King County
Mitigation Reserves Program
IN LIEU FEE PROGRAM INSTRUMENT

Submitted by:

King County Department of
Natural Resources and Parks

Water and Land Resources Division
201 S. Jackson Street, Suite 600
Seattle, WA 98104-3855
206-296-8008

Prepared by
Michael Murphy and Darren Greve,
King County Department of Natural Resources and Parks

With technical assistance from
Jon Sloan
(former King County employee)

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King County

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EXHIBITS

LIST OF ACRONYMS

BMP	Best Management Practice
CAO	Critical Areas Ordinance
CAT	Credit Allocation Team
CCNA	Cold Creek Natural Area
CFR	Code of Federal Regulations
CFT	Conservation Futures Tax
DA	Department of the Army (usually indicating Corps permits)
DDES	Department of Development and Environmental Services
DNRP	Department of Natural Resources and Parks
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ERES	Ecological Restoration and Engineering Services Unit
ESS	Engineering Services Section
FCD	Flood Control District
GIS	Geographic Information Systems
GRNA	Green River Natural Area
HGM	Hydrogeomorphic
IGA	Inter-governmental Agreement
ILF	In-lieu fee
IRT	Inter-agency Review Team
KC	King County
KCC	King County Code
KCD	King Conservation District
KCDDES	King County Department of Development and Environmental Services
KCDNRP	King County Department of Natural Resources and Parks
KCMRP	King County Mitigation Reserves Program
LWD	Large Woody Debris
MRP	Mitigation Reserves Program
NA	Natural Area
NOAA	National Oceanic and Atmospheric Administration
NRL	Natural Resources Lands
PRP	Parks Resource Program
RCW	Revised Code of Washington
SMG	Site Management Guidelines
SWM	Surface Water Management
USFWS	United States Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WLRD	Water and Land Resources Division
WRIA	Watershed Resource Inventory Area

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KING COUNTY MITIGATION RESERVES PROGRAM
IN-LIEU FEE PROGRAM INSTRUMENT
TECHNICAL APPENDICES &
COMPENSATION PLANNING FRAMEWORK

APPENDIX A: PROGRAM OVERVIEW

1.0 Introduction

Collectively, the Basic Agreement, these appendices, and the exhibits that follow constitute the In-Lieu Fee Program Instrument for the King County Mitigation Reserves Program. The Basic Agreement lays the legal framework for the operation of the program and establishes the terms of the "contract." These appendices describe the program and its operation in much greater detail.

The King County Mitigation Reserves Program (MRP) is a King County-sponsored "in-lieu fee" mitigation program. The proposed program structure and processes for completing mitigation projects are based largely upon guidance outlined in a federal rule issued in April 2008 by the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency (EPA) [33 CFR Part 332 and 40 CFR Part 230] (the "federal rule"). King County (the "Sponsor") seeks to "certify" the MRP under the federal rule. This instrument has been generated under the authority of the federal rule. Nothing in this MRP Instrument shall be held to contradict or override the federal rule; in the case of any ambiguity, the federal rule shall control.

The federal rule defines an *in-lieu fee program* as "a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements... Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor." [33 CFR 332.2].

The proposed King County Mitigation Reserves Program seeks to address historic inadequacies associated with compensatory mitigation by creating a comprehensive, equitable and consistent in-lieu fee program that includes all elements and phases necessary to ensure mitigation success among small and large projects, including: rigorous baseline conditions analysis; thorough assessment of impacts; seamless and transparent fee transaction processes; ecologically-based site selection criteria that address critical watershed needs; professional project design and implementation; and long-term commitment to adaptive management, maintenance, monitoring and stewardship to ensure no net loss of functions.

The two King County agencies responsible for implementing the MRP are the Department of Natural Resources and Parks (KCDNRP) and the Department of Development and Environmental

Services (KCDDES). King County DNRP has decades of experience in managing all aspects of King County's abundant natural resources, from completing comprehensive watershed analyses, to designing, implementing and maintaining and monitoring restoration and enhancement projects to improve aquatic resources across the county. King County DDES has a successful track record in working with permit applicants – large and small, public and private – to avoid and minimize environmental impacts and to identify suitable mitigation options. These two King County agencies have worked together to successfully implement mitigation projects through King County's pilot Mitigation Reserves Program and will build on these successes to implement the new MRP.

In addition to KCDNRP and KCDDES, a third entity will play a significant role in the KC Mitigation Reserves Program: representatives from a group of agencies making up an Interagency Review Team ("IRT"). The district engineer for the U.S. Army Corps of Engineers, Seattle District, or his designee (district engineer) serves as Chair of the IRT. The Washington Department of Ecology ("Ecology") will co-Chair the IRT. Other member agencies will include tribes, and federal, state and local agencies.

The IRT exercises oversight during the certification process for the MRP. In this role, the IRT has reviewed and commented on the MRP prospectus and earlier drafts of this Instrument.

Once the program is certified and operational (i.e., when the IRT approves this Instrument and both the District Engineer, Ecology, and Sponsor sign it), the IRT will play an integral role in reviewing and approving proposed mitigation "receiving sites" and Mitigation Plans (see Appendix K). The IRT will provide oversight and approval for the MRP actions, including future amendments to this instrument. Agencies and tribes represented on the IRT will likely change through time.

The King County MRP is intended primarily to serve King County permit applicants requiring mitigation for unavoidable impacts to aquatic resources related to their projects (including cases when King County is the permittee). The program may also be used by other municipal governments, as long as appropriate intergovernmental agreements are in place as more fully described in Appendix T.

Collectively, Appendices A through W, the exhibits, and the Basic Agreement constitute the *King County Mitigation Reserves Program In-Lieu Fee Instrument* ("Instrument"). These appendices provide a detailed account of the proposed program. This instrument has been developed following review of a program prospectus by the IRT and a public notice period. The prospectus provided an overview of the program; this instrument provides much greater detail about how the program will operate and the process by which mitigation projects will be identified, implemented and adaptively managed. After the program is certified (i.e., after all parties sign the instrument), the MRP can begin selling "credits" and implementing compensatory mitigation projects.

This instrument will be revised accordingly as the program operates to ensure the program is as effective as possible in compensating for losses to aquatic resources associated with unavoidable

permitted impacts. Any such revisions will be subject to review and approval by the Corps and Ecology in consultation with the IRT.

Regulatory Oversight and Authority

The Basic Agreement portion of this instrument describes in more detail the role of the Corps, Ecology and other IRT agencies.

When the MRP Enters into the Mitigation Sequence

The availability of the MRP for use in meeting mitigation obligations associated with a project does not change the requirement for permit applicants to adhere to the "mitigation sequence" required by federal, state and local agencies (see Appendix C). The MRP only becomes an option *after* a project proponent meets all requirements of prior steps in the mitigation sequence. The following list shows when the MRP enters into the mitigation sequence:

Prior to MRP involvement, DDES and other regulatory agencies:

1. Work with the project proponent to avoid creating the impact
2. Minimize the impact to extent possible
3. Implement onsite mitigation to extent possible/ecologically feasible
4. Determine that some or all of the impact can be mitigated most effectively offsite
5. Review all offsite mitigation options with applicant (e.g., mitigation banks, permittee-responsible, Mitigation Reserves Program). Regulatory agencies must consider compensatory mitigation options in the order in which they are listed in 33 CFR 332.3(b)(2) through 33 CFR 332.3(b)(6) (see Appendix C).

