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# PROSPECTUS FOR LAKE WASHINGTON- SAMMAMISH WATERSHED MITIGATION BANK

**KELLER FARM  
REDMOND, WASHINGTON**

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*and*

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5 January 2008



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## **1.0 INTRODUCTION**

Habitat Banc NW, LLC of Woodinville, Washington, (HBNW) proposes to develop the Lake Washington-Sammamish Watershed (LWSW) Mitigation Bank on approximately 117 acres of land within the city limits of Redmond, Washington. This property is also known as the “Keller Farm”. The proposed wetland mitigation bank would be a private entrepreneurial bank managed by Habitat Banc NW, LLC.

The Lake Washington-Sammamish Watershed Mitigation Bank is located within the Bear Creek Basin of Water Resource Inventory Area (WRIA) 8, the Lake Washington-Cedar/Sammamish Watershed (**Figures 1 and 2**). The bank site encompasses approximately 4500 feet of Bear Creek, the lower 1000 feet of Evans Creek to its confluence with Bear Creek, Perrigo Creek, and surrounding farmed fields, pastures, and existing wetlands (**Figure 3**). Bear Creek joins the Sammamish River approximately 1.1 miles downstream of its origin from Lake Sammamish. The Sammamish River is a tributary to Lake Washington. Bear and Evans Creeks support salmonid populations including chinook, coho, sockeye, steelhead, kokanee, sea-run cutthroat and resident trout.

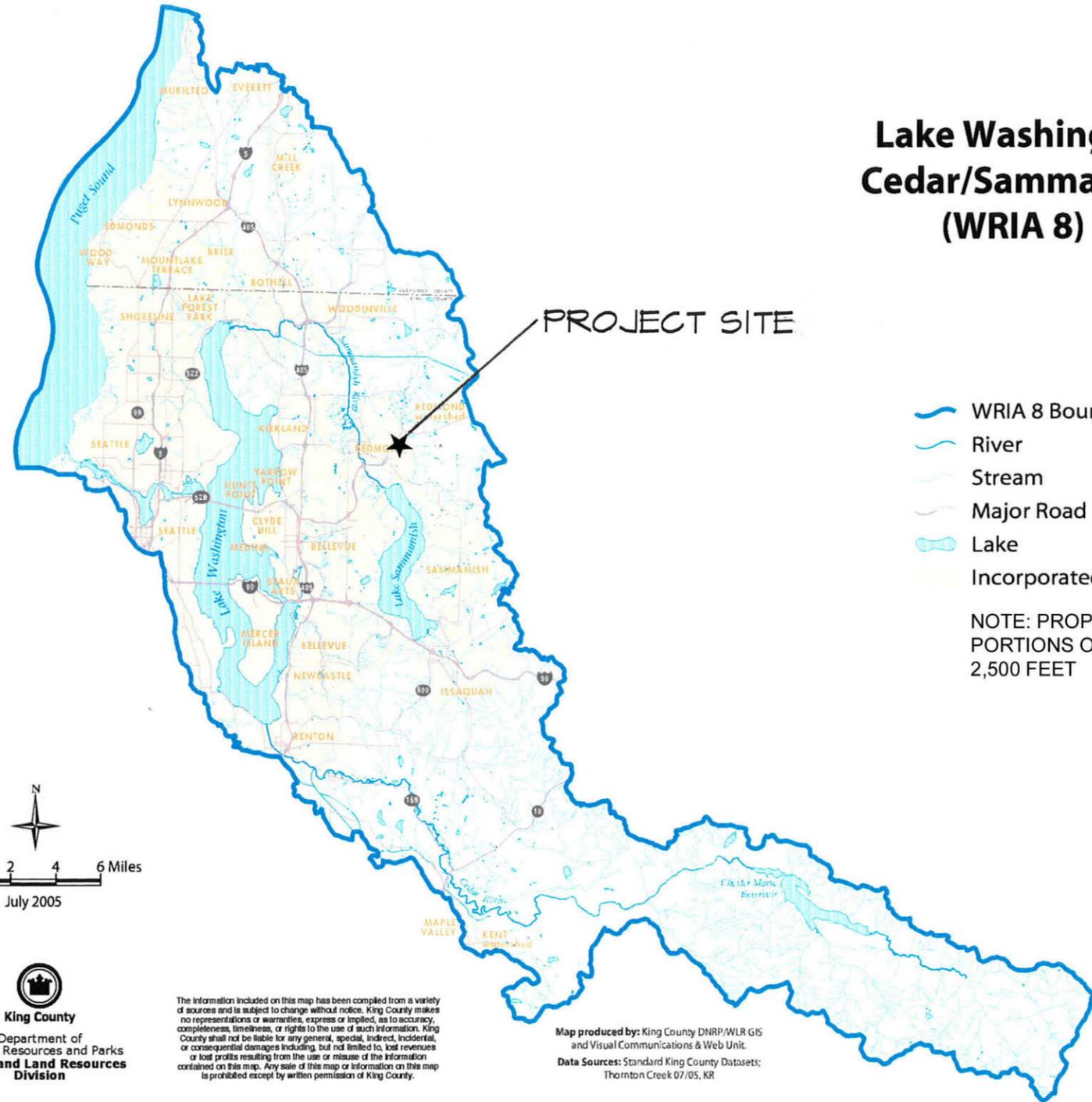
Habitat Banc NW proposes to generate wetland mitigation bank credits by restoring, enhancing, creating and preserving wetlands located on approximately 117 acres of the Keller property. Stream, riparian, floodplain, buffer, wildlife habitat and surface water quality would all be concurrently improved. Credits generated from wetland mitigation would be available for use in portions of WRIA 8 to offset impacts to freshwater wetlands.

