

***Nookachamps Wetland
Mitigation Bank***

Prospectus

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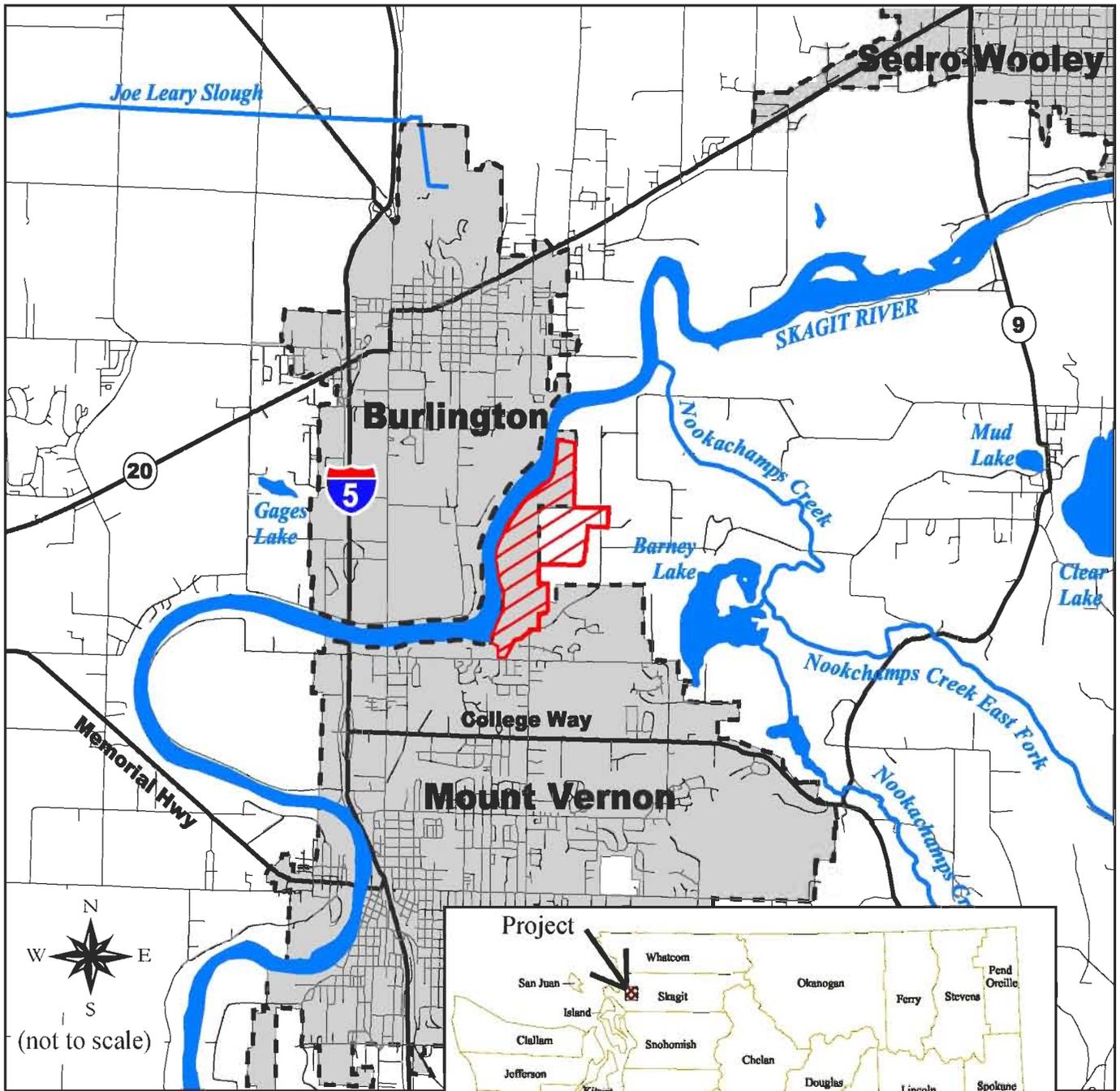
Introduction

Nookachamps, LLC. is developing the Nookachamps Wetland Mitigation Bank (Bank) in Mount Vernon, Washington, to provide ecologically sound and economically viable compensatory mitigation for local impacts to wetlands, riparian habitat, and habitat for threatened and endangered salmonids. The Nookachamps Wetland Mitigation Bank will restore quality wetland and off-channel aquatic habitat, create emergent wetlands, off-channel sloughs, riparian and upland habitats, and provide limited passive recreation in the Mount Vernon area.

The site (310 acres) is located in the lowlands of the Skagit River Valley at an average elevation of 26 feet (Figure 1). It is in the Lower Skagit River Water Resources Inventory Area (WRIA 3) near the confluence of the Skagit River and Nookachamps Creek. Project area soils are primarily hydric.

This Bank will be available for offsite compensatory mitigation for unavoidable impacts to waters of the United States, including wetlands, which result from activities authorized under Sections 401 and 404 of the Clean Water Act. Mitigation is also available for significant impacts to wetland and wildlife resources under the applicable sections of the Washington State Environmental Policy Act (Revised Code of Washington -RCW- 43.21C); unavoidable impacts to waters and wetlands which result from activities authorized under the State of Washington's Hydraulic Project Approval (RCW 77.55), the State Water Pollution Control Act (RCW 90.48) and the Washington State Shoreline Management Act of 1971 (RCW 90.58A); federal Endangered Species Act compliance, and impacts to waters and wetlands resulting from activities authorized under applicable local ordinances and approvals, provided the Bank meets all requirements applicable for mitigation with respect to a particular project and that mitigation through use of a bank is authorized by the appropriate authority.

This project will be ecologically superior to fragmented mitigation efforts due to its size and complexity; assist in Mount Vernon's comprehensive plan and Growth Management Act implementation; and set a high ecological standard for effective wetland and riparian mitigation.



LEGEND

- City Limit Boundary
- Project Area



Figure 1
Vicinity Map

1. Goals and Objectives

Restoring this Bank will re-create the site's natural geomorphic character of emergent wetlands, off-channel sloughs, and riparian habitat. Created and enhanced existing wetlands will more effectively reduce peak flows, erosion, sedimentation and nutrient loading. The wetlands and riparian areas will increase overall habitat suitability and complexity to benefit a variety of species. The created sloughs will provide off-channel rearing habitat for salmon and other aquatic species -- lack of this type of habitat is a limiting factor for salmon production in this river reach.

1.1 Ecological Goals

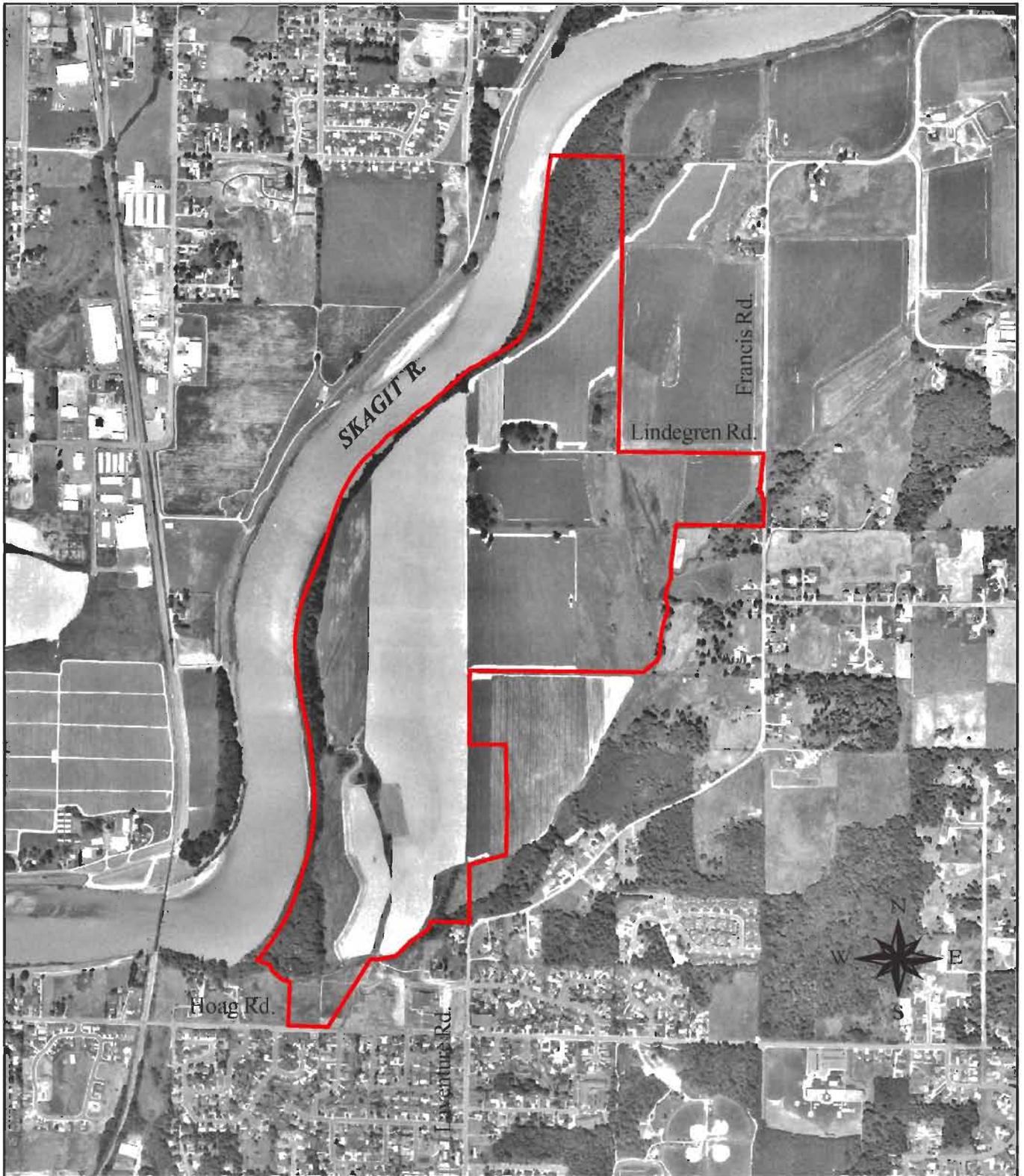
- Re-create the natural geomorphic and ecological character of the site including jurisdictional wetlands, dendritic channels, and riparian forests (deciduous and conifer) consistent with pre-agricultural influences
- Create and enhance traditional wetland habitats and functions including reducing erosion and peak flows, increasing general habitat suitability and native plant richness, and potentially reducing sediment and nutrient loading into the Skagit River.
- Create and enhance traditional riparian habitats and functions including increasing native plant richness and habitat suitability for various species, and reducing sediment and nutrient loading into the Skagit River.
- Create off-channel habitat and refugia for threatened and endangered salmonid species.

1.2 Ecological Objectives

- Objective #1: Establish permanent protection for Bank in year one.
- Objective #2: Establish and begin to fund a long-term endowment for maintenance and monitoring in perpetuity in year one.
- Objective #3: Construct/enhance wetland and riparian habitats as per design specifics detailed in the plan in year one.
- Objective #4: Re-create historic hydrology in year one sufficient to recreate jurisdictional wetlands in the new creation areas by year three.
- Objective #5: Groundwater visually confirmed in wells in year one.
- Objective #6: Jurisdictional wetlands creation confirmed by conducting delineation by end of year three.
- Objective #7: Minimum 30 percent herbaceous cover by end of year three.
- Objective #8: Minimum of two plant assemblages surviving by end of year five.
- Objective #9: Minimum of three vegetation strata surviving by end of year five.
- Objective #10: 75 percent canopy closure over water channels by end of year seven.
- Objective #11: Invasive plant species reduced to 20 percent or less by end of year ten.

2. Site Location

The Nookachamps Wetland Mitigation Bank is located within both the City of Mount Vernon and Skagit County (Figure 2).



Aerial Source: Microsoft Terraserver, 7-16-98
(not to scale)

The Skagit River is located to the northwest of the site. Hoag Road is located to the south, and Francis Road to the east. The site is located in Sections 4, 5, 8, and 9 of Township 34 N, Range 4 E, on the Willamette Meridian at latitude 48°27'0"N, longitude 122°18'36"W. The site provides a great opportunity to restore wetland and riparian habitats while also preserving open space in the City of Mount Vernon's Urban Growth Area.

3. Site Selection Criteria and Rationale

The site selection rationale utilizes considerations based directly on the Draft Washington State Wetland Mitigation Bank Certification Rules (2001 Washington Department of Ecology), as follows:

3.1 Whether the site includes areas that can be restored to wetland conditions:

The site has been plowed, drained, and partially leveled, temporarily eliminating previous wetland conditions. These conditions can be restored at the site by reestablishing natural ecological processes and reshaping the topological landscape.