If regulatory agencies issuing permits for an impact determine the MRP offers the most practicable way to meet mitigation obligations associated with an impact project then **MRP involvement begins:**

6. DDES quantifies impact to functions and values of wetland or aquatic resources related to the permitted project (see Appendix D, Section 3.0)
7. Applicable Regulatory Agencies or Permitting Entities review permit proposal, including the Applicant's assessment of credit requirements; approve or deny permit conditioned on purchasing Credits from the MRP for mitigation.
8. Applicant pays mitigation fee to MRP to buy Credits to offset Debits (see Appendix F, Section 2.0)
9. Statement of Sale sent to Corps, Ecology, and other applicable local Regulatory or Permitting Entities.
10. MRP staff review impacts and watershed needs (see Appendices H and I)

11. MRP staff selects preferred sites and proposes project concepts (see Appendix J); submits proposed sites and concept plans to IRT for approval, along with Spending Agreement. (see Exhibit 18)
12. IRT reviews proposed sites and project concept plans; selects and approves sites; the Corps and Ecology approve and sign Spending Agreement.
13. MRP staff develops draft mitigation plan (see Appendix K)and site protection instrument (see Appendix P)
14. IRT reviews draft mitigation plan and draft site protection instrument
15. MRP develops final mitigation plan and final site protection instrument
16. IRT approves final mitigation plan and final site protection instrument
17. MRP implements mitigation project. (All steps related to —credit fulfillment" are listed and discussed in Appendix K).

Nothing in this program affects the requirement that all Department of the Army (DA) permits subject to section 404 of the Clean Water Act comply with applicable provisions of the Section 404 (b)(1) Guidelines as 40 CFR part 230. Furthermore, the Corps will issue a DA permit only upon the condition that mitigation fees have been accepted into the MRP account sufficient to adequately compensate for debits calculated at the impacting project. Work in waters of the U.S. authorized by DA permits may not commence until proof of purchase of MRP credits has been submitted to the Corps.

Mitigation credits under this program may be sold to fulfill State and/or County requirements, even when no DA permit is required. Nothing in this program affects the permitting requirements or enforcement authority of State or Local permitting entities over any permits conditioned on MRP use. Such permitting entities may still enforce the individual requirements of permits granted under the program.

2.0 Objectives

The primary objective of the Mitigation Reserves Program is to replace functions and values of aquatic resources and associated habitats that have been degraded or destroyed as a result of activities conducted in compliance with or in violation of Section 404 of the Clean Water Act of 1972 and/or Section l0 of the River and Harbor Act of 1899. The program is also intended to uphold no net loss goals and meet wetland mitigation requirements of Washington State (Revised Code of Washington 90.48, Governor‘s Executive Order No. 89-10, Protection of Wetlands (December 1989) and King County government (King County Code 21A.24.010).

The program will provide compensatory mitigation through a variety of methods (e.g., enhancement, restoration, creation, preservation) to ensure there is no net loss of aquatic resource functions within the area served by the program (see Service Areas, Appendix I). Furthermore, the program will implement mitigation in a watershed context as required by the federal rule (see 33 CFR 332.3(c)).

Specific objectives of the program which address requirements of the federal rule include:

A. Provide high quality mitigation for unavoidable impacts to aquatic resources at impact project sites that lack ecologically-viable on-site options for mitigation.

B. Utilize scale efficiencies by combining the impacts from individual smaller projects within a service area into mitigation at larger parcels with greater ecological value.

C. Efficiently meet regulatory requirements by streamlining the compensatory mitigation process, thereby reducing conflict between conservation objectives and development interests and putting more money into ecological restoration and less into administrative processes.

D. Develop an ecologically-based site selection process to identify the most appropriate off-site mitigation options that result in greater ecological benefit to a subbasin, basin, or watershed within King County than could be achieved through on-site mitigation options that are impracticable or of low ecological value.

E. Operate in a financially self-sustaining manner: collecting enough mitigation fees to complete mitigation projects and meet ―no net loss" requirements. An added benefit will be the support of King County's ability to continue development of innovations and expertise in conservation planning and mitigation project implementation.

Additionally, King County has the following objectives for the program:

F. Fully offset functional losses resulting from impacts with equivalent or greater functional gains in ways that address watershed needs.

G. Create and maintain a roster of strategically selected and widely distributed sites that reflect a variety of habitat types, high potential for ecological ―lift' and valuable ecosystem services.

H. Provide public benefit by applying mitigation resources toward the improvement of ecologically-impaired publicly-owned natural areas and privately-owned lands with important ecological value to the watershed.

I. Select the best mitigation receiving site for a particular impact through a rigorous analysis by a group of professional resource managers, drawing from personal knowledge and best available science and analyses for a particular basin or watershed.

J. Procedurally decouple development projects from mitigation projects in order to put mitigation project planning and implementation into the hands of those with the appropriate experience and mandate to do so.

K. Provide an effective and transparent accounting structure for collecting in-lieu fees, disbursing project funds and compliance reporting.

L. Work in an efficient and transparent manner with the Interagency Review Team to implement mitigation projects and enact amendments to the program instrument.

3.0 History

The Mitigation Reserves Program began with the formation of a King County Interdepartmental Guidance Panel that was mandated to complete three primary tasks: identify publicly owned natural lands that could be used to satisfy permit applicants needs for ―offsite" mitigation; create a Technical Guidance Manual to outline a structure for applying mitigation resources to those lands and develop an in-lieu fee calculation method. The panel, whose membership consists primarily of restoration ecologists, regulatory specialists, project managers and section leaders, has met periodically since early 2005 and has substantially completed its original mandate.

Responsibility for administering King County's current mitigation program has been shared between the Department of Development and Environmental Services (DDES) and the Water and Land Resources Division (WLRD) of the King County Department of Natural Resources and Parks. Design, construction, maintenance and monitoring of mitigation projects has been carried out by the former Capital Projects Section of WLRD (now the Ecological Restoration and Engineering Services Unit) and the Parks Resource Program in the King County Parks and Recreation Division. Historically, the pilot MRP has not fully operated as a true ―in-lieu fee program." Unlike true in-lieu fee programs, the MRP has not fully decoupled the impact site from the mitigation site and King County only partially relieved project applicants of their obligations for mitigation in some cases.

With the publication of the new Federal Rules for compensatory mitigation [33 CFR Part 332 and 40 CFR Part 230] in 2008, King County proposed restructuring the MRP to be consistent with the guidelines for in-lieu fee programs. This restructuring has principally involved changing the way in which impacts and mitigation are assessed from an area-based ratio method to a functional assessment method using credits and debits. It has also required changes to the way in which the program financial account and ledger are managed, as well as improvements in transparency, interdepartmental communication, fee calculation methods, mitigation site selection and increased coordination with the IRT.

APPENDIX B: DEFINITIONS

There are terms used in the mitigation banking industry and in-lieu fee programs that may have different meanings than their colloquial usage would suggest. There are also differences in the legal definitions used by King County and the federal agencies. For all terms not described below, the definitions used by the Regulatory Program of the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency [33 CFR Parts 320-331; 40 CFR Part 230] are adopted by King County for the MRP.

A. *Affected tribe* or "treaty tribe" means any Indian tribe, band, nation or community in the state of Washington, that is federally recognized by the United States Secretary of the Interior and that will or may be affected by the proposal. (WAC 197-11-710)

B. *Applicant* means an entity seeking a permit for a project that will create impacts to aquatic resources. Use of the term applicant indicates that a permit has not yet been issued.

C. *Aquatic Resources* includes "wetlands", "aquatic areas" and "aquatic resources". The King County CAO regulates all wetlands that meet Washington State Wetland Identification and Delineation Manual (1997) standards. These wetlands include isolated wetlands that may not be regulated by the Corps and EPA.

   The CAO defines *wetlands* as:

   21A.06.1391 Wetland. Wetland: an area that is not an aquatic area and that is inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and under normal circumstances supports, a prevalence of vegetation typically adapted for life in saturated soil conditions. For purposes of this definition:
   A. Where the vegetation has been removed or substantially altered, "wetland" is determined by the presence or evidence of hydric soil, by other documentation such as aerial photographs of the previous existence of wetland vegetation or by any other manner authorized in the wetland delineation manual required by RCW 36.70A.175; and
   B. Except for artificial features intentionally made for the purpose of mitigation, "wetland" does not include an artificial feature made from a non-wetland area, which may include, but is not limited to:
   1. A surface water conveyance for drainage or irrigation;
   2. A grass-lined swale;
   3. A canal;
   4. A flow control facility;
   5. A wastewater treatment facility;
   6. A farm pond;
   7. A wetpond;
   8. Landscape amenities; or
   9. A wetland created after July 1, 1990, that was unintentionally made as a result of construction of a road, street or highway. (KCC 21A.06.1391).