## **2.0 WETLAND MITIGATION BANKING REGULATIONS, POLICY GUIDANCE AND ESTABLISHMENT**

Wetland mitigation banking has been in practice nationally since the early 1990s. Several private wetland mitigation banks, including the Snohomish Basin Mitigation Bank, operated by Habitat Bank, LLC, have been established in Washington State since 2001. Several rule, policy and guidance documents govern the establishment of mitigation banks in Washington State. Federal agencies with regulatory authority over wetland permitting issued Federal Guidance in 1995 on the establishment, use and operation of wetland mitigation banks (Federal Register: Vol. 60, No. 228). Further federal rules were proposed in March 2006 (Federal Register: Vol. 71, No. 59).

In 1998, the Washington State Legislature adopted Chapter 90.84 RCW, “Wetlands Mitigation Banking”, which recognized mitigation banking as an important tool to compensate for wetland impacts in the state. This law directed the Washington State Department of Ecology (Ecology) to develop and adopt rules for a statewide wetland mitigation banking certification program. Ecology issued a Draft Rule on Wetland Mitigation Banking in Washington State (WAC 173-700) in 2001 (Driscoll and Granger, 2001). Although the draft rule has yet to be adopted, this mitigation banking proposal for the Lake Washington-Sammamish Watershed Bank will comply with the guidance outlined in the 2001 draft rule and with interagency wetland mitigation policies and

# Lake Washington/ Cedar/Sammamish (WRIA 8) Base



**King County**  
Department of  
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**Water and Land Resources  
Division**

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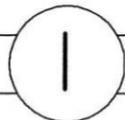
Map produced by: King County DNRP/WLR GIS and Visual Communications & Web Unit.  
Data Sources: Standard King County Datasets; Thornton Creek 07/05, KR

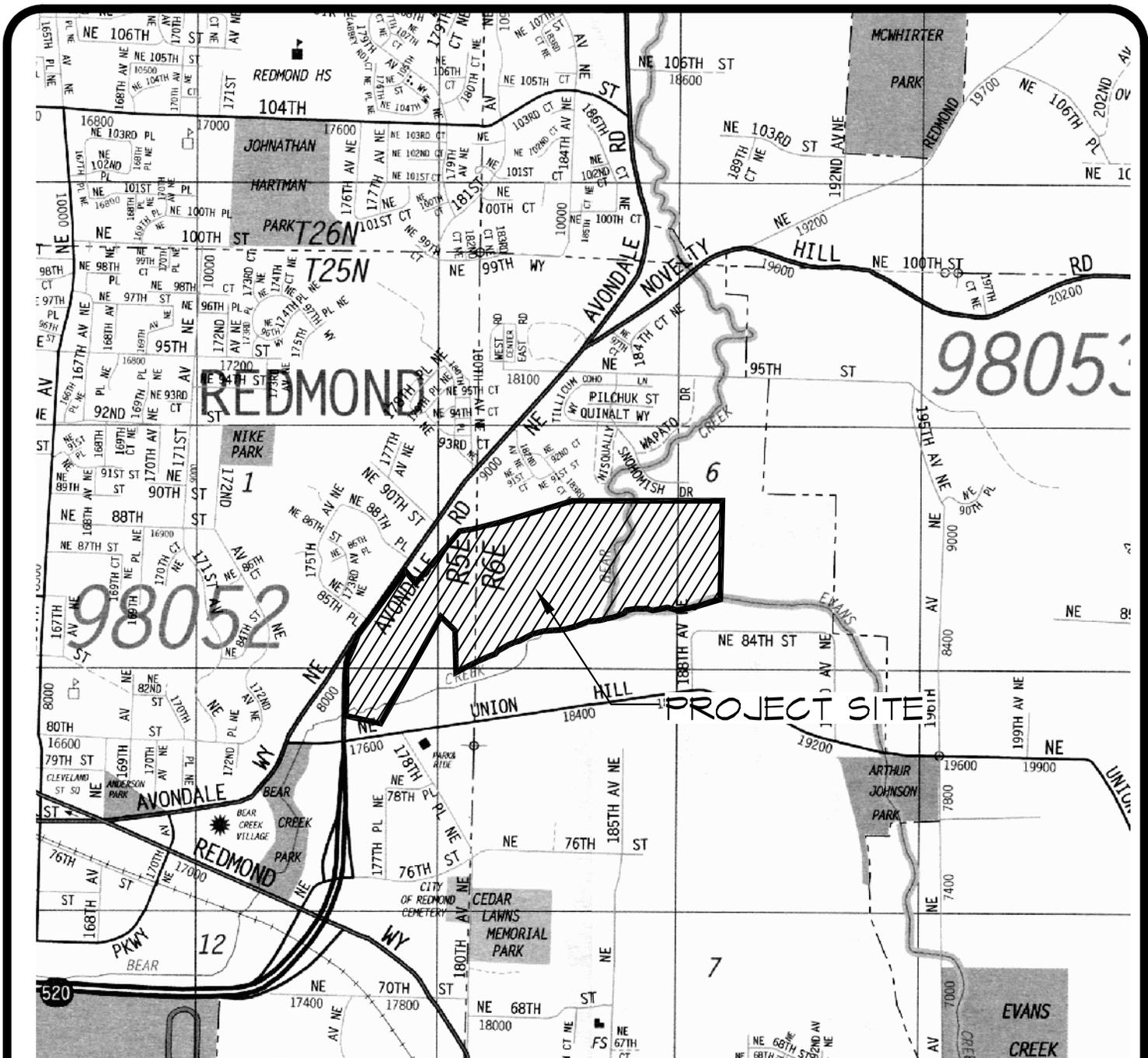
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FIGURE #1  
PROPOSED SERVICE AREA  
LAKE WASHINGTON - SAMMAMISH  
WATERSHED MITIGATION BANK SITE  
REDMOND, WASHINGTON