3.2 Whether the site possesses the physical, chemical and biological characteristics to support the Bank goals and objectives:

This Bank site was historically a floodplain forest connected to a wetland complex. The soil, established over time from floodplain deposition and erosion, does possess the physical, chemical and biological characteristics needed to enhance and recreate wetlands and riparian habitats, and will support associated functions and vegetation communities.

3.3 Whether the size and location of the bank is appropriate relative to the ecological features found at the site, such as sources of water:

The site is located adjacent to the Skagit River, near its confluence with Nookachamps Creek in the flatlands of the Skagit River Basin, and is influenced by floodwaters and local stormwater runoff. The site is large enough to allow re-establishment of off-channel habitat and accompanying hydrologic function.

3.4 If the bank sponsor has obtained any necessary water rights for the site, if necessary:

Agricultural water rights are pre-existing on the site and will remain under the ownership and control of Dike, Drainage, and Irrigation District #20 (District #20). This toe drain typically intercepts all runoff from the hillside to the east and is not expected to influence the Bank's natural hydrology.

Nookachamps, LLC. has two vested water rights separate from District #20. The first water right allows Nookachamps, LLC. to withdraw 1.1 cubic feet per second (cfs) from a small pond adjacent to the Skagit River (the western borrow pit). The second water right allows Nookachamps, LLC. to withdraw 0.02 cfs water from a small unnamed spring at the base of the eastern borrow pit. These water rights may be utilized for the first few years to irrigate new plantings until the vegetation is established.

Nookachamps, LLC. will later explore options to either sell or otherwise extinguish these water rights when they are no longer necessary.

3.5 The wetland functions and values that the site has the potential to provide:

This site is currently in agricultural production. As such, it provides limited wetland functions and values. Prior to the current agricultural use, this Bank was a forested wetland complex. Once restored, this site will once again have the potential to remove sediment, nutrients and toxins; reduce peak flows and soil erosion; recharge groundwater; and provide suitable habitat for some species of invertebrates, amphibians, anadromous and resident fish, birds, and mammals. In addition, it will also supply regional ecological diversity, establish native plant communities, provide plant species richness and the potential for primary production and organic export, form hydrologic links to other wetlands and create microclimates.

3.5.1 Washington Methods for Assessing Wetland Functions

For existing and future jurisdictional wetland habitat types, the Washington Methods for Assessing Wetland Functions (WFAM) methodology was used. Depending on the inlet and outlet conditions of the wetland, either the “Riverine Flow Through” or the “Depressional Outflow” model was used.

3.5.2 Modified WSDOT Model (BPJ)

For areas with low-lying, frequently flooded riverine and riparian habitat that are not technically jurisdictional wetlands, the “Washington State Department of Transportation’s Wetland Functions Characterization Tool for Linear Projects” was modified to create an assessment methodology similar to WFAM. This methodology is referred to as the Best Professional Judgment (BPJ) method. The intent was to evaluate the functions and values of these habitats and compare them with those habitats evaluated with WFAM to qualitatively assess the ‘functional or environmental lift’ provided by the proposed project.

3.6 Whether the bank site can provide increased or improved wetland functions and restore ecological processes within the basin or the watershed:

The Bank will increase and improve the wetland functions and ecological processes in the local watershed by holding and filtering water on site and slowly releasing it over time. Production and export of organic material will provide detritus, food for the macro and micro invertebrate species upon which salmonids depend. Revegetation will stabilize the soil during flood events, reducing erosion, sedimentation and nutrient loading of the Skagit River.

3.7 If the bank site has a high potential to connect or complement existing wetlands:

The bank provides a regionally significant opportunity to improve and expand the site’s wetlands and connect them to those already associated with the Skagit River Basin.

Wetland functions, such as waterfowl usage or sediment trapping, will also contribute to the health of the watershed.

3.8 The types of unavoidable impacts that are anticipated to use bank credits for compensatory mitigation:

Unavoidable impacts anticipated to require Bank credits for compensatory mitigation include development primarily within Water Resource Inventory Area 3, such as residential and community development and public infrastructure projects. The Bank might also provide supplementary mitigation for unavoidable impacts for a variety of wetland categories. The regulations which require mitigation include local Critical Areas Ordinances, the State Water Pollution Control Act, and Hydraulic Project Approvals, and at the federal level, the Endangered Species Act, and the Clean Water Act.

3.9 Whether the site and bank objectives are compatible with surrounding land uses laying both up and down gradient:

The current City of Mount Vernon Comprehensive Land Use designation for this site is Open Space. A wetland mitigation bank is consistent with this land use designation. The surrounding land use designation is primarily medium density residential with limited areas of multi-family and churches/schools. The Bank and its mitigation objectives are compatible with these land use designations. This Bank is also compatible with the adjacent agricultural use.

While this Bank will be permanently dedicated to open space, it will not be counted towards the City of Mount Vernon's park and open space inventory. Limited passive recreation opportunities will be allowed to continue via a primitive trail on the western edge of the project site. This trail will be located primarily on the City of Mount Vernon's property that is included within the project boundary.

3.10 Whether the bank site can be protected over time from direct, indirect, and cumulative impacts due to current and foreseeable future land-uses:

Development on the hillside immediately to the east of the site could increase runoff to the site. However, the functions and values created and re-established at the site will be protected several ways despite increasing development in adjacent areas.

First, the entire project site will have a 50-foot-wide buffer to protect it from adjacent land use. Second, the toe drain will collect stormwater runoff from the hillside developments and prevent pollutants from impacting the water quality on site. Thirdly, the site will continue to be protected from direct, indirect, and cumulative impacts by virtue of its location in the floodway. Additionally, a conservation easement will prevent, in perpetuity, development of the Bank site.

3.11 Whether the bank site is consistent with existing planning documents, such as watershed, zoning, or comprehensive land-use plans and critical areas rules:

The site is consistent with existing planning documents including:

- Skagit County Comprehensive Plan
- City of Mount Vernon Comprehensive Plan
- Mount Vernon Park and Recreation Comprehensive Plan
- Mount Vernon Overall Economic Development Plan
- City of Mount Vernon Comprehensive Surface Water Management Plan
- Skagit County Critical Areas Ordinance

These documents recommend the conservation of wetlands and riparian areas, the preservation of natural open space and wildlife habitat and a rural/small-town atmosphere, and awareness of natural resource issues through public education and recreation opportunities.

3.12 Whether the bank site contributes to the improvement of identified management problems within the drainage basin or watershed, such as sedimentation, water quality degradation, or flood control:

This proposed project will assist in reducing the basin's sedimentation problem by stabilizing the site's soil, thereby reducing erosion and improving water quality. This site will provide flood control for the immediate area, but not affect peak flows on the Skagit River.

3.13 What the historical land-uses were at that site:

Inhabitants of nearby pre-European settlements likely used the area for hunting, farming and gathering purposes. More recent land uses at the site included a residence whose foundation remains. As noted previously, the majority of the site is still cultivated.

3.14 The presence and quantity of invasive species on the site:

Invasive species, largely reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus discolor*), are present on the site in most locations not under agricultural cultivation, covering approximately 25 percent of the site. There is a limited amount of Japanese knotweed on site, approximately one acre. A knotweed survey will be conducted in March 2005.

3.15 The existence of a native seed bank on the site:

Native seed sources are present in existing wetlands and adjacent riparian habitats.

3.16 Whether the process of establishing the bank at the site will compromise ecologically significant aquatic or upland resources, cultural sites, or habitat for threatened, endangered, or candidate species:

Because an important goal of the project is to restore pre-existing wetland, riparian and upland areas, agricultural acreage that serves as foraging ground for raptors and feeding areas for trumpeter swans, will be lost. However, thousands of acres of cultivated land that remain in the surrounding area will still serve as foraging grounds.

No impact to any cultural resource is expected.

3.17 The degree of long-term maintenance necessary for the site:

Probable long-term maintenance necessary at this site includes invasive weed control, revegetation, rodent control, facilities management, and intermittent trail repair.

4. Existing Conditions and Land Uses

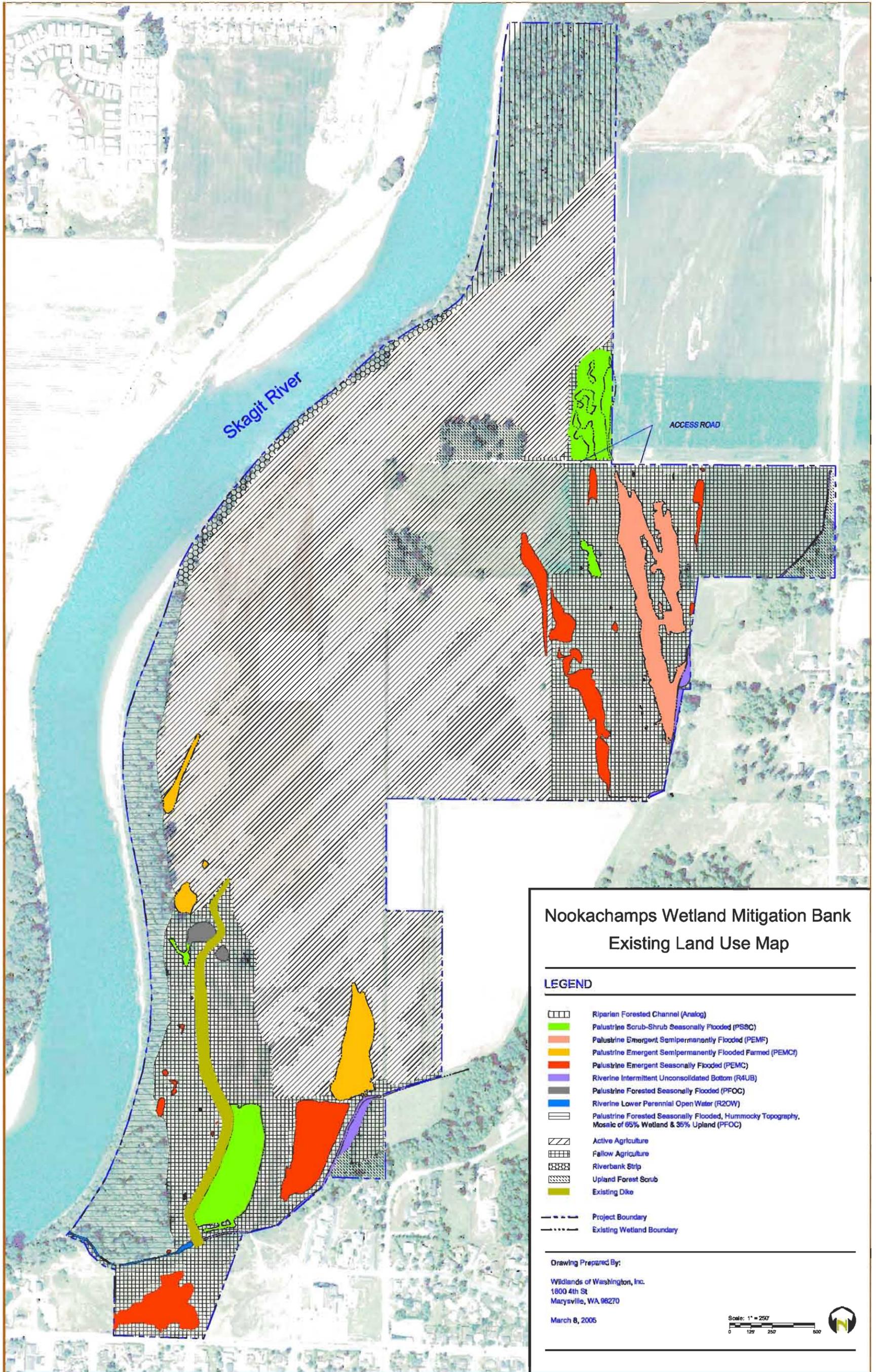
Currently, 172 acres of this Bank are in row-crop agriculture (Figure 3). Approximately 39 acres (approximately 12 percent) of the Bank are wetlands. Deciduous native forest grows along the Skagit River. Many portions of the site not under cultivation have been invaded by nonnative plant species, although native vegetation is present on other portions of the site.