The definition provided by the CAO states that a wetland is not an *aquatic area*. The CAO separately defines *aquatic area* as:

Aquatic area: any non-wetland water feature including all shorelines of the state, rivers, streams, marine waters, inland bodies of open water including lakes and ponds, reservoirs and conveyance systems and impoundments of these features if any portion of the feature is formed from a stream or wetland and if any stream or wetland contributing flows is not created solely as a consequence of stormwater pond construction. "Aquatic area" does not include water features that are entirely artificially collected or conveyed storm or wastewater systems or entirely artificial channels, ponds, pools or other similar constructed water features (KCC 21A.06.072C).

The CAO distinction between "aquatic areas" and "wetlands" is apt to create confusion with respect to how the Corps and EPA use these terms. To wit, federal agencies use the term "aquatic resources", and occasionally "aquatic areas", to generically include both jurisdictional wetlands and such features as rivers, streams, marine waters, open water areas and reservoirs.

To avoid this confusion, the term —aquatic resources", as connoted in the Federal Rules, will be used in this program instrument for the MRP to refer to jurisdictional wetlands and such features as rivers, streams, marine waters, open water areas, and reservoirs. The term —aquatic resources" will also refer to those areas defined as CAO —wetlands" (KCC 21A.06.1391) and CAO —aquatic areas" (KCC 21A.06.072C).

When the term —aquatic areas" is used in this instrument, it shall refer to non-wetland aquatic resources as defined in CAO.

On a case-by-case basis, King County will consult with the Corps and Ecology to make the required jurisdictional determinations as to whether an aquatic resource in question is a water of the U.S and/or State and to determine which agencies have jurisdiction.

D. *Credit* means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site. The measure of aquatic resource functions is based on the resources restored, established, enhanced, or preserved (see Appendix D). *Credits* may also be provided through preservation pursuant to 33 CFR 332.8(o)(6).

E. *Credit Fees* are fees paid by a permittee to purchase MRP mitigation credits. Credit Fees are used to pay for all aspects of implementing and managing mitigation projects, as well as Long Term Management duties. Credit Fees are one component of a *Mitigation Fee*, the other being *Land Fees*.

F. *Debit* means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the loss of aquatic resource functions at an impact or project site. The measure of aquatic resource functions is based on the resources impacted by the authorized activity (see Appendix D).

G. *Enhancement* means the manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area. [33 CFR 332.2]

H. *Establishment* means the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions. [33 CFR 332.2]

I. *Establishment phase* (also *performance period*) means the period of time from project construction until all mitigation credits associated with a project have been released, i.e., when a mitigation project is still "earning" mitigation credit. The end of the establishment phase marks the beginning of the *long-term management phase.*

J. *Functional Assessment Methodology* (also, "the tool"). Ecology, with input from King County scientists and policy staff, has completed an operation draft functional mitigation assessment methodology, with the working title *Calculating Credits and Debits for Compensatory Mitigation in Western Washington – Operational Draft.* This method is referred to in this instrument as the "functional assessment methodology" or as "the tool". The purpose of the tool is to provide a predictable and reproducible method for assessing mitigation requirements at a given impact project based on losses of wetland functions and values, and similarly, to assess lift in wetland functions and values resulting from a mitigation project. The tool comprises indicators to rate functions in a wetland unit related to habitat, hydrology and water quality. The tool is not designed for use in aquatic areas as defined in King County CAO (e.g., rivers and streams and their buffers). Many indicators used in the tool are the same as those used in the Wetland Rating System for Western Washington (Hruby 2006). The tool is designed for use at both impact sites (to asses functional loss) and at mitigation sites (to assess functional lift). The output of the tool (for both impact sites and mitigation projects) will serve as the basis for assigning debits and credits, but it will not be the only factor. Depending on site conditions and project variables, regulatory agencies can adjust the mitigation requirements related to an impact project so long as all regulatory agencies with authority approve of the modified requirements and rationale. Similarly, the mitigation credit earned at a proposed mitigation project may differ from the credit suggested by the tool so long as the program Sponsor provides adequate rationale for the modification and the IRT approves; in all cases, the IRT must approve the amount of mitigation credit to be earned and the "credit release schedule" (see Appendix K, Section 6.0) for each mitigation project. The tool is discussed in greater detail in Appendix 3, Section 3.0 of this instrument, and is attached to this instrument in its entirety as Exhibit 10.

K. *Functional lift* (or simply "lift") is the increase in aquatic resource functions provided by mitigation work and usually expressed in terms of credits.

L. *Impracticable* means that site conditions or other constraints exist that would cause —extreme and unreasonable difficulty" in completing mitigation onsite (Black's Law Dictionary, West Publishing Co., 1996)

M. *Land Fees* are fees paid by a permittee using the MRP to account for the land costs associated with implementing a mitigation project. Land Fees may be used by the MRP to acquire new Roster sites, or to refund acquisition funding sources for Mitigation Sites in cases where the original funding source disallowed use of a property for mitigation purposes.

N. *Long term management phase* means the period beginning at a site when the final credits are released from a mitigation project. During the long term management phase, the monitoring and maintenance will continue according to long term management plans contained in reviewed and approved Mitigation Plans for a site.

O. *Mitigation Fees* are all fees paid by a permittee using the MRP to purchase mitigation credits including land fees, and credit fees to be used in implementing mitigation projects.

P. *Permittee* means an entity which has been issued a permit by one or more regulatory agencies.

Q. *Preservation* means the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions [33 CFR 332.2]. Preservation may generate mitigation credit (see Appendix K, Section 5.0).

R. *Receiving site* refers to the area where the compensatory mitigation project will be constructed, or simply "mitigation site". In the context of the MRP, it refers to a site on the MRP Roster of available natural lands where mitigation will be implemented.

S. *Regulating agencies* or —agencies with regulatory authority". For credit transactions through the MRP, each permitted impact and mitigation receiving project will require permits from one or more agencies (e.g., Corps, Ecology, WDFW, King County). For all cases where mitigation will be required, King County will have regulatory authority under the Critical Areas Ordinance (CAO) (King County Code 21A.24). In most cases involving wetland impacts, Ecology will also have authority as provided under RCW 90.48. This authority may extend to buffer impacts as well. In many cases federal agencies will also have regulatory authority (e.g., the Corps, EPA, USFWS, NOAA, etc.). However, recent legal rulings have made determining federal jurisdiction over wetlands more difficult (e.g., *Rapanos v. United States* resulted in making determinations of Corps jurisdiction over wetlands more difficult). In cases where the Corps does have jurisdiction, addressing impacts to buffers and adequate buffer requirements on mitigation sites may be required to the extent specified in 33 CFR 332.3(i).

T. *Given the complex r*egulatory climate, and the predicted variability of permitted impacts and mitigation receiving projects, determinations of which local, state, and federal agencies have jurisdiction (i.e., regulatory authority) will be made on a case-by-case basis at the time the applicant seeks a permit with DDES. DDES may advise applicants about which regulatory agencies will need to review and permit a proposed project, but the applicant is responsible for obtaining all necessary permits.

U. *Restoration* means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is div*ided into two categories:* reestablishment and rehabilitation. [33 CFR 332.2]

V. *Sending sites* are areas where impacts to aquatic resource are incurred, often called the "impact site".

This MRP Final Instrument incorporates all other terms as defined in 33 CFR 332.2.

