rap, create a more natural channel configuration, and plant native riparian vegetation. Likely date (2017).
- Bear Creek Forest Cover Protection (N-216): Acquire forest property, development rights, conservation easements and provide enhanced incentives to retain and plant forest area environments. This is an on-going effort sponsored by King County.
- Sammamish River Tributary Mouth Restoration (N-339; N-346): Feasibility and design study for each of the tributary mouths in the Sammamish River, including Bear Creek (\$150,000.00 likely sponsor King County, listed as likely end date of 2015).
- Evans Creek Relocation (N-432A): Relocate Evans Creek to its historic channel, east of its current location. Protect and restore channel complexity, floodplain connectivity; restore riparian vegetation; protect and restore water quality. Sponsored by City of Redmond, 2018.

Numerous other projects, designated as ‘tier 1’, or highest priority, are listed throughout the Bear Creek watershed, further emphasizing the holistic, watershed-based approach taken by the City and regional salmon recovery partners. It is important to see the proposed bank site as one of many high priority restoration projects which, implemented together, are intended to ensure long-term sustainability of the watershed and the resources that it supports. While many of the projects listed in the three year work plan are funded by public entities, HB is providing the funding to implement, manage and maintain the proposed bank site.

### **Chapter 3. BANK SITE SELECTION**

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As noted above, bank site restoration is consistent with the Chinook Salmon Conservation Plan’s designation of the site as a Core Chinook Area (CSCP, 2005). In addition to the salmon recovery plan, other regional landscape-based planning support tools, such as the Puget Sound Watershed Characterization model, jointly developed by Ecology, WDFW, and the Puget Sound Partnership, were consulted with respect to watershed-based approaches to site selection. The Puget Sound Watershed Characterization is a GIS-based model that identifies and prioritizes areas on the landscape that are most suitable for restoration, protection, conservation, or development based on a variety of existing ecological considerations. The Puget Sound Watershed Characterization model identifies the lower Bear Creek reach as High Priority Restoration area. While the model is not intended to be used to guide site-specific restoration designs, it can be used to identify areas for management. In this case, restoration of the site as a mitigation bank is consistent with the recommendations from the Puget Sound Watershed Characterization model.

The City’s Watershed Management Plan is a scientifically based approach to prioritizing and protecting the natural resources of the City based on driving ecological processes. As is noted on the City’s web site:

*“Redmond values its natural resources, and has completed 45 stream restoration projects, covering 55 acres over the past 15 years. The objective of the projects is to restore habitat (critical areas) to provide the necessary function to support healthy native fish, wildlife and vegetation. Projects examples include: restoring riparian conditions by removing invasive plants and planting native vegetation, removing artificial barriers to fish migration (like undersized*

*culverts), installing large woody debris (LWD) to enhance fish habitat, and re-locating stream channels to more-natural courses.”*

The City's WMP identifies a hierarchical approach to process-based restoration which seeks to prioritize actions to restore driving ecological processes, such as hydrology, followed by restoring ecological structure and function, which leads to habitat restoration. The ultimate goal is to increase stream and riparian biological diversity and sustainability (WMP, 2013a). However, in order to be most successful, restoration actions must first be focused at restoring driving ecological processes that support the riparian system, such as hydrology. The WMP presents specific rehabilitation strategies for each surface water within the City's jurisdiction, by reach. Bear Creek is designated as a Class I stream by the City of Redmond (RZC 21.68), and as a Highest Restoration watershed in the City's Watershed Management Plan (WMP, 2013a). The reach of Bear Creek on which the bank site is proposed is identified as Bear Creek (BC) 5 to its confluence with Evans Creek, and BC 4 from its confluence with Evans Creek to Avondale Road. Because the Watershed Management Plan is intended to guide City management actions, many of the specific rehabilitation strategies are directed at City activities, such as street cleaning, or water quality monitoring activities undertaken by the City. Clearly, these activities are beyond the scope of this Prospectus, although it is important to note that such activities support and contribute to long-term site sustainability. However, many of the rehabilitation strategies are also directly relevant to bank site conceptual design. Specifically, the WMP identifies relocating and/or reconnecting the creek, its tributaries, riparian wetlands and floodplain, as well as adding in-stream complexity and restoring buffers on the site.

In summary, restoration of the proposed bank site is based on landscape and watershed considerations, and a holistic, scientifically based approach to watershed management. This is reflected in the fact that all of the regional and local planning documents specifically identify and support restoration of the proposed bank site. Existing site conditions, and a proposed conceptual design consistent with the above planning guidelines and regional restoration goals are discussed in more detail below.

## **Chapter 4. EXISTING AND PROPOSED CONDITIONS**

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Existing conditions at the proposed mitigation bank site are summarized below. Site conditions have not changed significantly since HB's initial Prospectus submittal in 2008, except that different types of crops have been grown at various locations on the site and a new water line easement has been placed on the property. The site has been in continuous agricultural use since 2008 (and throughout much of the preceding century) and recently portions of the property were rented out to row crop farmers on an annual basis. These activities have created a significant amount of waste and garbage that was left across the site, as well as altered hydrology and introduced exotic and/or invasive plant species which must be cleaned up prior to any restoration activities occurring on site.

### **4.1 Site History**

The lands in the vicinity of Lake Sammamish are known to have been heavily used by native peoples prior to European settlement and are within the traditional territory of the Sammamish people (NWAA 2009). The Muckleshoot Indian Tribe maintains Tribal Treaty Rights in the area, and the Snoqualmie Tribe has also been involved in riparian restoration sites in the area. In addition, the Duwamish, Stillaguamish, and Tulalip Tribes have an interest in projects in the area. More detailed ethnographic information for the project will be included in a cultural resources survey which will accompany the project's basis of design report.

The site is a portion of land that was claimed by Morris Keller in 1889 as part of the Homestead Relocation Act (as cited in NWAA, 2009). The Keller family owned the proposed bank site property through early 2015, at which time they sold the property to the City of Redmond.

During much of the Keller family ownership, the site was managed as a dairy farm. As part of site management, Bear Creek, which used to flow across the site to the north of its current location, was ditched and moved south, to its current channel. The site was extensively tilled, ditched, and drained to allow for better farm use. The dairy ceased operations in the 1980's, and portions of the site have been used until recently to grow crops, such as cut flowers and vegetables.