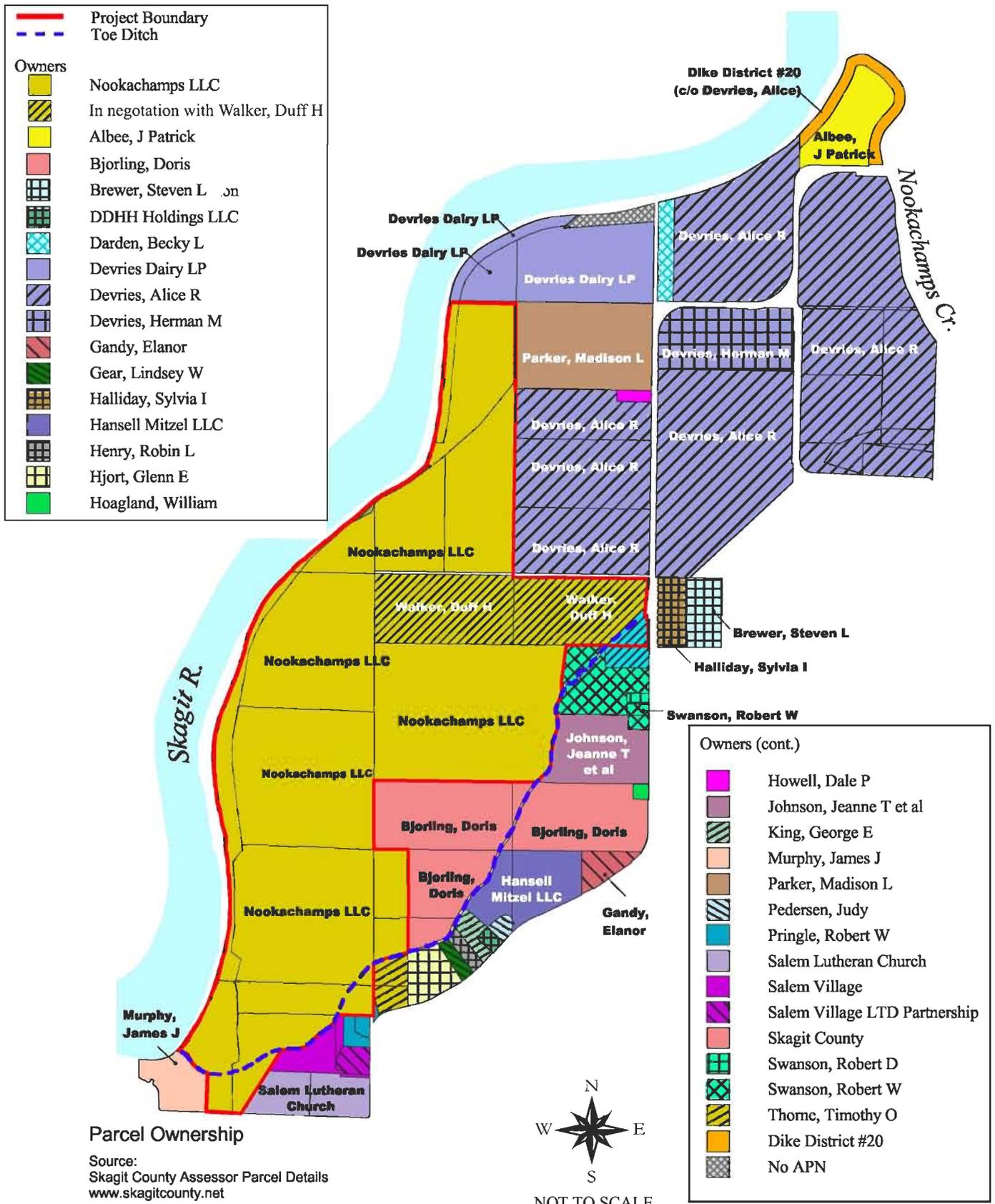
Two fragmented patches of riparian forest exist in the center of the site; one provides a nest for bald eagles. This property also contains an earthen dike five to ten feet tall and approximately 2,000 feet long running on a north to south axis. Other features on this site include abandoned homestead, dirt access road, and two borrow pits. This Bank floods during summer snowmelt and more frequently during winter storm events.

The Skagit River is home to steelhead, cutthroat and bull trout, native char, and all five species of Pacific salmon: Chinook, Coho, chum, sockeye, and pink Chinook salmon and Bull trout are listed as threatened under the Federal Endangered Species Act. Key limiting factors along this reach have been identified as lack of native riparian vegetation and lack of access to off-channel rearing habitat due to diking and draining activities.

4.1 Land Ownership

The majority of this land is currently owned by Nookachamps, LLC.; two large parcels (Walker) are in the final stages of acquisition (Figure 4). The City of Mount Vernon agreed to deed over the rights to their adjoining property through a Memorandum of Understanding with the Nookachamps, LLC. executed on 2/23/05. The City will maintain underlying ownership, but transferred all developable rights to this Bank for the purpose of this project. The City maintained the right to enter their property for the purpose of picnicking, primitive trail creation and maintenance, and other light recreational uses.





4.2 Landscape Position

The Bank site is adjacent to the main stem of the Skagit River in the Skagit Valley flatlands, near the mouth of Nookachamps Creek. The Bank and its corresponding service area are in Water Resource Inventory Area 3 (WRIA 3).

The Nookachamps Bank is located on a floodplain terrace east of the Skagit River, downstream from the mouth of Nookachamps Creek. A steep slope is located immediately to the south and east of the property line with a toe drain separating the hill slope and floodplain terrace. The project site is wholly within the Skagit River floodplain. The topography is relatively flat, with 0-5 percent sloped gentle swales on portions of the site which follow overland flow drainage patterns.

The site slopes gradually to the southwest in the downriver direction. The eastern parcels generally slope away from the river toward a toe drain running northeast to southwest. The toe drain also collects surface water runoff from upstream properties and hillside to the east. The toe drain discharges directly into the Skagit River at the south end of the Bank through a floodgate that remains open except when the river is higher than water elevations in the toe drain.

This toe drain typically does not overflow its banks; however, the Bank site itself is subject to frequent flooding by the Skagit River and Nookachamps Creek (approximately every two years) in which water comes from three areas. First, floodwater enters the site from the northern end of the dike when the river elevation exceeds the elevation of the northern end of the dike. As the Skagit River continues to rise, Nookachamps Creek (in the northeast corner of the site) overtops its banks, sending additional floodwater over the project site, flowing southwesterly. Lastly, during unusually high water events, the toe drain will overtop, but only after the site has already been inundated from Nookachamps Creek and the Skagit River.

4.3 Site Size

The Nookachamps site is approximately 310 acres in size.

4.4 Wetlands Present on the Site

According to an on-site delineation verification, conducted on July 26, 2004 by the U.S. Army Corps of Engineers, approximately 39 acres (12 percent) of the Bank is comprised of wetlands (Figure 5). Wildlands, Inc. provided site information and global positioning system (GPS) mapping. Site investigations of the delineation area confirmed and concluded that the on-site wetlands are driven by seasonal ground water elevations and surface micro-topography (i.e. depressions in the landscape). These conclusions were supported by visual observations of active mottling and the hydrologic data as found in the Preliminary Delineation. Additional wetlands were mapped using a GPS to collect field observations and by evaluating the topographic survey data for additional depressed elevation points. These new areas are shown on the revised delineation maps in the draft MBI.

Delineation Acreages

- Total Wetlands - 36.71 acres
- 6.80ac Palustrine emergent seasonally flooded (PEMC)
 - 3.32ac Palustrine emergent seasonally flooded, farmed (PEMcf)
 - 6.16ac Palustrine emergent semipermanently flooded (PEMF)
 - 13.79ac Palustrine forested seasonally flooded (PFOC)
 - 7.54ac Palustrine scrub-shrub seasonally flooded (PSSC)
- Total "Other Waters of the U.S." - 1.44 acres
- 0.42ac Palustrine open water permanently flooded (POWH)
 - 0.22ac Riverine lower perennial open water (R2OW)
 - 0.80ac Riverine intermitten unconsolidated bottom (R4UB)

Delineation Details

Delineator: Mark J. Young
 Surveyor: Jan Cessna
 Survey Date: June 24-27, 2003
 & May 21, 2004
 Prepared: June 10, 2004
 Revised: August 11, 2004

Topographic data collected by:
 Sound Development Group
 Mount Vernon, WA 98273

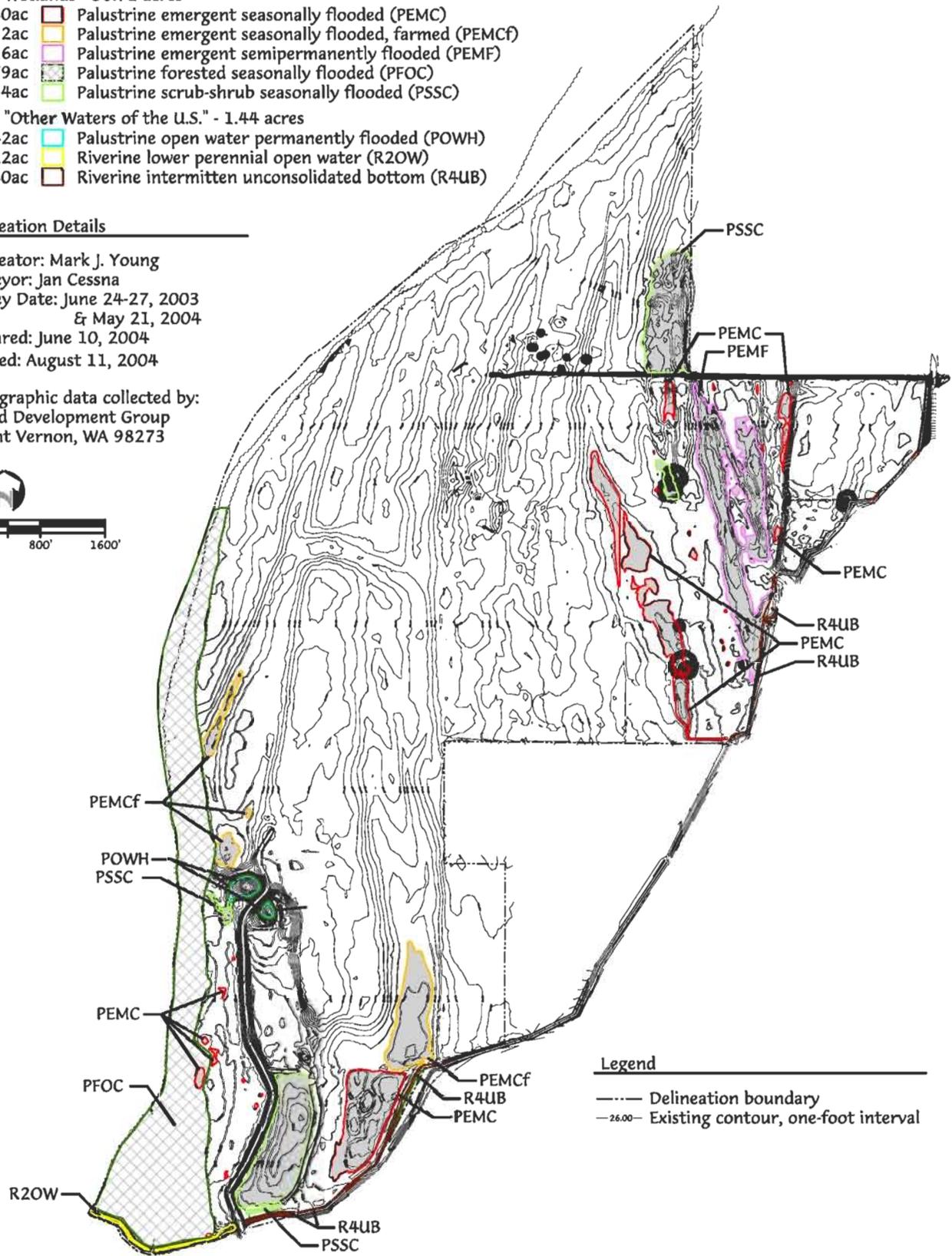


Figure 5
 Wetland Delineation

Existing wetland habitat types include: palustrine scrub-shrub seasonally flooded (7.54 acres), palustrine emergent semi-permanently flooded (6.16 acres), palustrine emergent seasonally flooded – farmed (3.32 acres), palustrine emergent seasonally flooded (6.8 acres), and palustrine forested seasonally flooded (13.79 acres). This site also contains palustrine open water permanently flooded (0.42 acres), riverine lower perennial open water (0.22 acres), and riverine intermittent unconsolidated bottom (0.80 acres) areas.

Several additional small depression-type wetlands were observed in the southwestern project area on the river side of the existing levee.

The Army Corps of Engineer representatives concurred that the palustrine forested seasonally flooded wetlands (13.41 acres) located adjacent to the Skagit River encompass a mosaic of 65 percent wetlands and 35 percent uplands in a hummocky topography. The Corps agreed no specific jurisdictional boundary mapping was needed in this area to separate the uplands and wetlands.

More details are contained in two wetland delineations:

- Preliminary Delineation of Waters of the United States Including Wetlands for the Nookachamps Wetland Mitigation Bank, June 2004;*
- Draft Nookachamps Mitigation Bank Wetland Delineation for Hoag Road Flood Control Berm, June 23, 20004*

4.5 Other Habitat Types

Other existing habitat types on this site include riparian forested channel (analog) (19.41 acres), upland forest scrub-shrub (6.29 acres), riverbank strip (3.11 acres), active agriculture (172.37 acres) and fallow agriculture (64.33 acres).