APPENDIX C: MITIGATION SEQUENCING AND PARTICIPATING AGENCIES

The MRP provides project applicants a compensatory mitigation option within the traditional mitigation sequence. Specifically, the program provides an applicant the opportunity to pay a fee to King County in-lieu of completing mitigation on their own, after higher priorities in the mitigation sequence have been exhausted. This appendix describes the mitigation sequence and lists the agencies that may use the MRP.

1.0 Mitigation Sequencing

"Mitigation sequencing" refers to the order in which different mitigation actions are considered.

Avoidance and Minimization

Section 404 (b)(1) of the Clean Water Act establishes guidelines identifying avoidance and minimization of impacts to aquatic resources as the first steps in the mitigation sequence (40 CFR 230.10(a) and 40 CFR 230.10(d)).

King County is firmly committed to upholding the integrity of avoidance and minimization requirements articulated in the Clean Water Act. King County Code 21A.24.125 mirrors Clean Water Act guidelines, outlining the mitigation sequence as follows:

1. Avoid impact by not taking a certain action;
2. Minimize the impact by:
    a. Limiting the degree or magnitude of the action with appropriate technology;
    b. Taking affirmative steps, such as project redesign, relocation or timing;
3. Rectify the impact to critical areas by repairing, rehabilitating or restoring the affected critical area or its buffer;
4. Minimize or eliminate the hazard by restoring or stabilizing the hazard area through engineered or other methods;
5. Reduce or eliminate the impact or hazard over time by preservation or maintenance operations during the life of the development proposal or alteration;
6. Compensate for the adverse impact by enhancing critical areas and their buffers or creating substitute critical areas and their buffers; and
7. Monitor the impact, hazard or success of required mitigation and taking remedial action. (King County Code 21A.24.125)

Prior to the collection of fees, each development project will undergo a thorough review to ensure that the mitigation sequence is adequately reflected in the proposal, i.e., that impacts have been

avoided to the extent practicable and that unavoidable impacts have been minimized. Further, permit reviewers from the applicable regulatory agencies will have worked with the applicant to ascertain whether high value onsite mitigation is possible, or whether mitigation banking or in-lieu fee programs should be preferred.

The MRP becomes an option in the sequence only when the applicant can demonstrate, and regulatory agencies concur, that on-site mitigation alternatives are impracticable or of low ecological value and that greater ecological benefits in the basin or watershed can be achieved through off-site, in-lieu fee mitigation.

The availability of the MRP as a means of meeting compensatory mitigation requirements does not affect requirements for an applicant and regulatory agencies to exhaust all preceding steps in the mitigation sequence.

Project applicants can only participate in the MRP after DDES permit reviewers and permit review staff from other regulatory agencies determine the MRP to be the most practicable option in the mitigation sequence.

Offsite Compensatory Mitigation

King County Code 21A.24.133 explains that offsite mitigation may be approved in cases where:

1. It is not practical to mitigate on or contiguous to the development proposal site; and
2. The off-site mitigation will achieve equivalent or greater hydrological, water quality and wetland or aquatic area habitat functions.

The federal rule [33 CFR 332.3(b)] mandates the evaluation of mitigation bank credits prior to in-lieu fee program credits. However, the district engineer may override the preference for mitigation banks when considerations are applicable, including where an in-lieu fee program has released credits available from a specific approved mitigation project, or involve a larger more ecologically valuable parcel or more rigorous scientific analysis [33 CFR 332.3(b)(2)]. The federal rule outlines the order in which the district engineer shall consider the type and location of compensatory mitigation options:

> (b) *Type and location of compensatory mitigation.* (1) When considering options for successfully providing the required compensatory mitigation, the district engineer shall consider the type and location options in the order presented in paragraphs (b)(2) through (b)(6) of this section. In general, the required compensatory mitigation should be located within the same watershed as the impact site, and should be located where it is most likely to successfully replace lost functions and services, taking into account such watershed scale features as aquatic habitat diversity, habitat connectivity, relationships to hydrologic sources (including the availability of water rights), trends in land use, ecological benefits, and compatibility with adjacent land uses. When compensating for impacts to marine resources, the location of the compensatory

> mitigation site should be chosen to replace lost functions and services within the same marine ecological system (e.g., reef complex, littoral drift cell). Compensation for impacts to aquatic resources in coastal watersheds (watersheds that include a tidal water body) should also be located in a coastal watershed where practicable. Compensatory mitigation projects should not be located where they will increase risks to aviation by attracting wildlife to areas where aircraft-wildlife strikes may occur (e.g., near airports)."

The headings of paragraphs (b)(2) through (b)(6) are listed below. The text of the rule expands upon each of these headings:

> (2) *Mitigation bank credits.*
>
> (3) *In-lieu fee program credits.*
>
> (4) *Permittee-responsible mitigation under a watershed approach.*
>
> (5) *Permittee-responsible mitigation through on-site and in-kind mitigation.*
>
> (6) *Permittee-responsible mitigation through off-site and/or out-of-kind mitigation.*

For permitted impact projects that do not involve jurisdictional wetlands (i.e., when only King County and/or State permits are required), the mitigation options shall be considered in the same order listed in 33 CFR 332.3(b).

2.0 Permitting Agencies

MRP credits may be appropriate for use in meeting mitigation obligations associated with permits from the following agencies:

- US Army Corps of Engineers
- US Environmental Protection Agency
- US Fish and Wildlife Service
- National Marine Fisheries Service
- Washington State Department of Ecology
- Washington State Department of Fish and Wildlife
- King County Department of Development and Environmental Services

MRP credits may satisfy mitigation requirements of other permitting agencies in addition to those listed above (e.g., local government permitting agencies). Omission of an agency from the list above shall not preclude an agency from using the program to meet its mitigation obligations.

APPENDIX D: CREDITS AND DEBITS

The standard unit of measure used in mitigation banking and in-lieu fee programs to quantify an impact is "debit" and lift at a mitigation site is measured in "credits". Generally speaking, the MRP will continue to use the terms "debit" and "credit" when speaking about impacts and mitigation projects. The MRP will have several aquatic resource types of credits and debits as described in Section 1.0 below. Each wetland credit will also have a sub-type relating to the category of functions provided by wetlands (habitat, hydrologic and water quality) as described in Section 2.0. Section 3.0 describes how MRP debits and credits will be quantified.

1.0 Debits and Credits – Aquatic Resource Types

The MRP will offer applicants the ability to mitigate unavoidable impacts to multiple types of aquatic resources, including but not limited to wetlands, wetland buffers, rivers and streams and their buffers and other aquatic resources. For any given permitted unavoidable impact, there will be one or more regulatory agencies with jurisdiction, which will be determined on a case-by-case basis. For example, for "isolated" wetlands, King County would have regulatory authority under the Critical Areas Ordinance (KCC 21A.24) and Ecology would also have authority as provided under RCW 90.48. For isolated wetland jurisdictional determination, the Corps has authority in determining whether a wetland or other aquatic resource is isolated.

The MRP will offer applicants four basic aquatic resource types of credit:

- Wetland credits
- Wetland buffer credits
- Aquatic area credits (i.e., non-wetland; see Appendix B: Definitions)
- Aquatic area buffer credits

Credits sold will be tracked carefully in the Credit Ledger (see Appendix G) – both by aquatic resource type (e.g., wetland, river, etc.), and also by which regulatory agency(ies) have authority (i.e., King County only, or King County and other IRT agencies). Mitigation plans proposed by King County to fulfill MRP credits must be reviewed by the IRT. The Corps and Ecology will seek to include all public agencies with a substantive interest in the MRP on the IRT per 33 CFR 332.8 (b)(2).

Buffer-Only Credits

In some cases, unavoidable impacts may affect only wetland buffer or aquatic area (i.e., river or stream) buffer, with no direct impacts to wetlands or aquatic areas. In cases when the DDES permit reviewer determines the MRP to be the most practicable mitigation option (i.e., impacts are unavoidable and no onsite options exist) the applicant can purchase MRP credits to meet their mitigation need.