DESIGN JW	DRAWN JL	PROJECT 960B
SCALE NTS		
DATE 5-24-07		
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SOURCE: THE THOMAS GUIDE 2005; METROPOLITAN PUGET SOUND.



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FIGURE #2

VICINITY MAP

LAKE WASHINGTON - SAMMAMISH  
WATERSHED MITIGATION BANK SITE

REDMOND, WASHINGTON

DESIGN JW	DRAWN AC	PROJECT 960B
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SCALE NTS
DATE 5-24-07
REVISED

2



TOTAL APPROXIMATE WETLAND AREA  
35 ACRES

### PLAN LEGEND

-  PROBABLE WETLAND
-  APPROXIMATE LOCATION OF WETLAND
-  CENTERLINE OF STREAM
-  CENTERLINE OF DITCH



### NOTES

1. SURVEY PROVIDED BY CORE DESIGN.
2. SOURCE DRAWING WAS MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL ENHANCEMENT.



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FIGURE #3

APPROXIMATE WETLAND AREAS  
LAKE WASHINGTON - SAMMAMISH  
WATERSHED MITIGATION BANK SITE  
REDMOND, WASHINGTON

DESIGN JW	DRAWN JL	PROJECT 960B
SCALE NTS		
DATE 5-24-07		
REVISED		

3

guidance jointly issued in March 2006 by Ecology, the US Army Corps of Engineers, and the US Environmental Protection Agency (WSDOE et al., March 2006).

The Lake Washington-Sammamish Watershed Mitigation Bank site is within local jurisdiction of the City of Redmond, Washington. The Redmond Comprehensive Plan has identified mitigation banking as a viable means to offset wetland impacts and directs the city to “Implement effective ways of wetland mitigation such as mitigation banking for capital improvement projects that are linear, such as road and utility projects” (Redmond Comprehensive Plan, December 2006.) The proposed LWSW Mitigation Bank will comply with all federal, state, and local regulatory requirements, policies and guidance issued for wetland mitigation banks.

There are several steps to establish a wetland mitigation bank:

- Bank proponent submits a prospectus.
- Interagency Mitigation Bank Review Team (MBRT) reviews the prospectus.
- Bank proponent responds to feedback from the MBRT.
- Prospectus is sent out for public comment.
- Bank proponent submits draft Mitigation Banking Instrument (MBI).
- Federal and state agencies and local jurisdiction give final approval.

This prospectus is a first step in the process and presumes a final project design featuring wetland restoration, creation, enhancement and preservation on the Keller Farm property.