4.6 Available Information on Land Use

The land is primarily farmed fields with row crops, mainly potatoes, but also wheat, corn, broccoli, and other rotation crops. Other portions of the site are used as pasture; the dominant vegetation in non-cultivated areas is reed canarygrass (*Phalaris arundinacea*). The foundation of an old residence is located in the northern portion of the site, amidst a grove of cottonwood, Douglas fir, and pine trees.

Adjacent land uses include a mix of open space and single-family medium density residential with limited multi-family residential and church/schools designations. Suburban influences such as residential housing, a church, ball field, and senior living center are found mostly on the south end. North and east of the site, land is more rural and used mostly for farming, although the hill slope on the Bank's eastern border is zoned for residential development. Non-regulated, unmaintained, unplanned access across the Nookachamps site and City property is being used by sport fishermen for salmon and steelhead fishing.

4.6.1 Water Sources

4.6.1.1 Water Rights

The site has existing water rights as previously described in Section 3.4. Dike, Drainage and Irrigation District #20 owns all water rights for the toe drain and maintains it and the flood gate. The toe drain is checked several times a year by district commissioners and after each high water event. Scheduled maintenance includes cleanout, approximately every two years or dependent upon sediment buildup.

4.6.1.2 Stormwater

The City of Mount Vernon occupies most of the upland hills above the project site. Urban stormwater can be a significant source of water quality impairment. However, the toe drain between the project site and the adjacent hillside land uses typically captures the stormwater before it reaches the site.

There are two main land use types contributing to stormwater runoff. About half of the local drainage comes from suburban and rural land uses. The other half comes from surrounding agricultural land uses, along with some commercial and high-density housing.

Mount Vernon has recently expanded its urban growth boundary and urban zoning areas to the hillside east of the project site, which will increase the developed area that drains towards the project site. As land uses in the surrounding area become more urban, stormwater discharges and volumes will likely increase to the project site (see Section 4.2 for a more detailed discussion of potential water quality impacts from storms).

4.6.1.3 The Skagit River

The Skagit River drains an area of 3,133 square miles. It originates in Canada, and 90 of its 163 miles are within Skagit County (FEMA, 1989). Its major tributaries in Skagit County are the Cascade, Sauk and Baker Rivers. Hydroelectric dams control flows on the main stem Skagit and Baker rivers. Approximately 40 percent of the basin is uncontrolled by dams; most of this includes the Sauk River drainage. Historically, logjams, including one major jam in downtown Mount Vernon, were common along the Skagit River and caused significant flooding on floodplain terraces, including this Bank site.

4.6.1.4 Nookachamps Creek

Nookachamps Creek flows into the Skagit River one half mile east of the project site. The Nookachamps basin is roughly 50,000 acres (78 square miles) in size. It provides habitat for salmon and trout species. Water quality is degraded, primarily as a result of high temperatures from lack of riparian vegetation, and fecal coliform concentrations from non-point sources. Flooding from Nookachamps Creek occasionally inundates the project site, mostly during events coincident with the Skagit River.

4.6.1.5 Flood Water

Major floods occur primarily between the months of November and March. These floods are normally triggered by heavy rainfall from Pacific frontal systems combined with

snowmelt. Spring floods also occur on the Skagit, primarily due to annual snowmelt and runoff, typically exhibiting lower peaks and longer duration than winter floods.

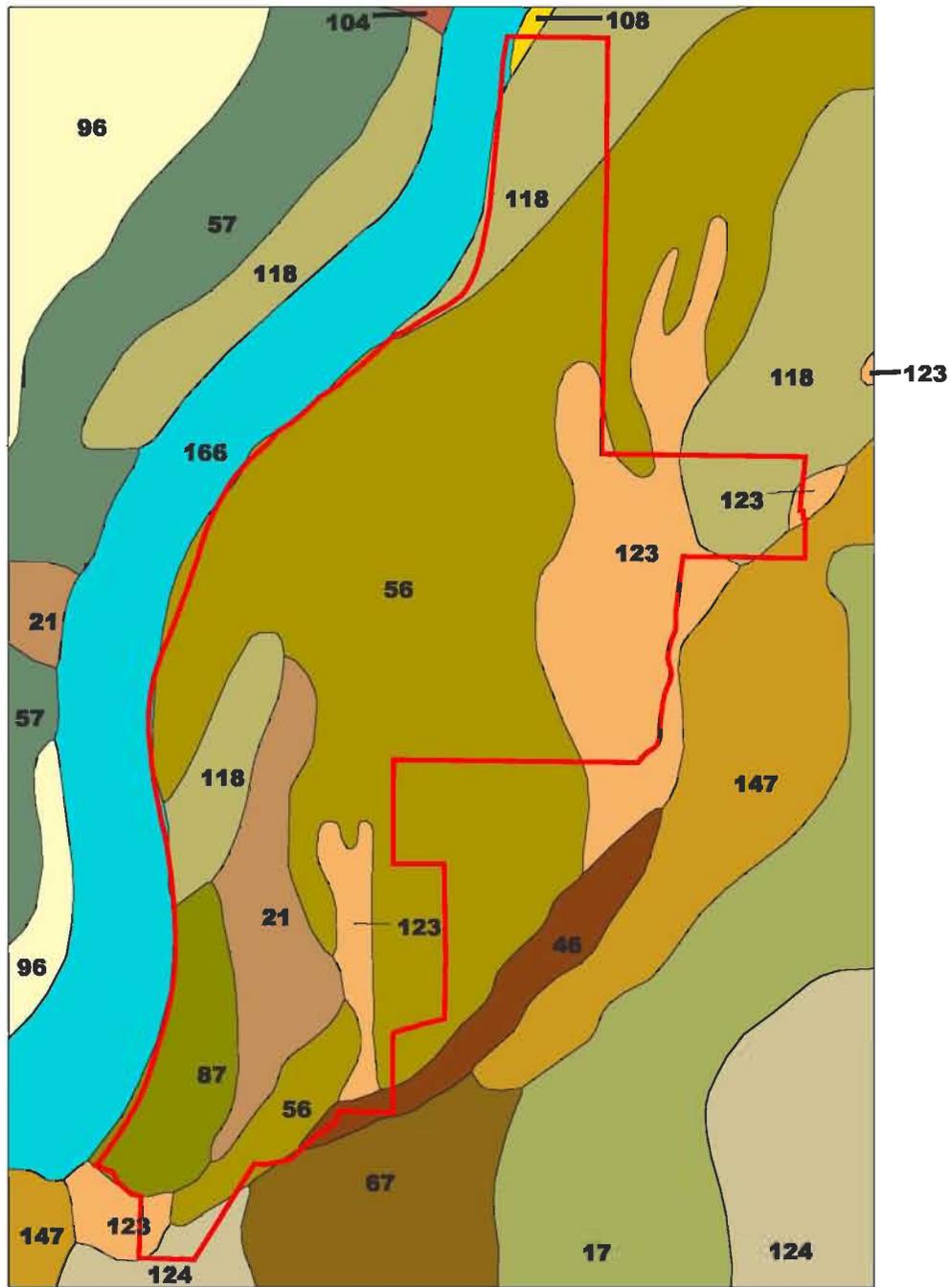
Estimated flood discharges for return intervals on the Skagit River near Concrete are as follows: (FEMA, 1989)

| <u>Return Interval</u> | <u>Discharge</u> |
|------------------------|------------------|
| 10-year flood | 124,000 cfs |
| 50-year flood | 193,000 cfs |
| 100-year flood | 226,000 cfs |
| 500-year flood | 329,000 cfs |

The project site floods on a regular basis, roughly every one to two years. A small, non continuous berm, two to four feet high, has been constructed along portions of the site adjacent to the Skagit River. This provides limited flood protection. Its elevation is 31 feet National Geodetic Vertical Datum. The opposite side of the river is protected by a 15 to 20-foot tall dike, which is about 41 feet in elevation and maintained by Dike District #12 to protect the City of Burlington and the Skagit Flats area.

4.6.2 Soils

The soils listed in the Skagit County Area Soil Survey at the proposed mitigation site are primarily composed of Field silt loam. Field silt loam is a very deep, moderately drained soil typically found on floodplains. Other soil types listed for the area include Skagit silt loam, Briscot fine sandy loam, Larush fine sandy loam, and Sedro-Woolley silt loam. All of these soil types are commonly found on floodplains and terraces. Dystric Xerochrepts soil, (found on 45 to 70 percent slopes) is also present. With the exception of dystric xerochrepts, all soils identified in the soil survey for the project site are listed on the Skagit County Area Hydric Soils List. However, due to draining, clearing, and filling from pioneering farming and logjam removal, much of the hydric soil formation is in a remnant condition (Figure 6).



| NRCS Soils | |
|---|---|
|  | 104 - Pilchuck Loamy Sand |
|  | 108 - Riverwash |
|  | 118 - Sedrow Woolley Silt Loam |
|  | 123 - Skagit Silt Loam |
|  | 124 - Skipopa Silt Loam, 0-3% slopes |
|  | 147 - Tokul Gravelly loam, 8-15% slopes |
|  | 17 - Bow Gravelly Loam, 8-15% slopes |
|  | 21 - Briscot Fine Sandy Loam |
|  | 46 - Dystric Xerochrepts, 45-70% slopes |
|  | 56 - Field Silt Loam |
|  | 57 - Field Silt Loam, Protected |
|  | 67 - Hoogdal Silt Loam, 8-15% slopes |
|  | 87 - Larush Fine Sandy Loam |
|  | 96 - Mt. Vernon Very Fine Sandy Loam |
|  | 166 - Water |

4.6.3 Vegetation

Existing vegetation in the palustrine emergent seasonally flooded wetlands and palustrine scrub-shrub seasonally flooded wetlands consists mainly of reed canarygrass (*Phalaris arundinacea*). Dominant plants in the palustrine emergent semi-permanently flooded wetlands include skunk cabbage (*Lysichiton americanum*), smartweed (*Polygonum sp.*) and spikerush (*Eleocharis sp.*). Palustrine emergent semi-permanently flooded-farmed wetlands consist of agricultural crops such as wheat and potatoes.

Riparian areas contain tree species such as big leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), and Pacific willow (*Salix lucida*), and an understory consisting primarily of red elderberry (*Sambucus racemosa*), wild crabapple (*Malus fusca*), Himalayan blackberry (*Rubus discolor*), salmonberry (*Rubus spectabilis*), and snowberry (*Symphoricarpos albus*).

Other common plants scattered throughout the site include Scoulers willow (*Salix scouleriana*), Sitka willow (*Salix sitchensis*), smartweed (*Polygonum sp.*), burreed (*Sparganium sp.*), curly dock (*Rumex crispus*), meadow foxtail (*Alopecurus pratensis*), white clover (*Trifolium repens*), broadleaf plantain (*Plantago major*) and ryegrass (*Lolium perenne*).

Historically, both banks of the Skagit River in this location were riparian woodlands, dominated by cedars and cottonwood. The average growing season is from March 14 to November 11, with a 242-day span (1989, USD Geomorphic Characteristics).

4.6.4 Functions Provided by On-site Wetlands

Eight different types of jurisdictional wetlands presently exist on site which provide various functions according to the Washington Methods for Assessing Wetland Functions methodology (WFAM). Most of these wetlands currently function at a low to moderate level. Table 1 lists 15 functions and how each type of wetland ranks in performing each function (low, moderate or high). In summary:

Palustrine scrub-shrub seasonally flooded wetlands (7.54 acres) effectively reduce erosion, provide high native plant richness, good mammal habitat, and a high potential for primary production and organic export of detritus material.

Palustrine emergent semi-permanently flooded wetlands (6.16 acres) do not provide high functions or values in any of the WFAM categories.

Palustrine emergent seasonally flooded – farmed wetlands (3.32 acres) provide a high potential to recharge groundwater.

Palustrine emergent seasonally flooded wetlands (6.8 acres) provide a high potential for primary production and organic export of detritus material.

Riverine intermittent unconsolidated bottom (0.80 acres) wetlands do not provide high functions or values in any of the WFAM categories.