For wetland buffer impacts, the tool will be used to calculate the debits (see Section 3.0, below) and the applicant will buy credits to offset the debits. These credits will be tracked in the MRP

database as "buffer impacts" and the credits sold will be deducted from the advanced credits and tracked on the credit/debit ledger (see Appendix G).

River and stream buffer and wetland buffer impacts may also be mitigated through the MRP if permit reviewers from applicable regulatory agencies determine the MRP is the most practicable mitigation option. In these cases the amount of mitigation required will be determined on a case-by-case basis (see Section 3.3 below). The MRP Manager will track the impacts on the appropriate Ledger (see Appendix G, Section 3.0). Impacts will also be tracked in the MRP database (see Appendix G, Section 6.0).

If MRP credits are purchased to meet a buffer-only impact, these credits must be fulfilled at an "integrated" mitigation project, i.e., a project that also creates lift in wetland or aquatic area functions *and* goes through the full IRT review and approval process. In other words, MRP mitigation fees – even those derived from buffer-only impacts – cannot be used to implement buffer-only mitigation projects, unless such use is explicitly approved by the Corps and Ecology after consultation with other IRT members.

2.0 Wetland Debits and Credits – Functional Types

The functional assessment methodology (i.e., *Calculating Credits and Debits for Compensatory Mitigation in Western Washington – Operational Draft*, see Section 3.0, below) yields three functional sub-types of debits and credits corresponding to the three main types of functions provided by wetlands: habitat functions, hydrological functions and water quality functions.

Impact site Debits

When quantifying an impact to a wetland system, the debits will be divided into three parts based on wetland functions: (1) habitat debits, (2) hydrology debits and (3) water quality debits. As discussed in the credit pricing section (see Appendix F, Section 7.0), each functional type of credit will cost the same, so for monetary accounting purposes, the three types of credits can be added together; the sum of the credit types multiplied by the price per credit will determine the *credit fee*.

Mitigation Site Credits

At mitigation sites, mitigation projects will "earn" credits in each of the three categories. There may be cases when pre-mitigation project functions in one or more categories are already high. In these cases, the project will only achieve lift in the functional category(ies) in which functions were improved (i.e., only when the tool calculates a lift in functions as a result of the project). For example, a reed canary grass-dominated riverine wetland with ample over bank storage may provide high hydrologic and water quality functions in its pre-mitigation project condition. If the mitigation project mainly improves habitat complexity, the project might only earn "habitat credits," and not earn any hydrology credits or water quality credits. Appendix G discusses the "balance" of credits across different functional categories.

3.0 Quantifying Debits and Credits

Debits and credits will be quantified according to functions lost at an impact site (debits) and lift in functions at mitigation projects (credits). Wetland and wetland buffer debits and credits will be quantified using the method *Calculating Credits and Debits for Compensatory Mitigation in Western Washington – Operational Draft,* which is referred to throughout this document as "the tool." The operational draft of this method will be used to provide a basis for quantifying both debits and credits.

However, the tool is not designed to quantify impacts and mitigation projects affecting non-wetland aquatic resources (e.g., rivers and streams). Therefore the impacts and lift will be quantified on a case-by-case basis as described in Section 3.3, below.

In all cases, determinations of debits (and thereby an applicant's credit requirement) must be approved by regulatory agencies permitting an impact. If all regulatory agencies issuing permits for an impact project agree that the MRP is the most practicable way for the applicant to meet their mitigation need, the mitigation requirements must be quantified and approved prior to permit issuance. The tool will provide the initial basis for wetland impacts, but regulatory agencies will need to use other methods to determined debits associated with aquatic resource impacts (see Section 3.3). The number of debits associated with the impact as determined by the tool (or by other means for aquatic resource impacts) may be adjusted for site-specific variables such as on site mitigation, or implementation of best management practices, etc. All regulatory agencies issuing permits for an impact project must agree to the mitigation requirements. Permitting agencies may choose to withhold final permit issuance until the applicant provides proof of purchase of MRP credits commensurate to the number of debits associated with the impact project.

The following sections of the federal rule are relevant:

> 33 CFR 332.3(f)(2) The district engineer must require a mitigation ratio greater than one-to one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project, temporal losses of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions, and/or the distance between the affected aquatic resource and the compensation site. The rationale for the required replacement ratio must be documented in the administrative record for the permit action.
>
> 33 CFR 332.3(f)(3) If an in-lieu fee program will be used to provide the required compensatory mitigation, and the appropriate number and resource type of released credits are not available, the district engineer must require sufficient compensation to account for the risk and uncertainty associated with in-lieu fee projects that have not been implemented before the permitted impacts have occurred.

> 33 CFR 332.8(o)(6) *Credits provided by preservation.* These credits should be specified as acres, linear feet, or other suitable metrics of preservation of a particular resource type. In determining the compensatory mitigation requirements for DA permits using mitigation banks or in-lieu fee programs, the district engineer should apply a higher mitigation ratio if the requirements are to be met through the use of preservation credits. In determining this higher ratio, the district engineer must consider the relative importance of both the impacted and the preserved aquatic resources in sustaining watershed functions.
>
> 33 CFR 332.8(o)(7) *Credits provided by riparian areas, buffers, and uplands.* These credits should be specified as acres, linear feet, or other suitable metrics of riparian area, buffer, and uplands, respectively. Non-aquatic resources can only be used as compensatory mitigation for impacts to aquatic resources authorized by DA permits when those resources are essential to maintaining the ecological viability of adjoining aquatic resources. In determining the compensatory mitigation requirements for DA permits using mitigation banks and in-lieu fee programs, the district engineer may authorize the use of riparian area, buffer, and/or upland credits if he determines that these areas are essential to sustaining aquatic resource functions in the watershed and are the most appropriate compensation for the authorized impacts.

Section 3.5 explains that credit cannot be generated by projects within public rights of way or from other County, State, or Federal restoration projects in existence outside the MRP.

3.1 Mitigation Assessment Method ("The Tool")

The tool is designed to assess impacts and mitigation, including the preservation, enhancement, restoration and creation of wetlands, providing a framework for standardized wetland assessment across community types and assessment areas. The tool has been developed through a collaborative process including scientists and policy staff from King County, Ecology and the Corps.

As of June 2011, an operational draft of the tool (with the working name *Calculating Credits and Debits for Compensatory Mitigation in Western Washington – Operational Draft)* is complete, and initial tests of the tool to assess functional lift generated by recently completed restoration projects sites indicate that the indicators and methodology of the tool provide reasonable estimations of the functions and values of a wetland system with respect to habitat, hydrology and water quality functions. (It is important to note that these tests of the tool were for analysis purposes only, and that none of these projects are generating any mitigation credit for future impacts mitigated through the MRP.) Although the tool is not finalized, in its current state of completion it can provide very useful information about functional losses at impact sites and functional lift at mitigation sites. Given that the format and content of the tool is based largely on the Wetland Rating System for Western Washington (Hruby 2006), initial users of the tool – DDES and DNRP staff experienced in using the Wetland Rating System – will be able to use the tool to assess mitigation requirements at impact sites and to assess functional lift at mitigation

sites. For functional lift associated with mitigation site projects, all credits (habitat, hydrology and water quality) proposed for fulfillment at a mitigation site must be reviewed and approved by the IRT.

The first version of the tool does not incorporate indicators to determine river and stream debits and credits.

Exhibit 10 includes a short introductory narrative describing the current draft version of the assessment method and a copy of the most current draft in its entirety. Ecology staff is working to finalize the methodology. Upon completion of a final draft of the tool, the method will be incorporated into this instrument by reference.