During the early part of the 20<sup>th</sup> century, the hillside west of Avondale Road was logged, and logs were floated from the Keller Farm downstream to the Sammamish River by way of a constructed canal and splash dam logging where water was diverted from Bear Creek, routed westward toward Avondale Road, and then southwesterly through the ditch that presently exists parallel to Avondale Road. The canal was filled in near Bear Creek, presumably upon completion of the logging operations. The remnant canal remains as one of the farm field ditches.

During the period when the dairy was in operation, cattle crossed Bear and Evans creeks by wading from bank to bank. Bank erosion was severe due to these continual crossings and also from unrestricted access to the streams for watering. Drainage ditches on the property were constructed in the early part of the twentieth century, and have been maintained periodically to the present time. Sub-surface drainage was also installed during the early days of the dairy operation, and many of these drain tiles are currently functional. Note the many ditches and drain tiles visible on the property from the aerial photograph in **Figure 3**.

During 2011/2012 the City of Redmond permitted and installed a water main which runs north to south across the site. The location of water main is shown in **Figure 3**.

Because of the City of Redmond's desire to see the Keller Farm restored through a mitigation bank project and the completion of their connector trail through the property, the City purchased the property from the Keller family in 2015. HB has a contract with the City as the bank's Sponsor to manage the bank's permitting and development process through all phases of the mitigation banking process.

#### **4.2 Land Use**

During the initial wetland mitigation bank proposal in 2008, the City of Redmond changed the zoning of the land to allow for the establishment of a wetland mitigation bank project on site. Although the original proposal did not result in the establishment of a wetland mitigation bank, the zoning remains in place to allow for the establishment of a mitigation bank. The site was farmed under lease agreements through the fall of 2014. The City of Redmond purchased the property from the Keller family in 2015. Farming activity on site has ceased, and the farm equipment and associated structures (e.g. hoop houses to extend cut flower production) are being removed from the property. HB has been contracted by the City to work with the Inter-Agency Review Team (IRT) to permit, maintain, and manage a wetland and conservation bank on the site.

While the property was farmed for row crops, the typical agricultural use of the fields west and north of Bear Creek included cut flowers, pumpkins, corn, and other vegetables. The portion of the site that was not farmed is dominated by a variety of weedy herbaceous species. Continuous disturbance of the fields and ditches has resulted in a dominance of invasive herbaceous species on the site. Some woody plant species, primarily deciduous shrubs and small trees, occur streamside and along the farm ditches.

#### **4.3 Present Extent of Wetlands**

The present extent of wetland acreage on the site is not confirmed at this time, as it is based on changing farm maintenance practices from year to year, which have likely changed hydrologic influences since the 2008 wetland mapping performed by Talasaea Consultants, Inc. The boundaries of the wetlands on site in 2008 were never confirmed through an approved

delineation by the agencies with jurisdiction. As a result, the information presented here on wetlands is provided to give a general idea of wetland area, and will be supplemented by updated data and a wetland delineation report through the mitigation bank permitting and review process.

Extensive hydrologic monitoring was undertaken from 2005 to 2007 to support a future wetland delineation by the regulatory agencies under the original Prospectus submitted by Habitat Bank (Talasaea Consultants, April 2007). Field investigations and hydrologic monitoring undertaken from 2005 to 2007 preliminarily identified wetland hydrology in numerous depressions within the agricultural fields, which were continually disturbed and altered by ongoing farming activities. Total wetland acreage estimated to be present on the site in 2008 was approximately 23 acres, as shown on **Figure 3 and 5<sup>5</sup>**.

Based on extensive knowledge of the site's hydrology and site geology gained from this previous work, the project team anticipates establishing a grid of shallow piezometers on site to monitor ground water levels on site. Based on this monitoring data, a wetland delineation will be undertaken to document the extent of existing wetlands.

The entire proposed bank site is located within the 100-year floodplain of Bear Creek. Soils on the majority of the bank site have been mapped as Puget silt clay loam, a hydric soil, which indicates a high probability of historic wetland conditions over much of the site (**Figure 4**).

Because of its landscape location at the confluence of two streams, in a relatively broad alluvial floodplain, it is likely that much of the proposed bank site was historically a complex and dynamic braided stream and wetland floodplain prior to disturbance; certainly the presence of peat deposits on site is indicative of historic wetland area, and gravel deposits consistent with the historic stream channel remain on site as well.

#### **4.4 Fish Habitat**

Bear and Evans Creeks support salmonid populations including Chinook, coho, sockeye, steelhead, kokanee, cutthroat and resident trout. Other native fish species such as dace and sculpin are also present (Talasaea, 2008). Mountain whitefish and lamprey, in addition to a variety of other fish species, have also been documented in the project vicinity (David Evans & Associates, 2014). The channels of Bear and Evans Creek within the bank site have been extensively modified over the years. Bear Creek historically entered the Sammamish River near the outlet of Lake Sammamish; the outlet of Bear Creek was rerouted in the 1920s and now discharges to the Sammamish River approximately 1.1 miles downstream of the lake outlet.

While Perrigo Creek has excellent water quality and flow characteristics in its headwaters, the creek currently provides minimal fish habitat. The habitat that is present is severely degraded as a result of historic ditching and ditch maintenance, as well as direct inputs of stormwater runoff from Avondale Road. It is currently piped throughout most of its length and daylighted on the bank site along the western property boundary.

#### **4.5 Water Quality and Stream Flow**

As noted above, Bear and Evans Creek are on the 2004 Washington Department of Ecology's (Ecology) 303(d) list for violation of dissolved oxygen (DO), temperature, and fecal coliform bacteria (FC) standards. Numerous ditches on the mitigation bank site have disconnected groundwater flow to the creeks. Reconnecting groundwater flows to Bear Creek would increase DO and summer base flow levels and likely decrease stream temperatures in the project area. One temperature modeling scenario indicated that an increase of approximately 5 cubic feet per

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<sup>5</sup> This acreage refers only to the area currently proposed as a bank, and therefore differs from the 2008 Prospectus information, which included additional proposed bank site area to the east.



second in Bear Creek's summer base flow could significantly reduce thermal stress for salmon in the Sammamish River (Sammamish River Corridor Action Plan, 2002.)