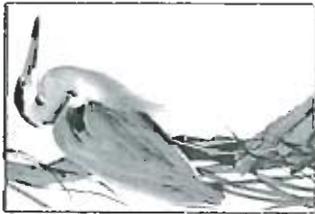


Table 1

Existing Wetlands and Other Waters Assessment Nookachamps Wetland Mitigation Bank

*Using Washington Methods for Assessing Wetland Functions methodology (WFAM)**

(L=low, M=moderate, H=high)

March 8, 2005

| Existing Wetlands & Other Waters | Method+ | Potential to remove sediment | Potential to remove nutrients | Potential to remove toxics | Potential to reduce peak flows | Potential to decrease erosion | Potential to recharge groundwater | General habitat suitability | Habitat suitability for invertebrates | Habitat suitability for amphibians | Habitat suitability for Anadromous fish | Habitat suitability for resident fish | Habitat suitability for birds | Habitat suitability for mammals | Native plant richness | Potential for production and export |
|---|---------|------------------------------|-------------------------------|----------------------------|--------------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------|------------------------------------|---|---------------------------------------|-------------------------------|---------------------------------|-----------------------|-------------------------------------|
| Palustrine Scrub-shrub Seasonally Flooded | DO | M | L | M | L | L | L | M | L | L | L | L | M | L | M | M |
| Palustrine Emergent Semi-permanently Flooded | RF | M | M | M | L | L | L | L | L | L | 0 | L | M | M | L | M |
| Palustrine Emergent Seasonally Flooded – farmed | RF | M | M | L | M | L | H | L | L | L | 0 | 0 | L | L | L | 0 |
| Palustrine Emergent Seasonally Flooded | RF | M | M | M | L | L | L | L | 0 | M | 0 | L | L | M | 0 | H |
| Riverine Intermittent Unconsolidated Bottom | RF | M | M | L | L | L | L | M | L | M | M | L | M | M | M | M |
| Palustrine Forested Seasonally Flooded | DO | H | M | M | H | M | L | M | L | M | H | M | M | M | M | M |
| Riverine Lower Perennial Open Water | RF | L | L | L | L | L | L | M | M | M | H | H | H | M | M | M |
| Palustrine Forested Seasonally Flooded – Hummocky | RF | H | H | L | M | H | H | H | L | M | H | M | H | M | H | H |

*Functional assessments performed by: Mark Young, Tom Cannon, Jennifer Aylor, Jan Cessna, and Sky Miller with limited input by Dyanne Sheldon.

+RF = Riverine Flow Through model; DO = Depressional Outflow model

Palustrine forested seasonally flooded wetlands (13.79 acres) has a high potential to remove sediment and to reduce peak flows. This type of wetland also provides good anadromous fish habitat.

Riverine lower perennial open water (0.22 acres) wetlands are highly suitable for anadromous and resident fish as well as birds.

Palustrine forested seasonally flooded - hummocky wetlands (13.41 acres) have a high potential to remove sediment and nutrients, to decrease erosion, recharge groundwater, and provides high habitat suitability for mammals, reduce peak flows. This type of wetland also provides good anadromous fish and bird habitat. They are high in native plant richness and the potential for primary production and organic export of detritus material.

4.6.5 Functions Provided by Other Existing Land Uses

A similar analysis of functions and values was conducted for the five other land uses that currently exist at this site, using the Best Professional Judgment (BPJ) model. Table 2 lists how each land use ranked for each of the same 15 functions, from low to high. In summary:

The Riparian Forested Channel (Analog) (19.41 acres) effectively reduces erosion, provides high native plant richness, good mammal habitat, and has a high potential for primary production and organic export of detritus material.

The Active Agriculture area (172.37 acres) provides high habitat suitability for birds and mammals.

Fallow Agriculture areas (64.33 acres) have a high potential to remove sediment, nutrients and toxins.

The riverbank strip area (3.11 acres) does not provide high functions or values in any of the BPJ categories.

Upland riparian scrub-shrub areas (6.29 acres) do not provide high functions or values in any of the BPJ categories.



Table 2

**Existing Uplands Assessment
Nookachamps Wetland Mitigation Bank**

Using Best Professional Judgment Methodology (BPJ)
(L=low, M=moderate, H=high)*

March 8, 2005

| Existing Uplands | Method | Potential to remove sediment | Potential to remove nutrients | Potential for removing toxics | Potential to reduce peak flows | Potential for decreasing erosion | Potential for recharging groundwater | General habitat suitability | Habitat suitability for invertebrates | Habitat suitability for amphibians | Habitat suitability for Anadromous fish | Habitat suitability for resident fish | Habitat suitability for birds | Habitat suitability for Mammals | Native plant richness | Potential for production and export |
|------------------------------------|--------|------------------------------|-------------------------------|-------------------------------|--------------------------------|----------------------------------|--------------------------------------|-----------------------------|---------------------------------------|------------------------------------|---|---------------------------------------|-------------------------------|---------------------------------|-----------------------|-------------------------------------|
| Riparian Forested Channel (Analog) | RF* | M | M | L | L | H | M | M | L | M | M | M | M | H | H | H |
| Active Agriculture | BPJ | M | M | M | M | N/A | Not Assessed | M | L | M | M | M | H | H | N/A | L |
| Fallow Agriculture | BPJ | H | H | H | M | L | Not Assessed | M | L | M | M | M | L | L | N/A | M |
| Riverbank Strip | BPJ | M | M | M | L | L | Not Assessed | M | L | M | M | M | M | M | M | M |
| Upland Forest Scrub-shrub | BPJ | L | L | L | L | L | Not Assessed | M | L | M | Not Provided | Not Provided | M | M | M | L |

*RF= Riverine Flow Through model of WFAM methodology was used

5. Conceptual Site Design

The proposed mitigation design includes enhancing a mosaic of existing wetland and upland riparian habitat types as well as creating new wetlands – primarily palustrine scrub-shrub seasonally flooded- and restoring the agricultural land to its historic habitat of riparian floodplain forest (Figure 7).

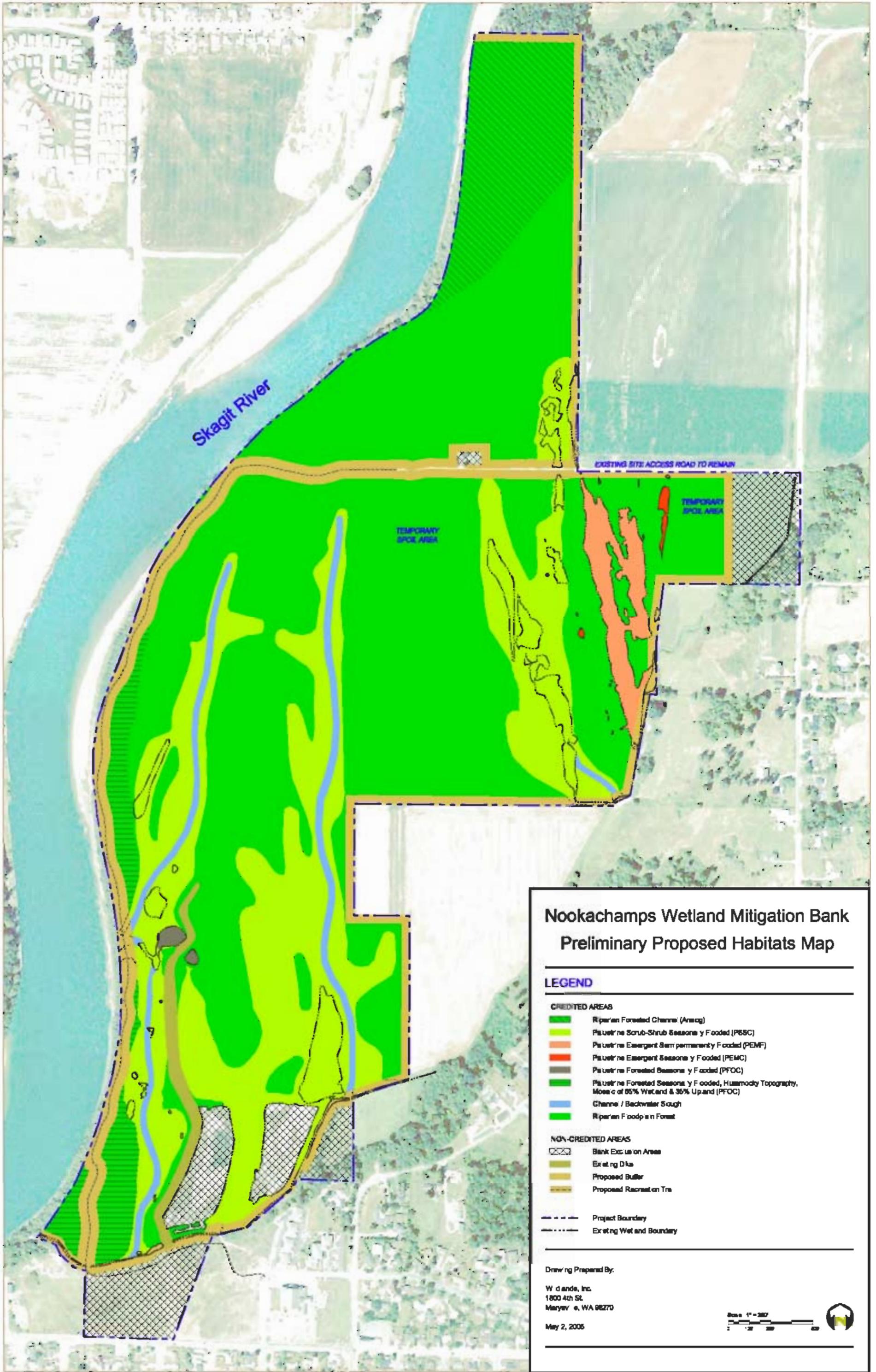
A low-flow channel, approximately 15 feet wide and an average of four feet deep, will be excavated in several of the proposed palustrine scrub-shrub seasonally flooded wetlands. These channels will connect to either the Skagit River or toe drain, allowing flood waters to back up into this proposed wetland habitat. Adjacent to these wetland channels, low-lying terraces of various widths will be excavated. The site will also be revegetated with native trees, shrubs and other wetland and riparian specific plants.

A 50-foot-wide buffer will be placed between proposed habitats and adjacent land uses (not part of mitigation bank acreage). A five-foot-wide primitive trail is proposed, running from the southwest corner of the site north along the river and then turning east to join the existing county access road in the northern section. It will have a 50-foot-wide vegetated buffer on each side that will not be included as mitigation bank acreage. A log-bridge type crossing will be built over one of the proposed wetland channels.

The man-made wetlands at the southern tip of this site are also not included as mitigation bank acreage.

5.1 Proposed Types and Approximate Sizes of Jurisdictional Wetlands and Other Waters

Palustrine scrub-shrub seasonally flooded wetlands (approximately 67 acres), will be created from portions of existing palustrine emergent seasonally flooded-farmed areas, palustrine emergent seasonally flooded areas, palustrine forested seasonally flooded-hummocky areas, and active and fallow agricultural lands. See Table 3 for conversion and acreage details.



Nookachamps Wetland Mitigation Bank Preliminary Proposed Habitats Map

LEGEND

- CREDITED AREAS**
- Riparian Forested Channel (Anacog)
 - Pasture Scrub-Shrub Seasonally Flooded (PSSC)
 - Pasture Emergent Seasonally Flooded (PEMF)
 - Pasture Emergent Seasonally Flooded (PEMC)
 - Pasture Forested Seasonally Flooded (PFOC)
 - Pasture Forested Seasonally Flooded, Hummocky Topography, Mosaic of 65% Wetland & 35% Upland (PFOC)
 - Channel / Backwater Scough
 - Riparian Foodplain Forest
- NON-CREDITED AREAS**
- Bank Exclosure Areas
 - Existing Dike
 - Proposed Buffer
 - Proposed Recreation Trail
 - Project Boundary
 - Existing Wetland Boundary

Drawing Prepared By:

W. J. G. & Co., Inc.
1800 4th St.
Marysville, WA 98270
May 2, 2005



Table 3. Conversion of Existing Habitats to Proposed Habitats
Nookachamps Wetland Mitigation Bank

| Existing Habitat | Proposed Habitat Conversion and Acreage |
|--|---|
| Riparian Forested Channel (Analog) | 17.84 - Enhanced Riparian Forested Channel (Analog) <u>1.57</u> - Buffer 19.41 acres |
| Palustrine Scrub-shrub Seasonally Flooded | 2.50 - Enhanced Palustrine Scrub-shrub Seasonally Flooded 0.93 - Buffer <u>0.27</u> - Palustrine Scrub-shrub Seas. Flooded 3.70 acres |
| Palustrine Emergent Semi-permanently Flooded | 5.89 - Enhanced Palustrine Emergent Semi-permanently Flooded <u>0.28</u> - Buffer 6.17 acres |
| Palustrine Emergent Seasonally Flooded - farmed | 3.32 acres - Palustrine Scrub-shrub Seasonally Flooded |
| Palustrine Emergent Seasonally Flooded | 3.37 - Palustrine Scrub-shrub Seasonally Flooded 0.36 - Enhanced Palustrine Emergent Seasonally Flooded <u>0.08</u> - Buffer 3.81 acres |
| Riverine Intermittent Unconsolidated Bottom | 1.10 acres – Buffer <u>0.09</u> acres – Bank Exclusion Area 1.19 acres |
| Palustrine Forested Seasonally Flooded | 0.50 acres - Enhanced Palustrine Forested Seasonally Flooded |
| Riverine Lower Perennial Open Water | 0.22 acres - Buffer |
| Palustrine Forested Seasonally Flooded - Hummocky | 8.87 - Enhanced Palustrine Forested Seasonally Flooded-Hummocky 3.67 - Buffer and Trail 0.47 - Palustrine Scrub-shrub Seas. Flooded <u>0.40</u> - Channel 13.41 acres |
| Active Agriculture | 120.55 - Riparian Floodplain Forest 38.23 - Palustrine Scrub-shrub Seasonally Flooded 8.86 - Buffer <u>4.73</u> - Channel 172.37 acres |
| Fallow Agriculture | 25.60 - Riparian Floodplain Forest 21.32 - Palustrine Scrub-shrub Seas. Flooded 9.84 – Bank Exclusion Area 5.92 - Buffer <u>1.53</u> - Channel 64.21 acres |