The intent is to use the current operational draft form of the tool as a basis for determining mitigation requirements associated with impact projects and functional lift associated with wetland mitigation projects. Both the federal rule and King County Code support the use of alternative mitigation assessment methods. As mentioned previously, the scoring output of the tool will not stand alone; mitigation requirements and quantification of lift must undergo review by regulatory agency staff and IRT members, respectively. Since the functional assessment method will be used in its draft form, initially, King County expects to carefully review scoring outputs of the tool with King County and Ecology senior science staff. Using the tool will provide consistency in establishing predictable and reproducible baseline information for making mitigation decisions, but for each project there is likely to be complicating factors requiring special requirements based on best professional judgment.

In all cases mitigation requirements associated with impact projects must be reviewed and approved by all regulatory agencies and affected tribes, and in all cases the amount and type of mitigation credit generated by mitigation projects must be reviewed and approved by the IRT. Any time best professional judgment is used to alter mitigation requirements or proposed earned mitigation credit, detailed rationale based in best available science must be documented and delivered to appropriate entities (i.e., regulatory agencies for impact projects and the IRT for mitigation projects).

Despite the availability of and intent to use a draft functional assessment methodology, the MRP shall retain the ability to establish debits/credit requirements on a case-by-case basis in consultation with the IRT using existing approved methods (e.g., area-based ratios).

3.2 Wetland Determinations

Wetland impacts will be quantified using a functional assessment method (—the tool"), which considers the existing condition of the wetland unit relative to potential project effects. Application of the tool results in quantification of units of functional loss, or 'debits', associated with the project. Once the number of debits has been determined, then the permittee can purchase a commensurate number of credits from the MRP to offset the debits.

The tool also accounts for temporal losses by using a temporal loss factor to increase the number of credits required to offset an impact. The tool is included as Exhibit 10.

3.3 Aquatic Area and Aquatic Area Buffer, and Wetland Buffer Determinations

The current version of the tool can only be used to quantify functional losses or lift (i.e., debits or credits) related to wetlands. At this point, the assessment method is not designed for use in quantifying impacts or lift related to functions and values of other aquatic areas (e.g., streams or rivers), associated buffers, wetland buffers, or other aquatic bed environments.

When unavoidable impacts to streams, rivers, or wetland buffers are permitted by King County and other regulatory agencies and/or Tribes, and offsite mitigation through the MRP is chosen to fulfill the mitigation obligation, debits and credits will be determined on a case-by-case basis. These determinations will be made in close coordination with members of the IRT, especially those IRT member agencies with regulatory authority over stream and river resources, namely Tribes, the US Fish and Wildlife Serve (USFWS), National Marine Fisheries Service (NMFS) and the Washington Department of Fish and Wildlife (WDFW). These credit determinations will follow methods of quantifying mitigation currently in use: namely area ratios based on the resource type being affected. King County Code Section 21A.24.380 outlines ratios in detail for wetlands and other aquatic resources such as rivers and streams. When credit determinations are made using area-based ratios, regulatory agencies mentioned above must approve of the mitigation requirements.

Because the tool is for wetland assessment and cannot be used to translate "aquatic area" (i.e., rivers, streams) impacts into credits/debits, the MRP will track aquatic area/buffer impacts separately on an Aquatic Areas Ledger (see Appendix G, Section 3.0) which will track amount and type of impact (e.g., lineal feet of stream bank armoring, square feet of aquatic bed, square feet of stream buffer impact). These impacts will also be recorded and tracked in the MRP Database (See Appendix G, Section 6.0).

Projects mitigated through the MRP pilot program and DDES permit history both suggest that use of the Mitigation Reserves Program to meet aquatic area impacts will be infrequent. In most cases, aquatic area and aquatic area buffer impacts are avoided, and if impacts are unavoidable, in most cases mitigation occurs onsite or as permittee-responsible mitigation within the same reach, as directed by King County code 21A.24.125 and 21A.24.380 (Klein, 2010).

Aquatic area impacts will be handled on a case-by-case basis according to the following process:

1) Regulatory agencies reviewing a proposed impact to aquatic areas and/or aquatic area buffer:
    a) work with applicants to avoid and minimize impact;
    b) determine all onsite mitigation options and require onsite mitigation to the extent possible;
    c) identify impacts that cannot be mitigated onsite;
    d) review offsite options and select one of the options (e.g., permittee responsible, bank, MRP); and

e) if MRP is the chosen offsite option, lead regulatory agency (DDES, usually) or project proponent notifies MRP of desire to use the MRP to mitigate for aquatic resource and/or aquatic resource buffer impacts.

2) Regulatory agencies suggest the quantity and type of mitigation to be completed offsite based on impacts and temporal lag associated with in-lieu fee mitigation (e.g., 0.2ac of buffer planting in the Newaukum subbasin, or placement of 8 pieces of LWD in Newaukum Creek). *This will not constitute a detailed Mitigation Plan, but rather an estimate to be used in establishing a fee if MRP is chosen.*

3) MRP Manager reviews the type and location of the impact and the suggested quantity and type of mitigation and then reviews availability of roster sites in the service area that may provide appropriate mitigation sites.

4) If MRP Manager determines one or more suitable sites are available to meet the mitigation need that also address watershed needs, MRP requests permission from the IRT to accept aquatic area/buffer impacts through the MRP. The following will accompany this request:

   a) Description of proposed impact project, including steps taken to avoid and minimize impacts, onsite mitigation;

   b) Description of the proposed impacts to be mitigated through the MRP (this excludes impacts being mitigated onsite); and

   c) Description of Roster sites with potential for projects that would meet mitigation needs.

   Note: For case-by-case review of mitigation proposals related to aquatic area impacts, King County will submit for IRT review a concise document that outlines the rationale for using the MRP to meet the mitigation need. IRT members or designated representatives from IRT agencies, and affected tribes will be given the opportunity to comment on the use of the MRP for meeting the mitigation need.

5) MRP Manager notifies the lead regulatory agency of IRT decision;

If IRT approves the request for use of the MRP and the MRP is to be used:

6) MRP Manager sets the mitigation fee;

   a) MRP will set the base price using DDES bond-quantity worksheet (Exhibit 11, Part 3), (which DDES uses to estimate funds required for completing a project if an applicant does not perform required onsite or permittee-responsible mitigation).

   b) MRP will add to the base price costs required to meet credit fulfillment requirements in the federal rule (MRP Admin, maintenance and monitoring, land costs, etc. (see Appendix F, Section 7.0).

Upon receipt of the mitigation fee:

7) The MRP will use impact data, suggested mitigation requirements and analysis of watershed needs to guide site selection and mitigation project design.

8) The mitigation will occur according to the credit fulfillment steps outlined in Appendix K.

King County Code section 21A.24.380 lists the current mitigation ratios for Aquatic areas as well as provisions for mitigating offsite if there are no onsite mitigation options for unavoidable impacts.

All aquatic area resource and aquatic area buffer impacts handled by the MRP and subsequent mitigation will be tracked on the Aquatic Areas Ledger and in the MRP database (see Appendix G, Sections 3.0 and 6.0, respectively).

3.4 Maximum and Minimum Area of Debits and Credits

The tool quantifies debits associated with wetland impacts and credits associated with wetland mitigation projects, respectively.

The tool quantifies debits by rating functions and values of the wetland that will be impacted, multiplying the scores by the area of the impact, and then multiplying the result by a temporal loss factor (TLF). The TLF accounts for time lag between when an impact occurs and when replacement functions are achieved by mitigation.

Debits = [Functions & Values of Wetland Being Impacted] x [Area of Impact] x [Temporal Loss Factor]

The tool calculates credits by rating functions and values of a wetland to be enhanced, restored, or created, or preserved before and after mitigation (using project plans to estimate mature conditions for in-lieu fee programs) and multiplying the difference in scores by the area of mitigation treatment. To account for risk of project failure, the result is then multiplied by a risk factor.