#### **4.6 Wildlife Habitat**

A wide variety of wildlife utilizes the proposed bank site including: deer, coyote, beaver, river otter, muskrat, voles, waterfowl, shorebirds, raptors, and passerines. Because of its size, corridor connectivity to adjacent undeveloped land to the east, and diversity of habitat types, the property supports a remarkable diversity and abundance of wildlife in an increasingly urban environment.

#### **4.7 Site Specific Restoration Goals**

Site design goals have been identified consistent with addressing limiting factors for chinook recovery, as identified in the Chinook Salmon Conservation Plan, and further refined through the City's WMP for the segment of Bear Creek on which the bank site is located. Restoration goals on the bank site include the following:

- Re-establish wetland hydrology on site by disabling ditches and drain tiles.
- Re-establish wetland vegetation and wetland habitat communities on site through planting.
- Reconnect Bear Creek to its floodplain.
- Re-establish Perrigo Creek within its floodplain by creating a wetland-channel complex through which Perrigo Creek can flow onto the site, contributing to restored wetland hydrology on site.
- Re-establish channel complexity on site for both Bear Creek and Perrigo Creek by adding large woody debris to the newly created channels to create pools and in-channel complexity.
- Restore riparian vegetation throughout the site (both along newly created channels as well as along existing channels, which are lacking in riparian cover and complexity).
- Establish off-channel rearing and refuge areas for salmonids.
- Increase on site habitat structure, function, and complexity for fish and wildlife on site.

Site design must also include the following:

- Establish a trail through the southern portion of the site to connect the City of Redmond's trail system.
- Protect an existing water main that runs through the site.
- Accommodate a 60-foot-wide corridor along the east side of Avondale Road to allow for future roadway, stormwater management, and trail improvements.

#### **4.8 Conceptual Site Design**

The project design will be further developed in consultation with the IRT, and regional stakeholders, after adequate analysis of the site has occurred through the collection of existing conditions data and the formulation of a basis of design report. The initial data collected on the site, combined with previous experience on this site and in similar projects and an understanding of watershed goals in this location has contributed to the conceptual restoration design of the site identified in **Figure 5**. As the project progresses, these design concepts may

be altered or refined to account for a more thorough understanding of site conditions, or, to incorporate other design goals and objectives as they arise.

#### **4.9 Wetland Restoration**

A variety of wetland habitat types will be re-established within the project area, using a process-based approach to restoration design. The hydrology of the bank site has been severely altered by historic farming activities, as noted above. The restoration design will re-establish wetland hydrology on site by disabling the existing drainage ditches and drain tiles which were installed to drain the site to facilitate farming. The ditches will be partially disabled, essentially imitating beaver dam structures to plug the ditches to the extent that they backflow and create overbank flow that will sheet flow across the site. Surface water on site will be allowed to flow naturally across the site, though prior to disabling the ditches, the site will be graded to create some micro-topography within the floodplain, both to allow for a variety of planting areas and elevations, and to allow for a mosaic habitat types to be restored within the floodplain. Also prior to disabling the ditches, the areas on site that have been extensively farmed will be ripped to a depth of 14 inches to break up the plow layer that has become established at approximately 8 inches sub-surface. Exact size and location of the micro-topography, as well as how the ditches will be disabled, and how the water will be allowed to flow across the site will be based on hydraulic modeling and will be presented as part of the basis of design report.

The restored floodplain wetlands will comprise a mix of wetland vegetation classes intended to re-establish the dynamic nature of the riparian floodplain environment – primarily a mix of riverine forested and scrub-shrub wetlands. Wetland restoration activities within the floodplain will intertwine a complex of stream channel and riparian habitat area with wetland re-establishment and rehabilitation actions which will result in an increase in fish and wildlife habitat, and improvements in water quality and water quantity within the project area. Wetland restoration will address site and basin specific goals. In addition, site restoration will benefit Chinook salmon and other anadromous fish in the watershed by restoring off-channel rearing and refuge habitat, and re-establishing floodplain connectivity between those wetlands and adjacent riparian areas, in addition to restoring hydrologic functions such as improving base flow support, reducing water temperatures, improving water quality, and reducing sediment loads. Wetland habitat restoration goals are to restore wetland hydrology and replant wetland areas to provide improved habitat function for fish and other animals such as native amphibians that use the site for breeding, and the adjacent uplands and riparian areas for overwintering and cover. Improved wetland connection to off-channel rearing areas within the riparian zone will provide additional habitat for juvenile salmonids during rearing and the out-migration period of their life cycles, and will also provide off-channel refuge to adult salmon returning to spawn.

Invasive species including reed canarygrass (*Phalaris arundinacea*), Japanese knotweed (*Polygonum cuspidatum*), Giant hogweed (*Heracleum mantegazianum*), non-native blackberries, and other non-native invasive species will be removed from the site by spraying or mechanized removal. Emergent wetlands and aquatic habitat and any other bare areas will be seeded with a native herbaceous species or native upland grasses as appropriate and native trees and shrubs will be installed to improve cover and diversity. Reference sites will be used as a general guide to plant selection on site, although it is anticipated that riparian areas on site will be planted with native conifers, such as spruce (*Picea sitchensis*) and cedar (*Thuja plicata*), to create lasting structure and function along the riparian zone. Standing snags, downed logs, and large woody material piles will also be installed throughout the creation and rehabilitation areas to improve habitat structure and function. Coniferous and deciduous trees as well as various shrubs will be planted in the wetland and riparian areas to provide shade, cover, and increase allochthonous input to the surface waters on site.

#### 4.10 Riparian Habitat Restoration

It is anticipated that portions of the floodplain will be graded to create off-channel rearing and refuge areas from the mainstem of Bear Creek. Exact locations of the channels will be based on site conditions, and will reflect hydrologic modeling and considerations of subsurface geology, the location of the water main on site, and the proposed trail location across Bear Creek. The channels will be graded to minimize the risk of fish stranding. Channels will be heavily planted with native shrubs to prevent erosion and scour. Logs with root wads and other large woody material will be placed at the outlets to further protect from erosion and scour and provide channel complexity. Trees will be planted around the perimeter to provide shade and help regulate temperature. The off-channel areas will provide needed refuge and rearing habitat for juvenile salmonids. They will also provide refuge for adults migrating upstream during spawning.