Table 3. Conversion of Existing Habitats to Proposed Habitats - Continued
 Nookachamps Wetland Mitigation Bank

| Existing Habitats | Proposed Habitat Conversions and Acreages |
|-----------------------------------|---|
| Riverbank Strip | 1.66 - Riparian Floodplain Forest <u>1.45</u> - Buffer and Trail 3.11 acres |
| Upland Forest Scrub-Shrub | 2.82 - Riparian Floodplain Forest 2.53 - Bank Exclusion Area <u>0.94</u> - Buffer 6.29 acres |
| Existing Enhanced Wetlands | 6.83 acres - unchanged |
| Access Road | 0.49 acres - unchanged |
| Existing Dike | 3.21 acres - unchanged |
| Francis Road | 0.14 acres - unchanged |
| Pentec Wetland | 2.14 acres - unchanged |
| | |
| TOTAL | 310.52 acres |

The remaining (not-converted) portions of the five different jurisdictional wetlands on site will be enhanced. These are: palustrine scrub-shrub seasonally flooded wetlands (2.5 acres), palustrine emergent semi-permanently flooded (5.89 acres), palustrine emergent seasonally flooded (0.36 acres), palustrine forested seasonally flooded (0.50 acres), and palustrine forested seasonally flooded-hummocky (8.87 acres).

The riverine intermittent unconsolidated bottom (0.80 acres) areas and the riverine lower perennial open water (0.22 acres) areas will not be altered. These areas will be excluded from credit calculations as they will be part of the protected buffer.

Credit ratios were developed based on the Draft Washington State rules, as well as the environmental lift gained for key functions for each kind of habitat.

5.2 Other Proposed Habitat Types to be Provided

To be a jurisdictional wetland, a site must possess hydric solids, support wetland vegetation, and have standing water for a minimum of seven percent of the growing season (approximately 17.5 consecutive days). While hydric soils are present throughout this site, the necessary hydrology and topography are lacking in some elevated areas.

Therefore, other habitats being created or enhanced will not be classified as jurisdictional wetlands because of this elevation difference. However, they will have riparian vegetation and soils consistent with jurisdictional wetlands, and provide many of the functions and values of jurisdictional wetlands because of their proximity to the Skagit River.

The Riparian Forested Channel (Analog) (17.84 acres) will be enhanced and the riparian floodplain forest (148.97 acres) will be created. Specifically, the riparian floodplain forest habitat will provide (based on Best Professional Judgment) high nutrient and toxic removal, high erosion control and shoreline stabilization, high native plant richness, high organic matter production and export, highly suitable habitat for birds and mammals, moderate flow alteration and sediment reduction, moderate fish and amphibian habitat and low aquatic invertebrate habitat. The Riparian Forested Channel (Analog) will be highly suitable habitat for amphibians, resident and anadromous fish, birds and mammals, as well as have a high potential to produce and export organic matter.

5.3 Proposed Functions that the Bank Will Provide

5.3.1 Wetland and Riparian Habitat Functions

This Bank will provide the following functions at a moderate to high degree: remove sediment, nutrients and toxins; reduce peak flows and soil erosion; recharge groundwater; and provide suitable habitat for a variety of aquatic invertebrates, amphibians, anadromous and resident fish, birds, and mammals (Table 4).

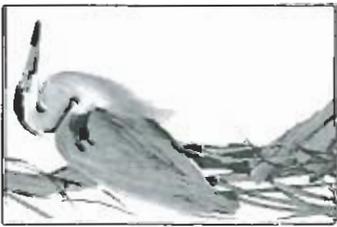


Table 4

Created and Enhanced Habitats Assessment Nookachamps Wetland Mitigation Bank

Using WFAM or BPJ methodology
(L=low, M=moderate, H=high)*

March 8, 2005

| Created and Enhanced Habitats | Method+ | Potential to remove sediment | Potential to remove nutrients | Potential to remove toxics | Potential to reduce peak flows | Potential to decrease erosion | Potential to recharge groundwater | General habitat suitability | Habitat suitability for invertebrates | Habitat suitability for amphibians | Habitat suitability for Anadromous fish | Habitat suitability for resident fish | Habitat suitability for birds | Habitat suitability for mammals | Native plant richness | Potential for production and export |
|---|---------|------------------------------|-------------------------------|----------------------------|--------------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------|------------------------------------|---|---------------------------------------|-------------------------------|---------------------------------|-----------------------|-------------------------------------|
| Palustrine Scrub-shrub Seasonally Flooded | DO | L | L | L | L | L | L | M | L | L | L | L | L | L | M | M |
| Palustrine Emergent Semi-permanently Flooded | RF | M | M | M | L | L | L | M | L | M | 0 | L | M | M | L | M |
| Palustrine Emergent Seasonally Flooded | RF | M | M | M | L | L | L | L | 0 | M | 0 | L | L | M | L | H |
| Riverine Intermittent Unconsolidated Bottom | RF | M | M | L | L | L | L | M | L | M | M | L | M | M | M | M |
| Palustrine Forested Seasonally Flooded | DO | H | M | M | H | M | L | M | L | M | H | M | M | M | M | M |
| Riverine Lower Perennial Open Water | RF | L | L | L | L | L | L | M | M | M | H | H | H | H | H | M |
| Palustrine Forested Seasonally Flooded - Hummocky | RF | H | H | L | M | H | H | H | M | H | H | M | H | H | H | M |
| Riparian Forested Channel (Analog) | RF | M | M | M | L | M | M | H | M | H | H | H | H | H | M | H |
| Riparian Floodplain Forest | BPJ | M | H | H | M | H | Not Assessed | H | L | M | M | M | H | H | H | H |

*Functional assessments performed by: Mark Young, Tom Cannon, Jennifer Aylor, Jan Cesna, and Sky Miller with limited input by Dyanne Sheldon.
+RF = Riverine Flow Through model; DO = Depressional Outflow model

In addition, the site will also add regional ecological diversity and wetland complexity, provide a high level of plant species richness as well as the primary production and export of organic matter. Over time, each created or enhanced habitat type is expected to perform relatively or significantly better than the existing habitat type it is replacing.

5.3.2 Peak Flow Reduction

The site stores floodwater during large events (up to 3,000 acre-feet) but this does not significantly affect the Skagit River flows.

5.3.3 Recreation

Limited passive recreation opportunities will be included in the design of the Bank via a trail along the western edge along the river.

6. Potential Adverse Impacts

Potential adverse impacts to aquatic resources or other habitat from this mitigation Bank project include construction-related erosion or sedimentary impacts, which will be similar to or less than impacts caused by agricultural activities; construction-related noise impacts, which will also be similar to agricultural impacts but could temporarily be of a longer duration; accidental or indirect impacts to fauna related to the passive recreational uses; or, without proper controls, introduction of nonnative vegetation.

The raptor foraging area will be reduced. However, many acres of farmed land in the adjacent area continue to provide forage area for migrating water fowl and sensitive species such as swans.

6.1 Timing Limitations

Construction will be timed to avoid any negative impacts to sensitive, threatened and endangered species (bald eagles, Chinook salmon, Bull trout) as required by state and federal permits.

6.2 Buffer zones

Existing native vegetation will not be disturbed outside of the designated construction area. A 50-foot-wide permanent perimeter site buffer will be placed between proposed habitats and incompatible adjacent land uses.

6.3 Fish Stranding

To prevent fish stranding, channels created in the palustrine scrub-shrub seasonally flooded habitats will be constructed at an approximate slope of 1:1,000 feet from upstream to downstream end. The mouth of each channel will equal the river elevation at the mean annual flow of approximately 16,610 cfs. If fish kill occurs or fish are observed in distress, the project activity shall immediately cease and WDFW habitat program shall be notified immediately. Project activities shall not degrade water quality to the detriment of fish life.

6.4 Monitoring

Each year during the first five years monitoring of plant, fish and wildlife species usage will be conducted to ascertain biologic performance and to make adaptive changes if necessary. Invasive plants will be eradicated as needed. Dead tree and shrub plantings will be replaced as necessary to meet performance standards.

6.5 Connection to the Skagit River

Connecting the constructed channels to the Skagit River will be completed during the late summer low flow period when the elevation of the river is below the design elevation of the channel mouth.

7. Proposed Service Area

The proposed service area reflects the extent of like ecological benefits found throughout the watershed compared to the functions and values to be provided at the Bank. Wetland benefits will occur through water quality and aquatic habitat improvements and extend throughout the lower Skagit watershed. The proposed Nookachamps Service Area will encompass the area described below and shown in Figure 8.

All of the Lower Skagit/Samish Water Resource Inventory Area (WRIA 3) east of the easternmost boundaries of Swinomish Slough, Skagit Bay, Padilla Bay, and Samish Bay, excluding tidally influenced wetlands, brackish marshes, or halotrophic wetlands in and along Swinomish Slough, Skagit Bay, Padilla Bay, Samish Bay, and the north and south forks of the Skagit River.

The Washington State Draft Wetland Mitigation Banking Rules (WAC 173-700, 2001) define the following considerations, which must be addressed in defining a service area:

7.1 Whether and how far the ecological and hydrological benefits of the bank extend beyond the bank site location:

The ecological and hydrological benefits of the Bank include 1) flooding, erosion, and sedimentation benefits that extend throughout the lower Skagit River (WRIA 3) floodplain which extends from Conway through La Conner, Fredonia, Edison, and Bow in the Samish River lowlands; 2) migratory waterfowl over-wintering benefits in the lower Skagit River (WRIA 3) floodplain, including Fir Island; Skagit, Padilla, and Samish bays; and WRIA 3 tributaries; 3) anadromous fish benefits, including migratory bull trout and sea-run cutthroat that travel between the Skagit River and other WRIA 3 systems like the Samish River and tributaries; and 4) wildlife habitat benefits along the Skagit River and WRIA 3 floodplain and tributary corridors.

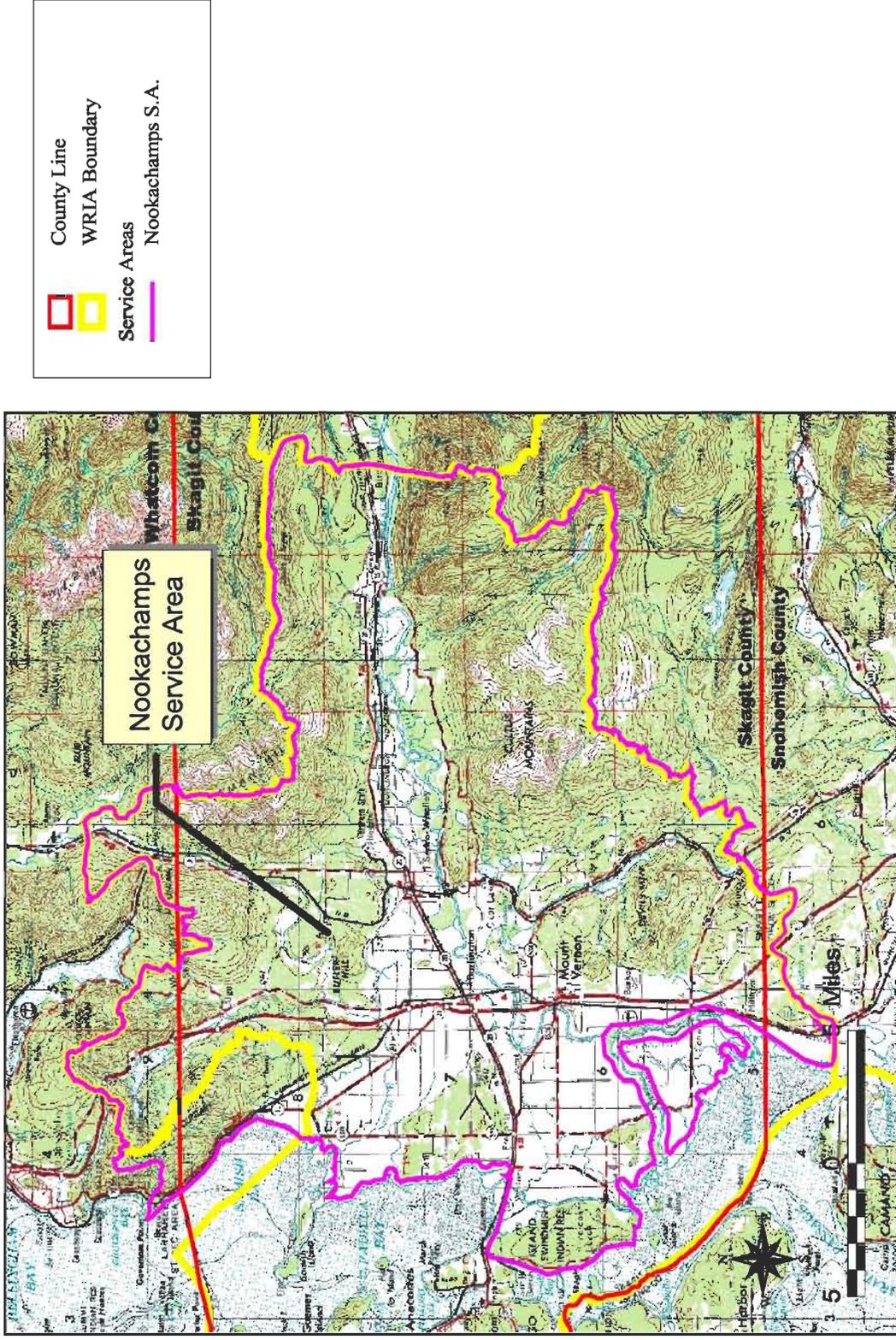


Figure 8
Proposed Service Area

7.2 The landscape position of the bank site within the watershed:

The Bank is adjacent to the main stem of the Skagit River in the Skagit Valley flatlands, near the mouth of Nookachamps Creek.