Credits = ([Wetland Functions & Values After Mitigation] - [Wetland Functions and Values Before Mitigation]) x [Area of Mitigation] x [Risk Factor]

For each category of wetland functions rated by the tool, there are minimum and maximum scores ranging from low functions and values to high functions and values in each category. There are also minimum and maximum temporal loss and risk factors. Therefore it is possible to translate debits and credits into theoretical maximum and minimum areas of impact and lift associated with one credit.

Table 1. Theoretical Maximum and Minimum Area Calculations

	Maximum Area Impacts to lowest quality wetlands; least intensive mitigation treatment		**Minimum Area** Impacts to highest quality wetlands; most intensive mitigation treatment	
	Acres	Square Feet	Acres	Square Feet
1 Debit (Impact)	0.037	1613	0.005	230
1 Credit (Lift)	2.00	87,120	0.04	1,793

The worksheets used to perform these calculations are included in the *Calculating Credits and Debits for Compensatory Mitigation Western Washington – Operational Draft (Hruby, Draft 2010)*.

3.5 Public Rights of Way and Existing Easement Exclusions

In cases where a mitigation site is traversed by a public right of way (e.g., utility easement or trail) or other easements or restrictive covenants that allow access or activities that would compromise ecological functions provided be mitigation projects, these areas and an appropriate buffer shall be excluded from generating mitigation credit. Appropriate buffers between these easements and MRP mitigation projects will be determined in consultation with the IRT during the mitigation planning process.

3.6 How Mitigation Relates to Restoration Projects

Mitigation credit shall not be available from other County, State or Federal restoration projects in existence outside the MRP. In cases where mitigation sites are adjacent to or near to existing or proposed restoration sites, the Mitigation Plan (see Appendix K) will clearly show areas of restoration (where no credit is available) and where mitigation credit can be generated.

The MRP will not derive credit from any project(s) already funded with Salmon Recovery Fund money or any projects already planned and funded or completed to meet a permit condition.

However, there may be cases when MRP mitigation fees can be used to implement a salmon recovery project or other restoration project. For this to occur, all of the following must apply:

- The project is not funded;
- There is not a restriction related to the funding used to acquire a site where the project will occur; and
- The project is not a requirement associated with a permit (e.g., a mitigation project).

The federal rule, [332.3(j)(2)] states:

> —Except for projects undertaken by federal agencies, or where federal funding is specifically authorized to provide compensatory mitigation, federally-funded aquatic resource restoration or conservation projects undertaken for purposes other than compensatory mitigation, such as the Wetlands Reserve Program, Conservation Reserve Program, and Partners for Wildlife Program activities,

> cannot be used for the purpose of generating compensatory mitigation credits for activities authorized by DA permits. However, compensatory mitigation credits may be generated by activities undertaken in conjunction with, but supplemental to, such programs in order to maximize the overall ecological benefits of the restoration or conservation project."

If mitigation fees are used to implement projects or portions of projects prioritized in a Salmon Recovery Plan, the impacts for which mitigation fees were collected must be accounted for when measuring progress toward watershed-wide salmon recovery goals. For each mitigation project implemented through the MRP, the MRP Manager will provide details of the mitigation project to WRIA Forum staff for entry into the Habitat Work Schedule, which is an online mapping and tracking tool used to measure progress and increase accountability for implementation of salmon recovery projects statewide. At minimum, information added to the Habitat Work Schedule database will include the amount of funding from mitigation fees, the type and amount of enhancement, restoration, creation, etc. to aquatic resources and buffers at the mitigation project, and the reports about permitted impact projects from which mitigation fees were derived (see Appendix G, Section 6.1). Mitigation projects will be clearly categorized as such in the Habitat Work Schedule database so it is evident to salmon recovery planning staff that ecological lift at mitigation projects is achieved at the expense of allowing permitted ecological impacts elsewhere in the watershed.

APPENDIX E: ADVANCE CREDITS

The federal rule defines *advance credit* as "any credits that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan." [33 CFR Part 332.2] Advance credits are not in any way tied to prior restoration or mitigation activities by the program sponsor. (However, the sponsor's track record in successfully implementing restoration and mitigation may influence the amount of advance credit awarded.)

A bank account/credit card analogy is helpful in explaining advance credits used for in-lieu fee programs versus mitigation bank credits:

First, consider mitigation banks. Mitigation banks build mitigation projects in advance, and in doing so "produce" mitigation credits. In this regard, a mitigation bank is analogous to a "mint." Rather than money, the mitigation bank can make a (limited) number of mitigation credits. These mitigation credits produced by the bank are kept in a "bank account", and are available for future sale to applicants with a mitigation need. When an applicant proposes an impact and needs a mitigation credit, they buy it from the mitigation banker, and the bank account is decreased by the exact amount sold to the applicant. When the balance reaches zero, the bank account is "closed" and no more credits are available from the bank.

Following the above financial analogy, think of *advance mitigation credits* as a pre-approved mitigation "credit card" with a set spending limit that the IRT issues to the in-lieu fee program sponsor based on their successful track record of implementing restoration/mitigation projects. The credit card itself actually has no value. When an impact project occurs, the sponsor can "borrow" a mitigation credit from the pre-approved credit card, and in turn sell that mitigation credit to the applicant who uses it to satisfy their mitigation need. The sponsor must then pay off the balance on the "credit card" by fulfilling (i.e., "producing") mitigation credits equal to (or greater than) the number of credits borrowed from the credit card. The remaining allowable "spending limit" on the credit card decreases as mitigation credits are sold to applicants, but increases accordingly when the sponsor "produces" mitigation credits at mitigation projects (i.e., pays off the balance on the card). Section 33 CFR 332.8(n)(3) of the federal rule describes this concept.

King County is not proposing to derive any Advance Credit from any restoration or mitigation project(s) completed prior to the certification of this instrument or from projects that are planned for completion to meet prior mitigation obligations. Credits to replenish MRP debits withdrawn from the advance credit pool can only be earned at newly-designed and constructed mitigation sites.

1.0 Advance Credit Request and Rationale

The King County MRP is requesting a total of 240 advance credits, or 80 advance credits in each of three categories (habitat, hydrology and water quality).

Credit allocation among the service areas is shown in Table 2 below. When credits are sold to an applicant, they shall be debited from the total number of credits advanced to the MRP by the IRT.