### Chapter 5. PROPOSED SERVICE AREA AND PROJECT NEEDS ANALYSIS

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#### 5.1 Proposed Service Area

The IRT in consultation with the bank sponsor determines each mitigation bank's service area. Consistent with both federal and state rules, the proposed service area for the Keller Farm Mitigation Bank includes all portions of WRIA 8 up to an elevation of 2500 feet, down to the locks of the Lake Washington Ship Canal (**Figure 6**). This service area is watershed based, in that drainages below this elevation were formed under similar geologic conditions, and share similar physical and biological characteristics, which in turn support similar habitats and species to the proposed bank site. Puget Lowland streams also share similar vegetation types and support similar aquatic resources below 2500 feet in elevation. Excluded from the proposed service area are the rocky alpine headwaters, as well as drainage areas that are significantly influenced by rain-on-snow-driven flooding events. Therefore, the proposed service area is ecologically based on an analysis of a watershed area which shares similar geomorphological, physical, and biotic conditions of the larger Cedar/Lake Washington/Lake Sammamish watershed. The proposed restoration design meets all of the highest priority restoration actions of the 2005 Chinook Salmon Conservation Plan, and proposes to combine nearly 100 acres of habitat protection, wetland restoration, floodplain connectivity, channel complexity and increased riparian vegetation. If ecologically successful, implementation of bank site restoration will contribute significantly to these regional restoration goals. In particular it is worth noting that the wetland restoration goal for the entire Cedar/Lake Sammamish/Lake Washington watershed is 69 acres. Successful restoration of riparian wetlands at the bank site are likely to approach 100% of that goal. Attainment of these priority regional watershed goals through bank site restoration further emphasizes the significance of restoring a relatively large site within a heavily urbanized area, contiguous to other open space within the area, but also in close proximity to the highest potential credit demand. Credits would be available to offset impacts to freshwater wetlands and aquatic resources, and other permitted critical area impacts such as impacts to critical area buffers and to salmonid habitat within the service area.

As previously noted, WRIA 8 is the most densely populated watershed in Washington State. Approximately 55 percent of the land area in WRIA 8 lies inside designated Urban Growth Areas (CSCP, 2005). Approximately 85 percent of WRIA 8 lies within the boundary of King County, the most populous county in Washington. The northernmost 15% is in rapidly urbanizing Snohomish County (Lake Washington / Cedar / Sammamish Watershed Near-Term Action Agenda for Salmon Habitat Conservation, August 2002).

The proposed bank site is in close proximity to urban and urbanizing areas. Wetland and stream habitat conditions within many individual basins in WRIA 8 have been degraded by impacts associated with urban development. Many future development projects, whether publicly or privately sponsored, will likely affect wetland, buffer or stream habitat as any new building occurs. Possible users of the proposed mitigation bank include: WSDOT, Puget Sound

Energy, King and Snohomish Counties, the City of Redmond and all other Cities within the service area, residential lot owners with reasonable use exceptions, and private development projects. The bank may also be an option for regulators looking for appropriate mitigation for shoreline violations in Lake Washington and Lake Sammamish. The demand for wetland mitigation is high in WRIA 8 due to extensive development. The availability of a large mitigation site with a high probability of success for restoring wetland and stream habitat functions and larger scale landscape and watershed processes, such as floodplain and groundwater connectivity, is extremely limited. Former wetland areas within WRIA 8 that have been converted to agricultural production districts, such as most of the central Sammamish River Valley, are not eligible to be used for mitigation. For these reasons, a successful mitigation bank project developed in this location would provide a superior option to other potential compensatory mitigation projects that would occur in the watershed. The bank would be an additional tool for offsetting unavoidable wetland, buffer, and other aquatic resource impacts in the watershed, when the permitted impact is unavoidable and no other suitable options exist.

A conservation credit and ESA service area for salmonids has not yet been developed, but will be developed in consultation with NOAA Fisheries and other involved stakeholders including input from tribal communities that have interests within the Lake Washington-Cedar River Watershed.

## **5.2 Project needs**

The bank site is an ideal location for a mitigation bank within WRIA 8. The site has the potential for significant wetland re-establishment and rehabilitation, as well as the ability to significantly improve both in-stream and riparian conditions within the site for anadromous and resident fish species. It is a relatively large restoration project within the urban area, and because the site was a historic stream and wetland complex, restoring the site has a high probability of ecological success that is sustainable in the long term.

The KFMB will help restore and protect riparian connectivity of Bear and Evans Creeks within the Lake Washington-Cedar/Sammamish Watershed, in conjunction with other habitat restoration projects occurring within the basin and watershed. Due to increased development pressures within the Lake Washington-Cedar/Sammamish Watershed as a whole, fish and wildlife habitat has been depleted and compromised. With the anticipation of continued growth in WRIA 8, watershed planning documents have encouraged local jurisdictions to protect and prioritize high quality habitat restoration projects within developing areas. Restoration of stream, riparian, floodplain, buffer and wildlife habitat at the proposed bank site would help reverse some of those effects of development impacts such as aquatic habitat loss, increase of impervious surfaces and loss of hydrologic processes that are increasing water temperatures in the basin.

## **Chapter 6. SITE PROTECTIONS**

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The proposed bank project will be protected under a conservation easement or similar restrictive covenant approved by the IRT. Habitat Bank will maintain and monitor the bank throughout the development and establishment period of the project, at which time site maintenance and monitoring will revert to an approved third party entity or the City of Redmond. As part of bank site establishment, Habitat Bank will fund an endowment account to ensure that the site is monitored for conservation easement compliance in perpetuity and that there are annual funds for basic site maintenance in perpetuity. As part of the bank certification process, Habitat Bank will also post financial assurances to ensure that the project can be completed prior to any credits being released from the project site.