7.3 The ecological sustainability of the bank site:

The vast majority of the Bank will be influenced solely by natural hydrology and therefore be inherently sustainable. The man-made structures (trail, flood gate, dike) will not be ecologically sustainable and will require regular maintenance.

7.4 The quality, diversity, and regional significance of the habitats provided:

This effort will replace islands of remnant and degraded habitat with large connected, functioning ecosystems. Replacing large-scale agricultural land with robust riparian and wetland habitats will see a significant improvement in water quality, flood storage and groundwater recharge. Riparian buffer and off-channel wetlands will restore high-quality habitats that have become scarce along the Skagit River. The created off-channel habitats will also trap sediment, increase detritus beneficial to salmon and other fish, and create a flood refuge for juvenile salmon and other fish. The proposed edge between upland and wetland habitats is highly sinuous, which is a very desirable habitat feature that is sorely lacking in much of this watershed.

More intact, diversely vegetated and multi-layered upland and riparian buffer habitats will greatly reduce erosion; trap sediments and nutrients; and provide secure sources of food, shelter and space for a multitude of invertebrates, amphibians, birds and mammals as well as benefit aquatic species. As revegetation continues at the site and exotic plants are removed or shaded out, habitat quality and diversity will continue to increase.

7.5 Local needs and requirements, such as consistency with land-use or watershed management plans:

This Bank is consistent with local planning, land-use, and watershed management plans. In its Overall Economic Development Plan, the City of Mount Vernon states, “wetland mitigation areas should be identified to create, resolve and enhance degraded areas.” The Plan also encourages that “Wildlife habitat should be created or enhanced along riparian areas as part of wildlife protection and enhancement.”

The Skagit County Comprehensive Plan directly encourages the “public and private acquisition of critical areas for permanent conservation,” as well as the “voluntary restoration and enhancement of lost or degraded wetlands.”

In the Comprehensive Plan, the City has identified the need for buffers and logical boundaries between urban and rural land uses. The Nookachamps Mitigation Bank will address this need by creating a permanent green space which will help create a northern boundary between Mount Vernon and surrounding agricultural areas, and will also create a major open-space buffer between Mount Vernon and Burlington. This will contribute to an orderly and progressive transition of land uses, as recommended by the County Comprehensive Plan.

This Bank is not considered a park, therefore, the City will not issue open space impact credits. The City will issue Nookachamps, LLC. some park impact credits as reimbursement for the cost of constructing the primitive trail at the project's western edge. No wetland credits will be issued for the trail or its associated buffer.

7.6 Consideration of the types of impacts to wetlands or other aquatic resources that may be compensated through the use of credits from the banks:

It is anticipated that the Nookachamps Mitigation Bank will compensate for impacts to low-functioning wetlands and riparian habitats that are allowed to occur through local, state and federal permitting processes. Current Washington State land use laws provide a mechanism for wetland crediting only. In the near future Nookachamps, LLC. will explore credits for riparian habitat through cooperation with National Oceanic and Atmospheric Administration (National Marine Fisheries Service) and U.S. Fish and Wildlife Service. Credit tracking will show all types of impacts mitigated for to ensure proper credit debiting.

7.7 Available information on baseline conditions in the requested service area such as that found in watershed management plans, function assessments, wetland mapping or inventories, storm water management plans, and comprehensive land use plans:

Studies and reports used include the Draft Inventory and Evaluation of Stream and Riparian Habitats of Mount Vernon, Washington; Soil Survey of Skagit County Area, Washington; A Feasibility Study for Edgewater Park Off-Channel Slough Restoration; The Skagit Risk: Resource Information for the Skagit River Flood Protection/Salmon Restoration Project; Guidelines for Enhancement of Riparian Areas: City of Mount Vernon and Urban Growth Area; Wetland Mitigation Banking Sites: City of Mount Vernon; Capital Improvement Projects: City of Mount Vernon and Urban Growth Area; Wetland and Stream Inventory: City of Mount Vernon and Urban Growth Area; and the National Wetlands Inventory, Mount Vernon quadrangle.

A river gaging station is located nearby on the Riverside Drive Bridge. Data collected at this station has been, and will continue to be, used to understand hydrologic conditions of the Skagit River near the project site and correlate these conditions with those occurring on the site.

8. Environmental Lift

Credit values will be determined based on the environmental lift gained by improving habitat functions after existing conditions are enhanced or better conditions are created as modeled using Washington Methods for Assessing Wetland Functions (WFAM) and Best Professional Judgment (BPJ) methodologies. The following describes the environmental lift gained for each existing habitat type when converted to the proposed wetlands and other habitat types.

8.1 Palustrine Scrub-shrub Seasonally Flooded Wetlands

The majority of palustrine scrub-shrub seasonally flooded wetlands (2.50 acres) will remain and be enhanced by removing exotic vegetation and promoting a natural connection to groundwater through adjacent excavation. Slightly less than one acre of this wetland type will be enhanced, but excluded from credit calculations as it will be part of the project buffer. One quarter acre (0.27 acre) will be enhanced. The environmental lift gained will be realized by increased habitat suitability for amphibians (by year seven) and native plant richness (by year 10).

8.2 Palustrine Emergent Semi-permanently Flooded Wetlands

The majority of palustrine emergent semi-permanently flooded wetlands (5.89 of 6.17 acres) will remain and be enhanced by removing exotic vegetation and promoting a natural connection to groundwater through adjacent excavation. The remaining area (0.28 acres) will still be enhanced, but excluded from credit calculations as it will be part of the project buffer. The environmental lift gained will be realized by decreased erosion, increased habitat suitability for general species, amphibians, invertebrates, birds, and mammals. These benefits will be realized between years one and three.

8.3 Palustrine Emergent Seasonally Flooded – Farmed Wetlands

All of the palustrine emergent seasonally flooded – farmed wetlands (3.32 acres) will be converted to palustrine scrub-shrub seasonally flooded wetlands. This will be accomplished by channel and adjacent floodplain excavation (to increase the connection to groundwater) in conjunction with reforestation with native plants, and by placing large woody debris in various stages of decomposition. The environmental lift gained will be realized by increased removal of sediments, toxics, and nutrients; decreased erosion; increased habitat suitability for general species, amphibians, invertebrates, birds, mammals, and anadromous and resident fish; increased native plant richness, and increased production and export of organic detritus matter. These benefits will be realized primarily in year one with additional benefit realized by year three.

8.4 Palustrine Emergent Seasonally Flooded Wetlands

Palustrine emergent seasonally flooded wetlands (0.36 acres) will be enhanced. Enhancement will be done by removing exotic plants and promoting a natural connection to groundwater through adjacent excavation. The other half, 3.37 acres will be converted to palustrine scrub-shrub seasonally flooded wetlands by careful excavation, planting, reintroduction of groundwater, and by placing large woody debris in various stages of decomposition. The remaining amount (0.08 acre) of palustrine emergent seasonally flooded wetland will still be enhanced, but will not be considered for credits as it will be part of the project buffer.

The environmental lift gained from enhancement will be realized by increased removal of sediments and nutrients; decreased erosion; increased groundwater recharge; increased habitat suitability for general species, invertebrates, birds, mammals, and anadromous and resident fish; increased native plant richness, and increased production and export of organic detritus matter. These benefits will be realized primarily in year one with additional benefits realized by year three.

The environmental lift gained from creation will be realized by increased habitat suitability for birds and mammals, and increased native plant richness. These benefits will be realized by years five, seven, and one respectively.

8.5 Riverine Intermittent Unconsolidated Bottom Wetlands

The existing riverine intermittent unconsolidated bottom wetlands (1.1 acres) will be left unaltered as part of the project buffer. As such, it will be excluded from credit calculations.

8.6 Palustrine Forested Seasonally Flooded Wetlands

All of the palustrine forested seasonally flooded wetlands (0.5 acres) will be enhanced by earthwork that will tie these wetlands into the palustrine scrub-shrub seasonally flooded wetlands, and by placing large woody debris in various stages of decomposition. The environmental lift gained from enhancement will be realized by increased habitat suitability for general species, and increased native plant richness. These benefits will be realized by year five.

8.7 Riverine Lower Perennial Open Water

The riverine lower perennial open water wetlands (0.22 acres) will be left unaltered as part of the project buffer. As such, it will be excluded from credit calculations.

8.8 Palustrine Forested Seasonally Flooded - Hummocky Wetlands

Slightly more than half of the palustrine forested seasonally flooded - hummocky wetlands will be enhanced (8.87 of 13.41 acres). This will be done by adding large woody debris in various stages of decomposition, and by planting native conifers--grand fir (*Abies grandis*), western red cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), and western hemlock (*Tsuga heterophylla*). The environmental lift gained will be realized by increased habitat suitability for invertebrates and mammals in year one.

A small portion of this wetland type will be converted to channel/backwater slough (0.40 acre) and palustrine scrub-shrub seasonally flooded wetlands (0.49 acre). This will be accomplished by channel and adjacent floodplain excavation (to increase its connection to groundwater) in conjunction with reforestation with native plants, and by placing large woody debris in various stages of decomposition. The environmental lift gained from this conversion will be realized by increased removal of toxins, and increased habitat suitability for invertebrates, resident fish, birds, and mammals. Some of these benefits will be realized in year one, with the rest realized by year three.

The remaining portion of this wetland type (3.67 acres) will be converted to the primitive recreation trail (at the project's western edge) and its associated buffer. Much of this acreage will still be enhanced but will not be considered for credits as it will be part of the trail buffer.

8.9 Active Agriculture

The majority of the active agricultural land (120.55 of 172.37 acres) will be restored to its historic riparian floodplain forest condition. This will be accomplished through densely planting native trees and shrubs, and by placing large woody debris in various stages of decomposition. The environmental lift gained from this restoration will be realized by increased removal of toxics and nutrients; decreased erosion; increased groundwater recharge; increased habitat suitability for general species, birds, and mammals; increased native plant richness; and increased production and export of organic detritus matter. Significant benefits will be realized in years one, three and five with ongoing gains in environmental lift as the native plantings mature.

A smaller portion of active agriculture land will be converted to channel/backwater slough (4.73 acres) and palustrine scrub-shrub seasonally flooded wetlands (38.23 acres). This will be accomplished by channel and adjacent floodplain excavation (to increase its connection to groundwater) in conjunction with reforestation with native plants, and by placing large woody debris in various stages of decomposition. The environmental lift gained from this conversion will be realized by increased removal of nutrients; decreased erosion; increased groundwater recharge; increased habitat suitability for general species, invertebrates, amphibians, anadromous and resident fish, birds, and mammals; increased native plant richness; and increased production and export of organic detritus matter. Initial benefits will be realized in year one; additional benefits will occur by year three.

The remaining active agriculture land (8.86 acres) will be converted to the project buffer, trail, and trail buffer. This area will still be densely planted, but will not be counted toward project credits.