## **2.1 Proposed Mitigation Bank Review Team (MBRT)**

Both federal wetland mitigation banking guidance and the state’s draft rule call for wetland bank proposals to be reviewed, evaluated and negotiated by an interagency team called the Mitigation Bank Review Team or MBRT. The role of the MBRT is to work with applicants to develop a mitigation bank instrument, which outlines the terms and conditions of bank approval or certification, and to oversee the establishment, use, and operation of the bank. The MBRT is co-chaired by the Washington State Department of Ecology and the US Army Corps of Engineers. Representatives from the City of Redmond will also be included on the MBRT for this project. The state wetland banking statute dictates that local jurisdictions shall be signatory to the bank instrument (RCW 90.84.040) (Driscoll and Granger, 2001). Other agencies, such as Washington State Department of Fish and Wildlife and stakeholders, such as the Muckleshoot Tribe, will be consulted during bank planning, site design, and permitting. The bank proposal and all permitting activities will be subject to public notice requirements as required by state and local regulations.

## **2.2 Additions to the Bank Site**

The proposed LWSW Mitigation Bank currently includes 117 acres owned by a single property owner. HBNW may approach the owners of adjoining properties for inclusion in the mitigation bank if it makes ecological and business sense. For example, the City of Redmond owns a high quality wetland property to the east of proposed bank site and a small wedge of land on the south side of the bank. HBNW will work with the City to

consider the advantages of potentially including and protecting these sites as part of the bank proposal. A final decision on adding any neighboring sites will depend upon the credit generating potential of the sites as negotiated in the bank instrument development phase with the MBRT.

### **2.3 Proposed Service Area**

A mitigation bank service area is defined in Washington State statute [RCW 90.84.010(8)] as “the designated geographic area in which a bank can be reasonably expected to provide appropriate compensation for unavoidable impacts to wetlands.” The Federal Guidance on wetland mitigation banking (Federal Register: Volume 60, No. 228) states that geographic extent of service areas should be based on “hydrologic and biotic criteria” including US Geologic Survey hydrologic unit mapping and ecoregions of the United States. Federal guidance also recommends that service areas be specified using state or regional watershed level classifications and encourages the integration of wetland banks with resource management plans.

Washington State’s Draft Wetland Mitigation Rule (Driscoll and Granger, 2001) states that determination of service areas is based on consideration of criteria listed in WAC 173-700-201 including: the watershed (WRIA) and ecoregion in which the bank is located, integration with watershed management and other land-use plans, the landscape setting of the bank, the types of functions provided by the bank and the anticipated impacts for which the bank will provide compensation.

The MBRT determines each mitigation bank’s service area. Consistent with both federal and state guidance, Habitat Banc NW proposes the service area for LWSW Mitigation Bank include all portions of WRIA 8 up to an elevation of 2500 feet, down to the locks of the Lake Washington Ship Canal (**Figure 1**). Credits would be available to offset impacts to freshwater wetlands within the service area.

The Lake Washington/Cedar/Sammamish Watershed, WRIA 8, is the most densely populated watershed in Washington. The population in 2002 was approximately 1.3 million people; the projected population for 2020 is 1.7 million people. Approximately 55 percent of the land area in WRIA 8 lies inside designated Urban Growth Areas [Final Lake Washington/ Cedar/ Sammamish (WRIA 8) Chinook Salmon Conservation Plan, July 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 LWSW Mitigation Bank lies within WRIA 8 in close proximity to urban and urbanizing areas. Wetland and stream habitat conditions within many individual basins in WRIA 8 have been degraded from impacts associated with urban development. Many future development projects, whether publicly or privately sponsored, will likely affect wetland or stream habitat. Possible clients of the proposed mitigation bank include: WSDOT, Puget Sound Energy, King and Snohomish County, the City of Redmond and all other Cities within the service area, residential lot owners with reasonable use exceptions, and private developers. 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. Availability of large sites with a high probability of success for restoring

wetland habitats and functions and larger scale landscape and watershed processes, such as floodplain and groundwater connectivity, is low. 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.

### **3.0 SITE SELECTION RATIONALE**

Habitat Banc NW is partnering with Aegis Senior Living for the proposed development of the Keller property. Aegis Senior Living has a contract to purchase the Keller Farm and is proposing development of a private continuing care retirement community on a small 6.3 acre portion of the site that is entirely upland. This development will occur as a separate project in the northwest corner of the property along Avondale Road. Habitat Banc NW will be the sponsor of the LWSW Mitigation Bank and will use the approximately 117 remaining acres of the property for the LWSW mitigation bank. This portion includes all the existing and former wetlands on the site, the confluence and major sections of Bear and Evans Creeks and in the future the restored lower end of Perrigo Creek.