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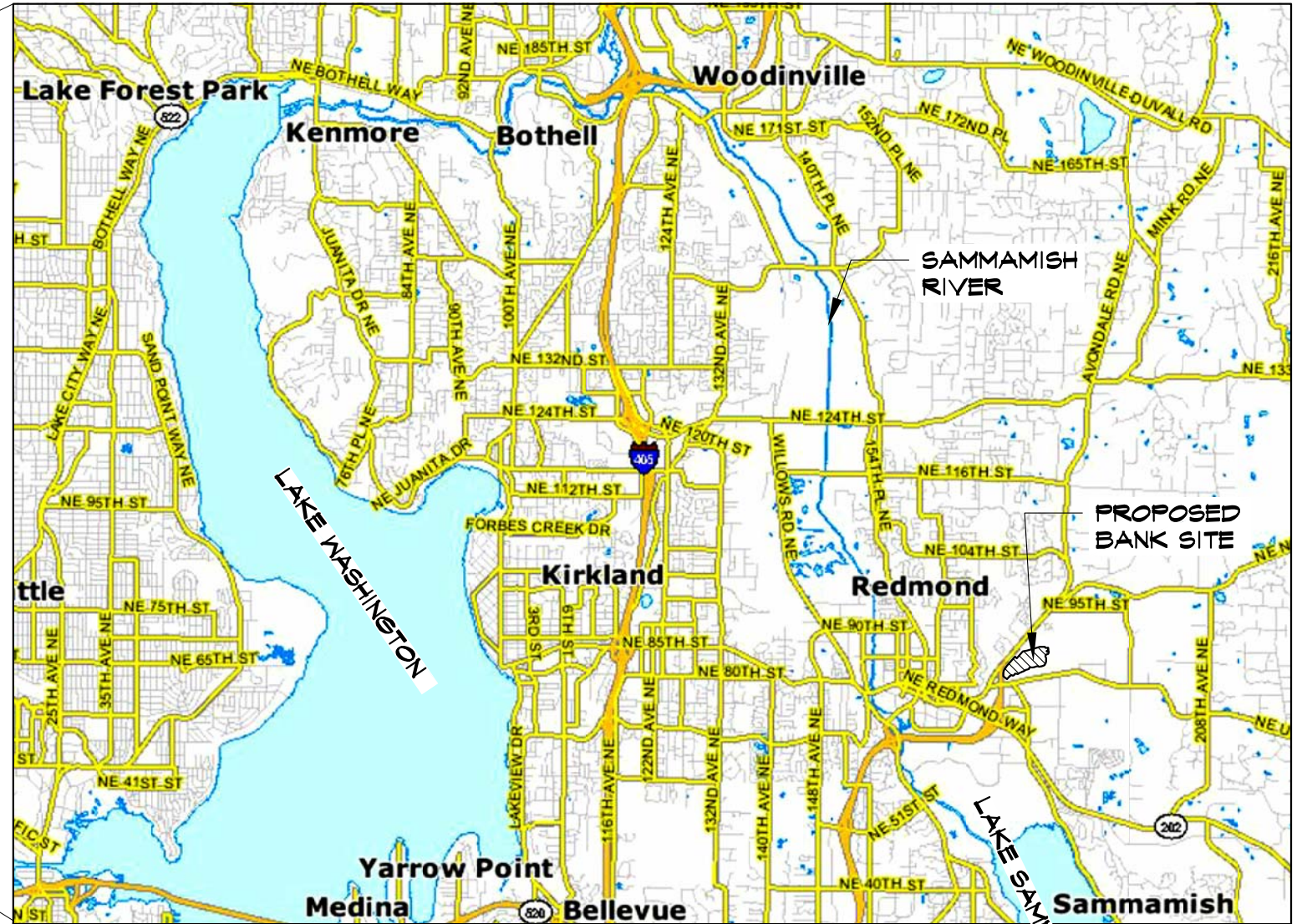
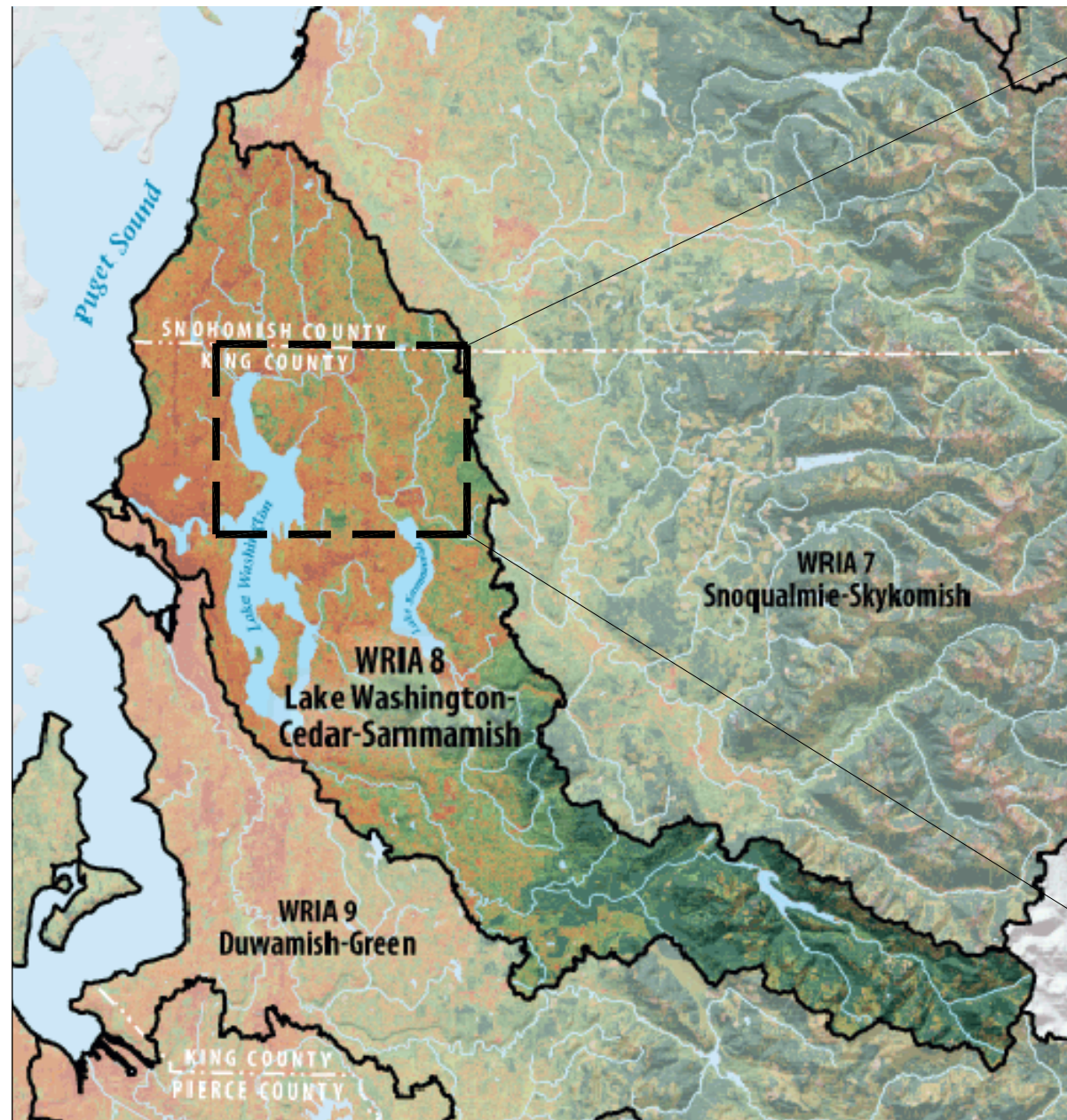