8.10 Fallow Agriculture

About half of the fallow agricultural land (25.60 of 64.21 acres) will be restored to its historic condition of a riparian floodplain forest. This will be accomplished through densely planting native trees and shrubs, and by placing large woody debris in various stages of decomposition. The environmental lift gained from this restoration will be realized by decreased erosion; increased habitat suitability for general species, birds, and mammals; increased native plant richness; and increased production and export of organic detritus matter. Significant benefits will be realized in years one, three and five with ongoing gains in environmental lift as the plantings mature.

A smaller portion of fallow agriculture land will be converted to channel/backwater slough (1.53 acres) and palustrine scrub-shrub seasonally flooded wetlands (21.32 acres). The environmental lift gained from this conversion will be realized by decreased erosion; increased groundwater recharge; increased habitat suitability for general species, invertebrates, amphibians, anadromous and resident fish, birds, and mammals; increased native plant richness; and increased production and export of organic detritus matter. Initial benefits will be realized in year one with additional benefits by year three.

The remaining portion of fallow agriculture land (5.92 of 64.21 acres) will be converted to the primitive trail and buffer. This area will still be densely planted, but will not be

counted toward project credits. The remaining area will be part of the bank exclusion area, and labeled as such on project maps.

8.11 Riverbank Strip

Half of the riverbank strip habitat (1.66 of 3.11 acres) will be enhanced. This habitat type is limited by a relatively monoculture plant stand. Enhancement will be accomplished by greatly increasing native plant diversity, and by placing large woody debris in various stages of decomposition. These actions will better integrate this habitat with the riparian floodplain forest. The environmental lift gained from this restoration will be realized by increased removal of toxics and nutrients; decreased erosion; increased groundwater recharge; increased habitat suitability for general species, birds, and mammals; increased native plant richness; and increased production and export of organic detritus matter. Significant benefits will be realized in years one, three and five with ongoing gains in environmental lift as the native plantings mature. The remaining area (1.45 acres) will be converted to the primitive trail and buffer.

8.12 Upland Forest Scrub-Shrub

About half of the upland forest scrub-shrub habitat (2.82 of 6.29 acres) will be restored to its historic riparian floodplain forest condition. This will be accomplished through densely planting native trees and shrubs, and by placing large woody debris in various stages of decomposition. The environmental lift gained from these actions will be realized by increased removal of sediments, nutrients, and toxins; altered flood flow; decreased erosion; increased habitat suitability for general species, anadromous and resident fish, birds, and mammals; increased native plant richness; and increased production and export of organic detritus matter. Most benefits will be realized by year three; additional benefits will occur by year five.

A small portion of upland forest scrub-shrub habitat (0.94 of 6.29 acres) will be converted to the project buffer. This area will still be densely planted, but will not be counted toward project credits. The remaining acreage (2.53 acres) will be part of the bank exclusion area, and labeled as such on project maps.

9. Proposed Credit Release

Credits are proposed to be released according to the schedule shown in Table 5.

| Table 5 Proposed Credit Release Table | | | | | |
|---|--|-----------|-----------|-----------|-----------|
| Goals Measured By Performance Standard | Percent of Credits Released by Performance (Estimated by Year) | | | | |
| | 1* | 3 | 5 | 7 | 10 |
| 1. Obtain Required MBI Signatures | 10 | | | | |
| 2. Establish Conservation Easement | 10 | | | | |
| 3. Construct per Design and Submit As-builts | 10 | | | | |
| 4A. Hydrologic Standard #1 (visual groundwater well confirmation) | 10 | | | | |
| 4B. Hydrologic Standard #2 (wetland delineation) | | 10 | | | |
| 5. Meet Vegetation Standards: As-built planting plans Minimum 30 percent herbaceous cover Minimum of two plant assemblages surviving Minimum of three vegetation strata surviving 75 percent canopy closure over channels Reduce invasive species to 20 percent or less | | 5 10 | 10 5 | 5 5 | |
| 6. Fund a long-term endowment | | | | | 10 |
| Credit Percentage Totals | 40 | 25 | 15 | 10 | 10 |

*Year one begins after installation of first phase of planting is complete.

10. Water Rights

Agricultural water rights are preexisting on the site, and will remain with it (see discussion in Section 3.2). However, long-term habitat restoration will be based on natural ecological processes rather than pumped water.

11. Financial Assurances

Wildlands, Inc. routinely provides financial backing and assurances for its projects. The construction is funded directly from the firm's working capital and guaranteed through construction performance bonds. The construction performance bonds are generally 120 percent of the estimated construction cost and are issued by a surety authorized to issue bonds or equivalent securities. The contingency security is typically in the form of certificates of deposit and/or irrevocable standby letters of credit. Long-term management is funded through a non-wasting endowment account constituted from a percentage of credit sales. The accrued interest and earnings from the endowment account shall be used to fund the permanent management and long-term maintenance of the property.

12. Permanent Protection Mechanism

Wildlands, Inc. will view the site primarily as a dynamic ecosystem (exceptions include trail, access road, dike and toe drain), and management strategies will be adjusted according to its changing conditions.

Plant revegetation will include creating or enhancing the various habitats by establishing deciduous and evergreen native trees, shrubs and other wetland and riparian plants where appropriate. Eradication will be carried out as needed for invasive plant species such as purple loosestrife (*Lythrum salicaria*), Himalayan blackberry (*Rubus discolor*), Japanese knotweed (*Polygonum cuspidatum*), and reed canarygrass (*Phalaris arundinacea*). Ongoing replanting of native vegetation will be carried out as needed in case of mass failure or damage. A certain percentage of plant mortality is expected; however, it will be monitored and controlled according to performance standards. Mowing and weeding will be provided as part of plant maintenance if required.

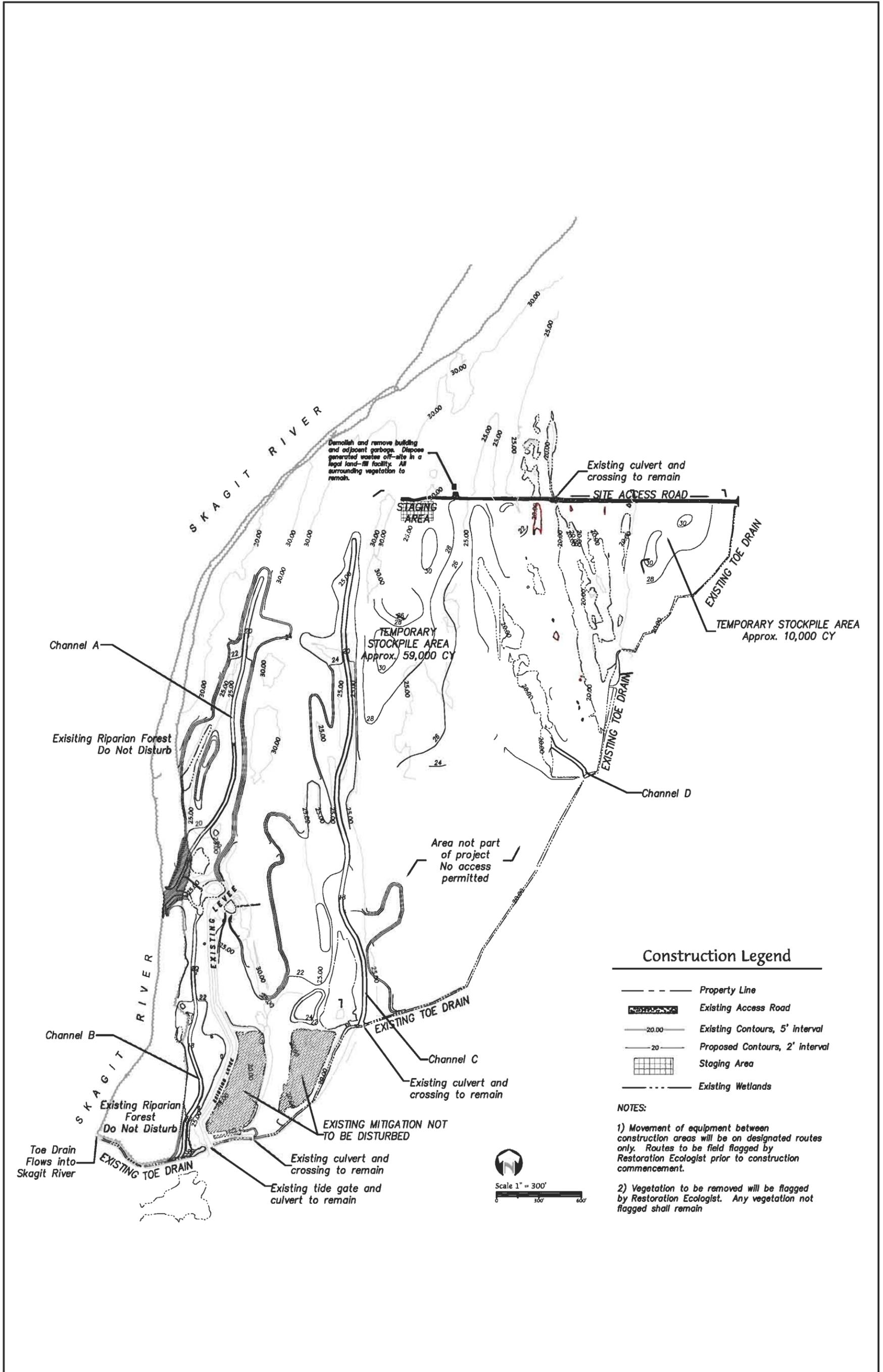
During construction, a construction performance bond will be provided. Habitat establishment will be financed through a contingency security, including bonds or letters of credit.

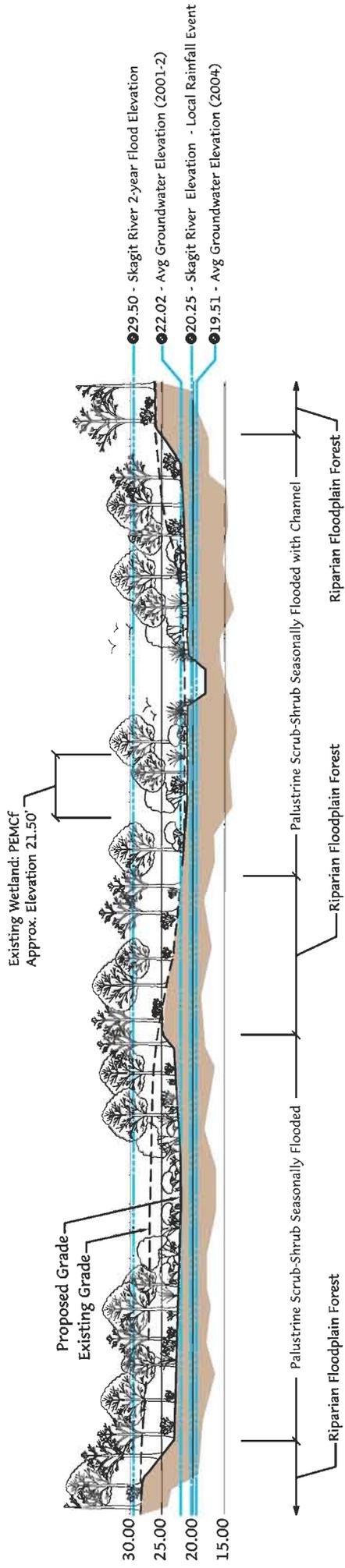
Long-term management will be financed by a non-wasting endowment account.

Permanent protection for the site will be provided by a nonprofit easement holder (currently in negotiations) to ensure compliance with the terms of the easement.

13. Site Plans

See Figure 9 for the grading plan approved by the City of Mount Vernon Development Services Department and the Skagit County Planning and Development Services Department, and Figure 10 for a typical cross section.





Note: Refer to groundwater data in the Mitigation Bank Instrument for more information.

14. Public Elements

14.1 Dike

As part of the Nookachamps Wetland Mitigation Bank, Nookachamps, LLC. will construct a dike to protect the homes on Hoag Road. The dike will be 400 feet long, built with 20,000 cubic yards of dirt, be about 15 feet high at its tallest, and have a 3:1 side slope. The dike will be deeded over to the City of Mount Vernon. The city will be responsible for ongoing dike maintenance. Impacts to the wetland and riparian habitats from constructing this dike will be compensated for in the Bank by deducting credits.

14.2 Trail

As part of the Nookachamps Wetland Mitigation Bank, Nookachamps, LLC. will construct a five-foot-wide primitive public trail along the western edge of the Bank. The trailhead will be on City of Mount Vernon property south of the project (north side of Hoag Road). The trail, located in the riparian forest, will run from the southwest corner of the site along the river to the existing county access road in the northern section. It will have a 50-foot-wide vegetated buffer on each side that will not be included as mitigation bank acreage. A log-bridge type crossing will be built over one of the proposed wetland channels.

Portions of the trail may be covered with crushed rock and/or mulch. The trail will be deeded over to the City of Mount Vernon, which will be responsible for its ongoing maintenance and upkeep.