The Keller Farm site is an ideal location for a wetland mitigation bank within WRIA 8. The site has potential for approximately 85 acres of wetland enhancement and restoration. It is close to urban areas and offers a high probability for successful wetland restoration, enhancement and creation on a large site. Stream, riparian, floodplain, buffer, and wildlife habitat and surface water quality would also be concurrently improved through creation of the bank. The “Keller Farm” site has been singled-out for habitat restoration, enhancement and protection in every watershed planning document produced for the Bear Creek Basin and WRIA 8 during the last 18 years. Wetland, stream, riparian, buffer, and fish and wildlife habitat restoration, enhancement and preservation and improvements in streamflow regulation and surface water quality have been identified as primary goals for the site (see list of watershed planning documents in Appendix A). The City of Redmond has also prioritized preservation of natural view corridors within the City and has identified the Keller Farm as a priority site (City of Redmond Comprehensive Plan).

The LWSW Mitigation Bank would help restore and protect connectivity of Bear and Evans Creeks within the Lake Washington-Cedar/Sammamish Watershed. Due to increased development pressure within the Bear Creek Basin and the Lake Washington-Cedar/Sammamish Watershed, fish and wildlife habitat has been depleted and compromised. With the anticipation of continued growth in and outside of urban growth areas within WRIA-8, watershed planning documents have encouraged local jurisdictions to acquire high quality habitat locations within developing areas. Restoration of stream, riparian, floodplain, buffer and wildlife habitat at the Keller Farm Site would help reverse the effects of development impacts such as habitat loss, increase of impervious surfaces and loss of hydrologic processes that increase water temperature.

#### **3.1 Location**

The Lake Washington-Sammamish Watershed Mitigation Bank is located within the Bear Creek Basin of Water Resource Inventory Area (WRIA) 8, the Lake Washington-Cedar/Sammamish Watershed (**Figure 1**). The bank site encompasses 117 acres and includes approximately 4500 feet of Bear Creek, the lower 1000 feet of Evans Creek to

its confluence with Bear Creek, Perrigo Creek, and surrounding farmed fields, pastures, and existing wetlands (**Figure 3**). Bear Creek joins the Sammamish River approximately 1.1 miles downstream of its origin from Lake Sammamish. The Sammamish River is a tributary to Lake Washington. Bear and Evans Creeks support salmonid populations including chinook, coho, sockeye, steelhead, kokanee, sea-run cutthroat and resident trout.

The proposed bank site is located northeast of the intersection of Avondale Road and Union Hill Road, in Redmond, Washington (**Figure 2**). Most of the southern boundary of the property is defined by Bear and Evans Creeks. The west edge is defined by Avondale Road. Several single family residences are adjacent to the northwest corner of the bank site boundary. A business park comprised of six buildings and associated above-ground parking is adjacent to the south. Properties to the east are undeveloped.

### **3.2 Existing Conditions**

Existing conditions at the proposed mitigation bank site were evaluated by Talasaea Consultants (April 2007) and are summarized below.