IMAGE SOURCE: KING COUNTY IMAP,  
[HTTP://WWW.KINGCOUNTY.GOV/OPERATIONS/GIS/MAPS/IMAP.ASPX](http://www.kingcounty.gov/operations/gis/maps/imap.aspx)  
 (ACCESSED 12 FEB 2015)

SOURCE: [HTTP://WWW.GOVLINK.ORG/WATERSHEDS/8/](http://www.govlink.org/watersheds/8/)



**TALASAEA**  
**CONSULTANTS, INC.**

Resource & Environmental Planning  
 15020 Bear Creek Road Northeast  
 Woodinville, Washington 98077  
 Bus (425)861-7550 - Fax (425)861-7549

FIGURE #1  
 VICINITY MAP  
 KELLER FARM MITIGATION BANK  
 REDMOND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	960D
SCALE		
NTS		
DATE		
2-27-2015		
REVISED		







IMAGE SOURCE: KING COUNTY IMAP,  
[HTTP://GISMAPS.KINGCOUNTY.GOV/IMAP](http://GISMAPS.KINGCOUNTY.GOV/IMAP) (ACCESSED 5/20/2015)

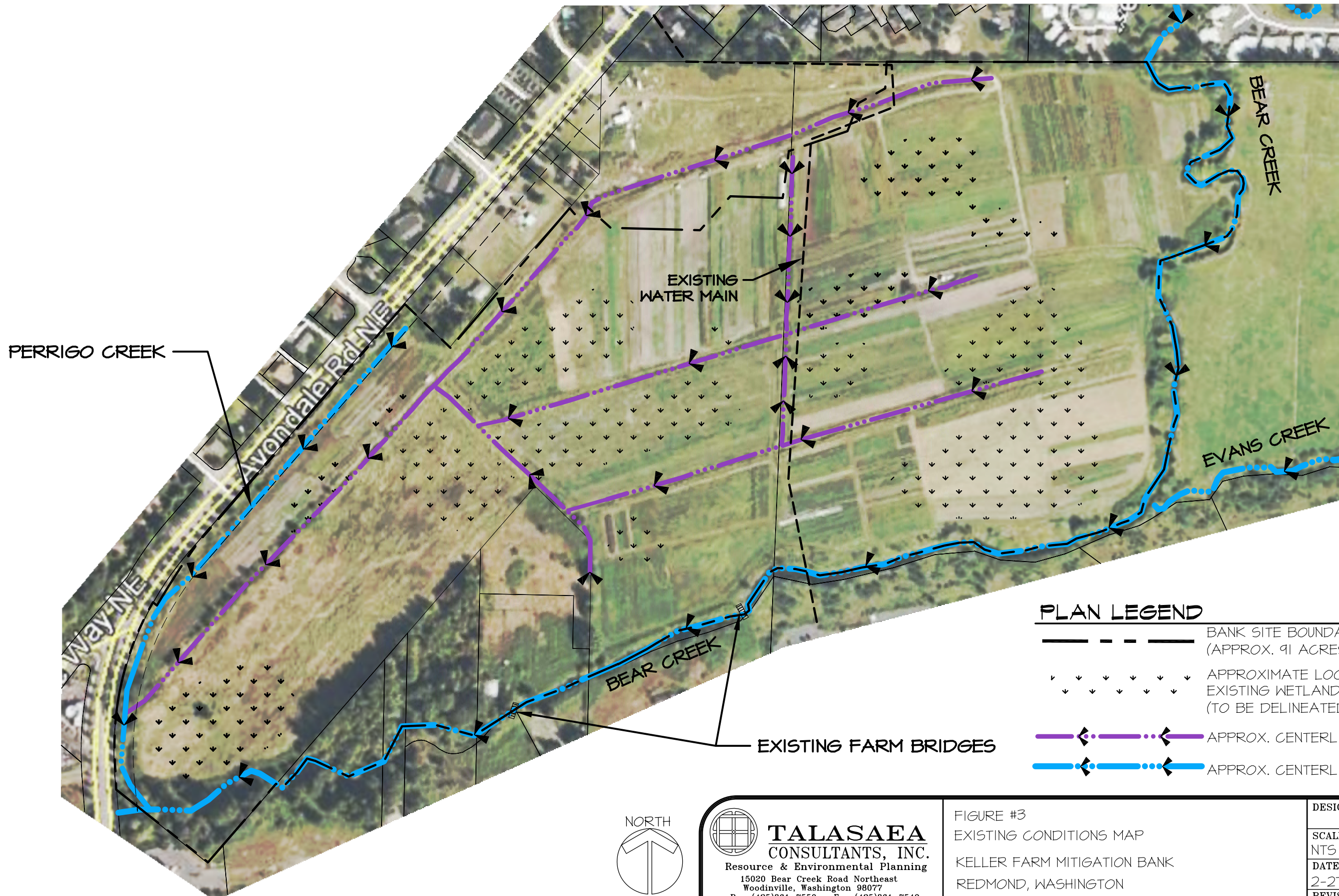

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FIGURE #2  
 PARCEL MAP  
 KELLER FARM MITIGATION BANK  
 REDMOND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	960D
SCALE		
NTS		
DATE		
2-27-2015		
REVISED		
5-20-2015		