#### **3.2.1 Land Use**

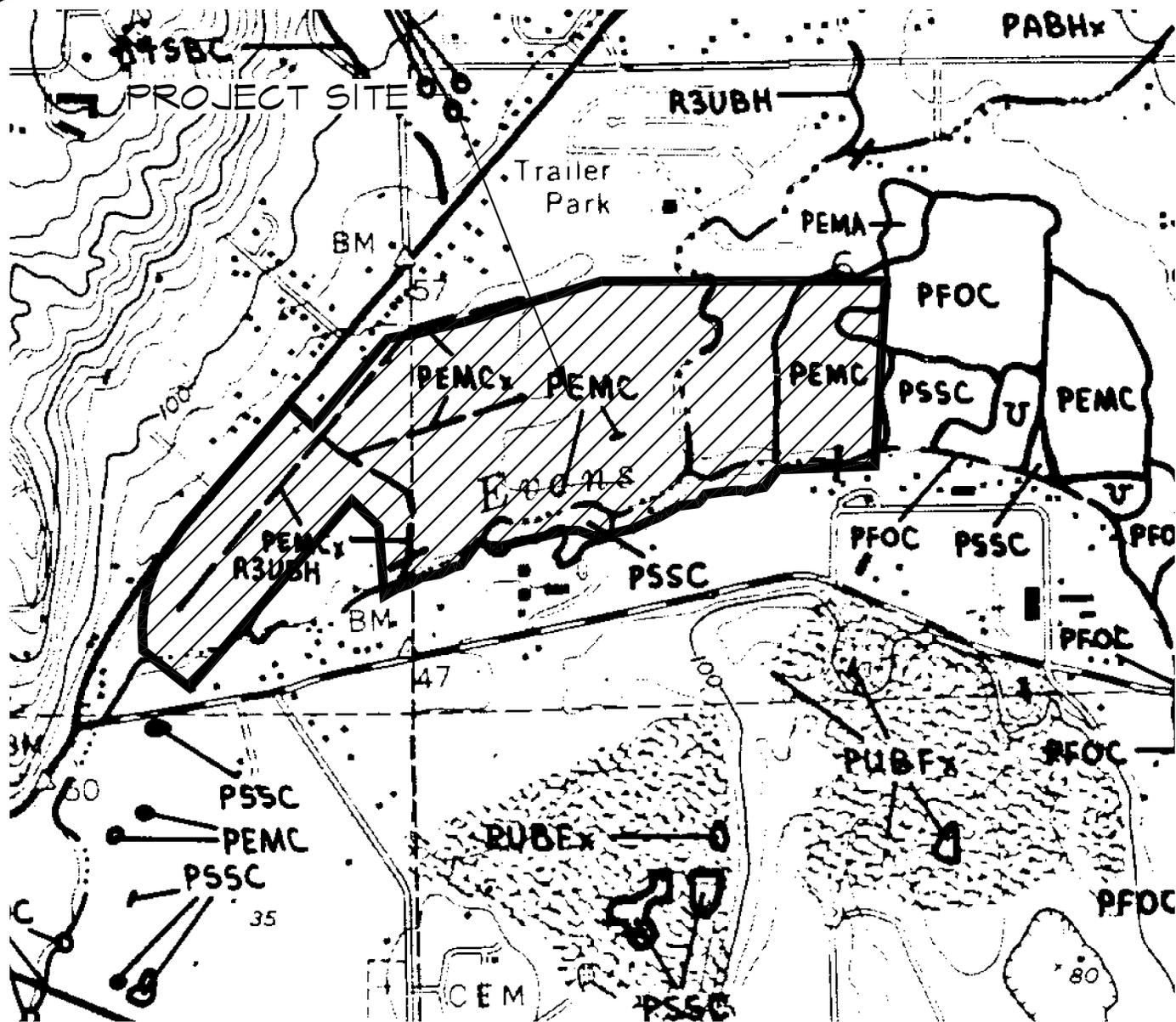
The proposed wetland mitigation bank site is currently used for agriculture. The fields west and north of Bear Creek have been farmed for cut flowers, pumpkins, corn, and other vegetables since the dairy operations were suspended in the 1980's. The fields east of Bear Creek and north of Evans Creek have been farmed for hay in recent years. The fields, where they are not currently used for the agricultural production of vegetables and flowers, support a wide range of weedy herbaceous species. Periodic mowing of the fields has resulted in a dominance of herbaceous species on the site. Woody plant species, primarily deciduous shrubs and small trees, occur streamside and along the farm ditches.

During the early part of the 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. 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 the two creeks by wading. 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 last 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**.

#### **3.2.2 Present Extent of Wetlands**

Numerous wetlands have been preliminarily identified on the mitigation bank site (**Figure 3**) (Talasaea Consultants, April 2007). The National Wetland Inventory (NWI) map for the Redmond Quadrangle (**Figure 4**) shows a large area of palustrine emergent wetland



**LEGEND**

- PEMA PALUSTRINE, EMERGENT, TEMPORARILY FLOODED
- PEMC PALUSTRINE, EMERGENT, SEASONALLY FLOODED
- PSSC PALUSTRINE, SCRUB-SHRUBM SEASONALLY FLOODED
- PFOC PALUSTRINE, FORESTED, SEASONALLY FLOODED

SOURCE: U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, NATIONAL WETLANDS INVENTORY MAP, REDMOND QUADRANGLE, 1989



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FIGURE #4

NATIONAL WETLANDS INVENTORY MAP

LAKE WASHINGTON - SAMMAMISH  
WATERSHED MITIGATION BANK SITE

REDMOND, WASHINGTON

DESIGN JW	DRAWN AC	PROJECT 960B
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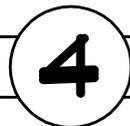
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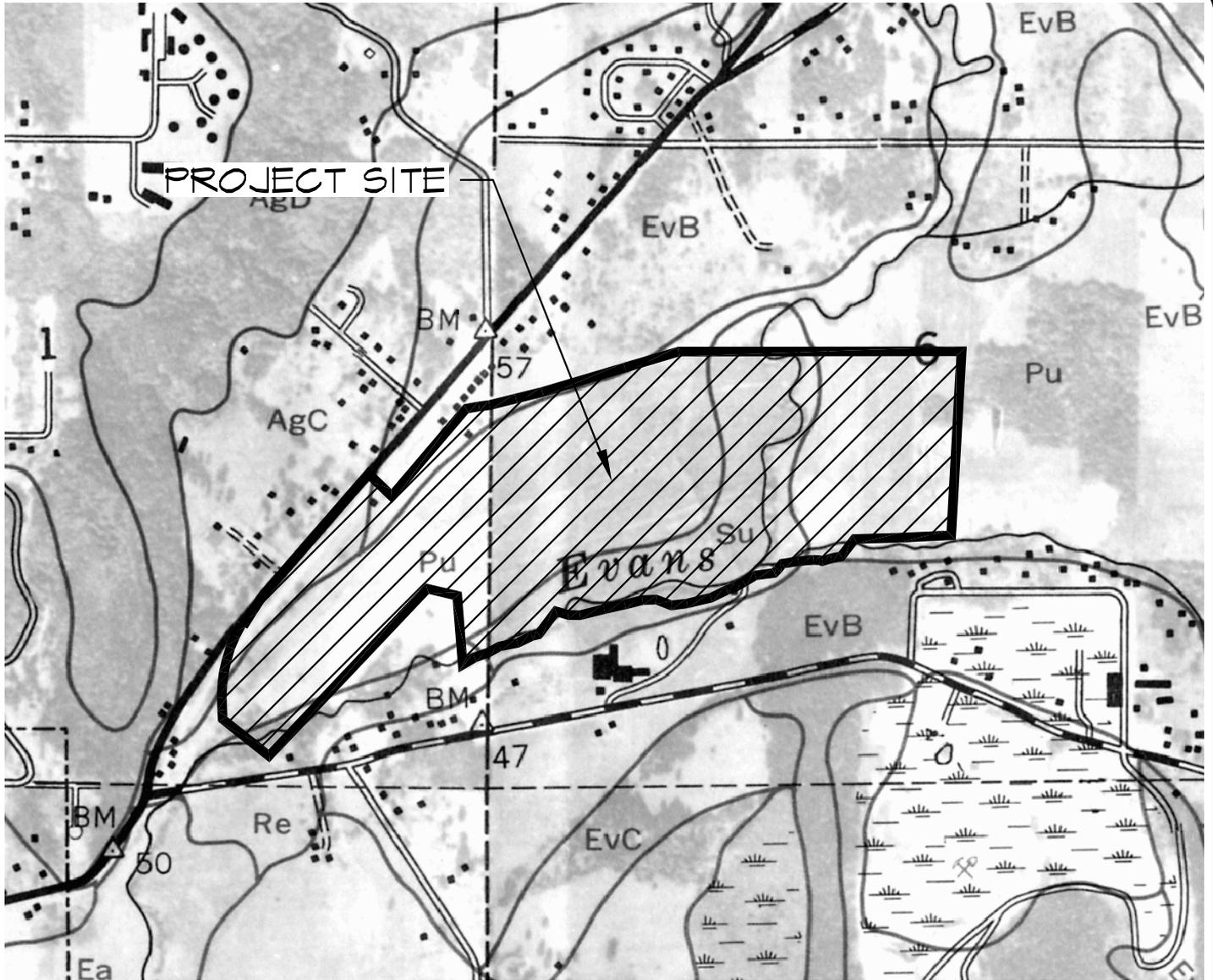
5-24-07

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in the eastern portion of the site, extending offsite to the east. This wetland is also identified as “Evans Creek Wetland #53” in the King County Sensitive Areas Map Folio; the King County Sensitive Areas GIS database identifies this wetland as approximately 40 acres in size and categorizes it as Type 2. The NWI map also identifies several small, isolated areas of palustrine emergent wetland onsite and an area of palustrine scrub-shrub wetland surrounding a portion of Evans Creek. Several ditches are also identified on the NWI map as palustrine emergent wetland. Field investigations preliminarily identified numerous wetlands on the proposed bank site. Wetlands have not been field-delineated. Total wetland acreage presently existing on the site is approximately 34.7 acres. This figure does not include ditch areas. Square footage of wetland areas is approximated on Figure 3. One wetland on site, Wetland A, was preliminarily rated as a Category 3 wetland using the Washington State Rating System for Western Washington.

Because of its landscape location, most of the 117 acres of the proposed bank site were probably wetland at one time. The entire bank site is located within the 100-year floodplain of Bear and/or Evans Creeks. The majority of the bank site has been mapped as Puget silt clay loam, a hydric soil, which indicates historic wetland conditions over much of the site (**Figure 5**).



**LEGEND**

- Pu PUGET SILTY CLAY LOAM, LESS THAN 1% SLOPES
- Su SULTAN SILT LOAM, LESS THAN 2% SLOPES
- EvB EVERETT GRAVELLY SANDY LOAM, 0-5% SLOPES

SOURCE: U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, KING COUNTY AREA SOIL SURVEY, 1973



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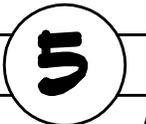
FIGURE #5

NRCS SOILS MAP

LAKE WASHINGTON - SAMMAMISH  
WATERSHED MITIGATION BANK SITE

REDMOND, WASHINGTON

DESIGN	DRAWN	PROJECT
JW	AC	960B
SCALE		
NTS		
DATE		
5-24-07		
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### **3.2.3 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. 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 1960s and now discharges to the Sammamish River approximately 1.1 miles downstream of the lake outlet. Perrigo Creek provides minimal fish habitat. It is currently piped throughout most of its length and daylighted on the bank site along the southwestern property boundary. It receives direct road runoff from Avondale Road.