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**PLAN LEGEND**





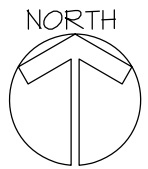
-  BANK SITE BOUNDARY (APPROX. 91 ACRES)
-  APPROXIMATE LOCATION OF EXISTING WETLANDS (TO BE DELINEATED IN 2016)
-  APPROX. CENTERLINE OF DITCH
-  APPROX. CENTERLINE OF STREAM

IMAGE SOURCE: GOOGLE EARTH; [HTTPS://WWW.GOOGLE.COM/EARTH/](https://www.google.com/earth/)



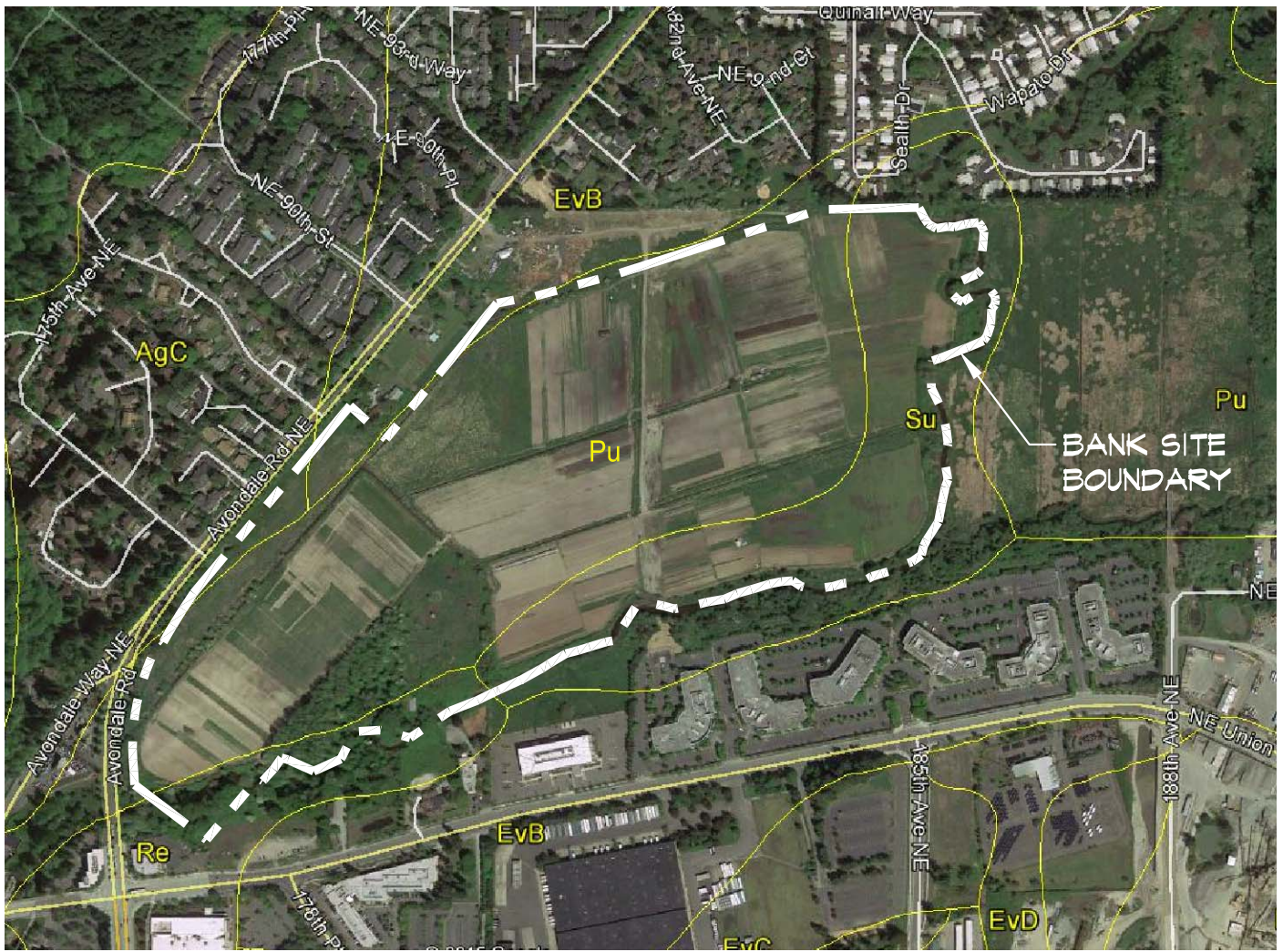
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FIGURE #3  
 EXISTING CONDITIONS MAP  
 KELLER FARM MITIGATION BANK  
 REDMOND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	960D
SCALE		
NTS		
DATE		
2-27-2015		
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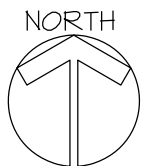


## LEGEND

TYPE DESCRIPTION, SLOPES

AgC	ALDERWOOD GRAVELLY SANDY LOAM, 6 TO 15 PERCENT SLOPES
EvB	EVERETT GRAVELLY SANDY LOAM, 0 TO 5 PERCENT SLOPES
PU	PUGET SILTY CLAY LOAM
RE	RENTON SILT LOAM
SU	SULTAN SILT LOAM

SOURCE: SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, WEB SOIL SURVEY. AVAILABLE ONLINE AT <http://websoilsurvey.nrcs.usda.gov/>. (ACCESSED 2-10-2015)