Every watershed planning document produced for the Bear Creek Basin and WRIA 8 during the last 18 years has identified the “Keller Farm” as a priority for salmonid habitat restoration (Appendix A). The City of Redmond has identified the bank site as a Core Fish and Wildlife Habitat Preservation Area.

### **3.2.4 Water Quality and Streamflow**

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 cut off groundwater flow to the creeks. Reconnecting groundwater flows to Bear and Evans Creeks would increase DO and summer baseflow levels and decrease stream temperatures. One temperature modeling scenario indicated that an increase of approximately 5 cubic feet per second in Bear Creek’s summer base flow could significantly reduce thermal stress for salmon in the Sammamish River (Sammamish River Corridor Action Plan. September 2002.)

### **3.2.5 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, adjacent undeveloped land to the east, and diversity of habitat types, the property supports a remarkable diversity and abundance of wildlife in this increasingly urban environment. The City of Redmond has identified the bank site as a Core Fish and Wildlife Habitat Preservation Area.

## **5.0 CONCEPTUAL DESIGN GOALS**

Conceptual design goals for the Lake Washington-Sammamish Wetland Mitigation Bank focus on restoring former wetland areas, enhancing existing wetlands and preserving wetland habitat and include:

- Restoring wetland hydrology by disabling drainage tiles and ditches.
- Increasing native plant species richness and community diversity in wetland and upland buffer habitats on site.

- Increasing native plant structural diversity and habitat interspersion and complexity.
- Creating a variety of wetland hydroperiods and plant communities on site.
- Increasing groundwater storage on site and restoring groundwater connections to Bear and Evans Creeks.
- Improving water surface quality in wetland areas and Bear and Evans Creeks.

Stream, riparian, floodplain, buffer, and wildlife habitat and surface water quality would be improved through creation of the bank. Habitat for salmonids, including endangered Chinook salmon and Puget Sound steelhead, other fish and stream-dwelling invertebrate species would also be concurrently improved on site through creation of the bank. Restoration of the Keller Farm site would address site specific design goals for Chinook salmon in the WRIA-8 watershed by restoring riparian vegetation and using large woody debris to provide shade and cover, restoring off-channel rearing and wetlands used during various stages of the salmonid life cycle and protecting site specific hydrologic functions and temperatures that support salmonids.

## **6.0 ASSOCIATED PROJECTS**

Several other associated projects are proposed that will require coordination during the mitigation bank development and design process:

- Habitat Banc NW is working with Aegis Senior Living to implement the LWSW Mitigation Bank. Aegis Senior Living is proposing development of a private continuing care retirement community on approximately 6.3 acres adjacent to the northwest corner of the mitigation bank site. This project will include daylighting and rerouting of Perrigo Creek through the development and into the bank site to its new confluence with Bear Creek. The retirement community will be permitted as a separate project. Part of the retirement community's amenities include a walking trail and garden which typically are lightly used by residents. This area will border the bank site with natural barriers or split rail fencing to block access to the mitigation bank.
- The City of Redmond wishes to construct a multiuse trail through the eastern and southern areas of the bank site. The implementation of a trail system will be negotiated with the City of Redmond during the bank approval process. Habitat Banc NW recognizes the need for public access and connectivity to the City's trail system and will work to develop a solution that does not inhibit effective restoration of the parcel or negatively impact the overall functions of the bank.
- The City of Redmond is proposing to reroute Evans Creek which would require a new stream channel on the eastern portion of the bank site. This will be evaluated during the bank approval process to determine if this design is compatible and consistent with goals of the bank.

## 7.0 REFERENCES

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## APPENDIX A

### **Watershed and Land Use Planning Documents Relevant to the Proposed Mitigation Bank Site.**

Bear Creek Basin Current and Future Conditions Analysis. King County Surface Water Management, Snohomish County Surface Water Management, City of Redmond Public Works. March 1989.

Bear Creek Basin Plan. King County Surface Water Management, Snohomish County Surface Water Management, City of Redmond Stormwater Division. July 1990.

Bear, Evans, Cottage Lake, and Mackey Creeks: Habitat Problems, Prioritization, and Solution Development-Technical Memorandum. King County Surface Water Management and Entanco. October 1994.

Redmond Comprehensive Plan. City of Redmond, Washington. December 2006.

City of Redmond Wildlife Habitat Plan. City of Redmond, Washington and Adolfsen Associates, Inc. November 2002.

Final Lake Washington/ Cedar/ Sammamish (WRIA 8) Chinook Salmon Conservation Plan. July 2005. <http://dnr.metrokc.gov/WRIAS/8/chinook-conservation-plan.htm>

Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Near-Term Action Agenda For Salmon Habitat Conservation. August 2002.

Sammamish River Corridor Action Plan. King County Dept. of Natural Resources, Water and Land Resources Division. September 2002.