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FIGURE #4

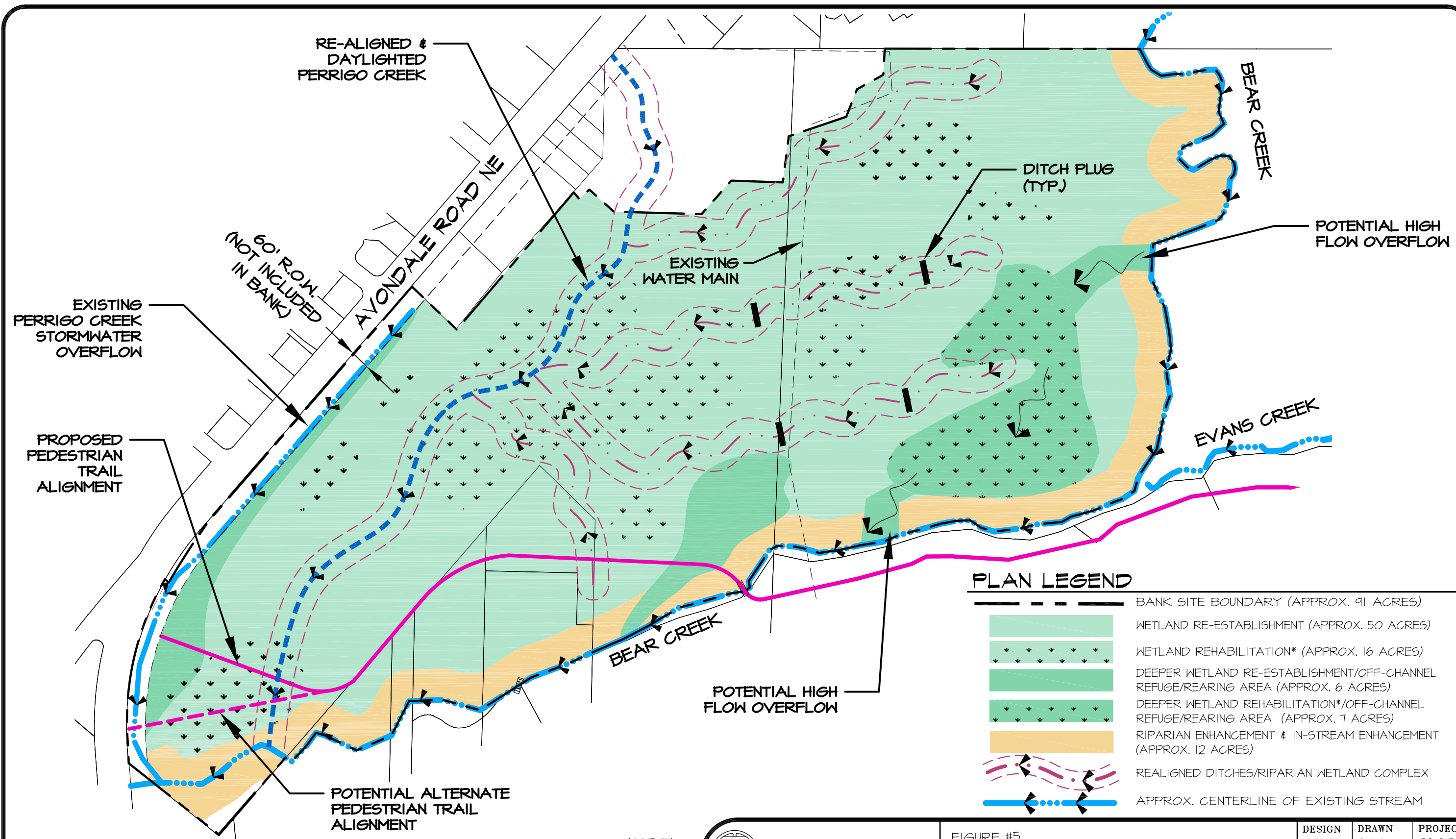
NRCS SOILS MAP  
KELLER FARM MITIGATION BANK

REDMOND, WASHINGTON









DESIGN	DRAWN	PROJECT
	ABS	960D
SCALE		
NTS		
DATE		
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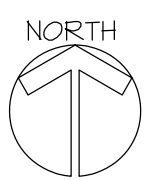




**PLAN LEGEND**

-  BANK SITE BOUNDARY (APPROX. 91 ACRES)
-  WETLAND RE-ESTABLISHMENT (APPROX. 50 ACRES)
-  WETLAND REHABILITATION\* (APPROX. 16 ACRES)
-  DEEPER WETLAND RE-ESTABLISHMENT/OFF-CHANNEL REFUGE/REARING AREA (APPROX. 6 ACRES)
-  DEEPER WETLAND REHABILITATION\*/OFF-CHANNEL REFUGE/REARING AREA (APPROX. 7 ACRES)
-  RIPARIAN ENHANCEMENT & IN-STREAM ENHANCEMENT (APPROX. 12 ACRES)
-  REALIGNED DITCHES/RIPARIAN WETLAND COMPLEX
-  APPROX. CENTERLINE OF EXISTING STREAM

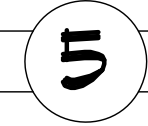
\*NOTE: EXISTING WETLANDS ACREAGE AND WETLAND REHABILITATION AREAS ARE BASED OFF OF A 2008 ESTIMATE FOR WETLAND ACREAGE ON THE SITE. A WETLAND DELINEATION WILL BE PERFORMED ON THE SITE IN 2016 TO DETERMINE THE CURRENT AND CORRECT AMOUNT OF EXISTING WETLAND AREA



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FIGURE #5  
 CONCEPTUAL BANK SITE DESIGN  
 KELLER FARM MITIGATION BANK  
 REDMOND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	960D
SCALE		
NTS		
DATE		
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REVISED		
5-20-2015		



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**Legend**

- Developed Areas**
  - City Center & Rock
  - Industrial & Commercial
  - High Density Urban
  - Medium Density Urban & Suburban
  - Bare Ground/Clearcut
- Vegetation**
  - Grass
  - Scrub & Shrub
  - Deciduous Forest
  - Mixed Forest
  - Conifer Forest
- Other**
  - Open Water
  - Bare Rock
  - Shadow
  - WRIA Boundary
  - County Boundary

SERVICE AREA BOUNDARY (WRIA 8 BOUNDARY)

SOURCE:  
[HTTP://WWW.GOVLINK.ORG/WATERSHEDS/8/](http://www.govlink.org/watersheds/8/)



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FIGURE #6  
 PROPOSED BANK SERVICE AREA  
 KELLER FARM MITIGATION BANK  
 REDMOND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	960D
SCALE		
NTS		
DATE		
2-27-2015		
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