Table 2. Advance Credits Requested by Service Area

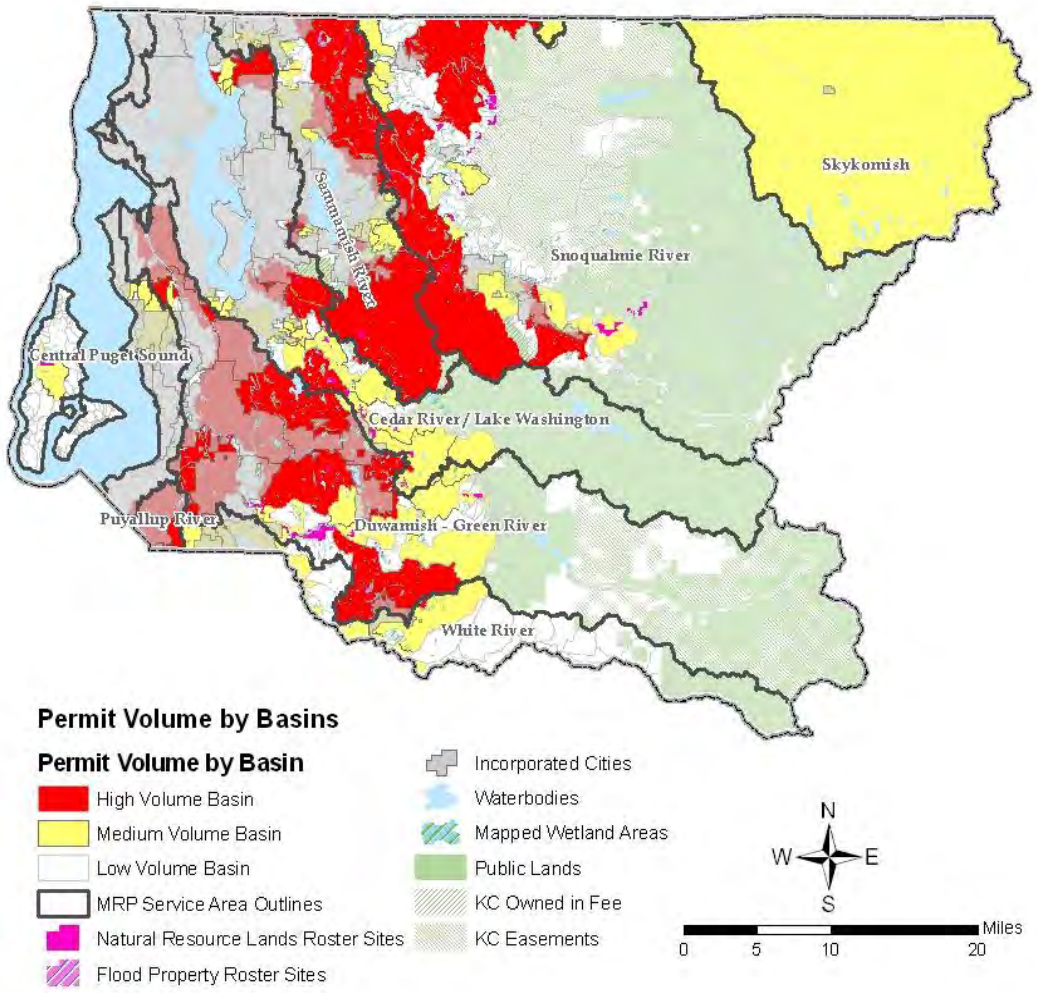
Service Area	Habitat Credits	Hydrology Credits	Water Quality Credits	Total
Snoqualmie River Watershed (WRIA 7)	20	20	20	**60**
Skykomish River watershed (WRIA 7)	5	5	5	**15**
Cedar River - Lk WA Watershed (WRIA 8)	10	10	10	**30**
Sammamish Watershed (WRIA 8)	15	15	15	**45**
Green/Duwamish Watershed (WRIA 9)	20	20	20	**60**
Central Puget Sound watershed (WRIA 8, 9)	5	5	5	**15**
White/Puyallup River Watershed (WRIA 10)	5	5	5	**15**
TOTAL ADVANCE CREDITS REQUESTED	80	80	80	**240**

The number of advance credits requested for each service area is based on several factors:

1. **Availability of current Roster Sites in the service area to generate credit.** Appendix I shows examples of how Roster sites in several of the larger service areas could generate more credit than the amount requested for the service area;
2. **Service area size.** More credits are requested for larger service areas;
3. **Percentage of service area within unincorporated King County.** More credits are requested for service areas with greater percentage of area in unincorporated King County; and
4. **Estimated development pressure:** Development pressure was estimated using a coarse analysis of recent DDES permit activity within all subbasins across King County. Given

the relatively small percentage of permits resulting in mitigation through the MRP, and the multiple and varied mitigation requirements associated with permits (e.g., ranging from planting several trees on site, to restoring several acres of wetland offsite), any permit with a critical areas review component was included in the analysis, regardless whether or not mitigation was required. In all, the analysis is based on 2,247 land use development permits that were still active or had been issued, approved or completed since January 1, 2008. These permits were divided among the basins in which they occurred (permits straddling a basin line were counted in both basins, though this occurred in few instances). Then permits were tabulated by basin to determine the permit volume within the basin (Figure 1).

Figure 1. Permit Volume by Basin in King County



Note: a larger version of this map is included with the service area maps in Exhibit 1, Part 2.

Portions of some basins lie within incorporated cities in King County; in these areas, DDES only has authority to issue permits in the unincorporated portions of the basin. Furthermore, some of these permits are likely for projects that were begun in an area that has since been annexed to a local jurisdiction.

- It is important to note that this is a coarse analysis, which does not account for basin size or whether permits actually required mitigation. Furthermore there is an inherent assumption that recent permit volume can be used to predict future development pressure; this assumption has not been validated.
- For these reasons, estimated development pressure carried less weight in determining how many advance credits to request; the first two factors were more heavily weighted.

Additional rationale for advance credits requests is included in the Service Area descriptions in Appendix I of this instrument.

2.0 How Advance Credits Relate to Amount of Allowed Impacts

The number of requested advance credits does not translate directly into a number of acres of impact that could be allowed in the process of "drawing down" all advance credits. First it is important to note that it is very unlikely the MRP will "max out" the allotted "spending limit." The intent is that the balance of advance credits will be replenished by implementing mitigation projects prior to selling all available advance credits to applicants.

Maximum and minimum impact acreage

In theory, there are maximum and minimum amounts of impact for a given number of advance credits in a given service area. If all impacts were to wetland systems with high ecological functions and high value to society, 240 credits would allow impacts of less than 1.5 acres countywide. If all impacts were to wetlands with low functions and low value to society (i.e., all functions and values at an impacted wetland receive minimum scores) 240 credits would allow impacts of about 9.0 acres countywide.

240 debits worth of impacts could range in acreage from less than 1.5 acres to about 9.0 acres, depending on the ecological value and value to society of the wetland where impacts occur.

Table 3 provides minimum and maximum acreages associated with credit amounts requested for MRP Service Areas.

Table 3. Maximum Acres of Impact Associated with Advance Credits by Service Area

Service Area	Advance Credits	Minimum impact from an equal number of debits (Acres)	Maximum impact from an equal number of debits (Acres)
Snoqualmie	60 credits	.32	2.22
Skykomish	15 credits	.08	0.56
Cedar/Lake WA	30 credits	.16	1.11
Sammamish	45 credits	.24	1.67
Green/Duwamish	60 credits	.32	2.22
Central Puget Sound	15 credits	.08	0.56
White	15 credits	.08	0.56
Total	**240**	**1.28 acres**	**8.90 acres**

In practice, the amount of impacts mitigated through the program will not match either the minimum or the maximum acreages for several reasons:

- An impact project may be partially mitigated onsite, with remainder of mitigation occurring offsite.
- The advance credit balance shrinks as credits are "withdrawn" to meet mitigation needs related to impacts, but the balance (i.e., the pool of available advance credits) also *grows* as mitigation projects are implemented and credits (of lift) are earned.
- Sites and projects will vary widely. Although the tool will provide a consistent method for assessing debits of impact, there are likely to be cases where mitigation requirements approved by regulatory agencies are different than what the tool suggests. For example, mitigation requirement may be reduced for a project because the project includes implementation of Best Management Practices (BMPs) above and beyond what would be required by King County Code. Any time mitigation requirements differ from what the tool suggests, the applicant must provide science-based justification for the alteration, and the changes must be approved by regulatory agencies with authority.
- Permit reviewers from the Corps, Ecology or other agencies (e.g., DDES, WDFW) may require additional credits based on a case-by-case review.

3.0 Advance Credit for Aquatic Areas and Aquatic Area Buffers

Because the tool can't be used to assess stream and stream buffer credits, King County is not requesting advance credit for river and stream impacts. However, there are several Roster sites with potential for projects that would serve as mitigation for aquatic resource losses. Section Appendix D, Section 3.3 describes the process for allowing mitigation through the MRP for unavoidable aquatic resource and aquatic resource buffer impacts.

APPENDIX F: PROGRAM ACCOUNT

The MRP Program Account comprises a series of seven groupings of sub-accounts, one group of subaccounts for each of the seven MRP service areas. Separating the accounts according to Service Area will facilitate tracking and reporting income and expenditures.

Each Service Area has four "Service Area Accounts," and "Mitigation Project Accounts" will be added for each mitigation project implemented through the MRP.

The remaining sections of this Appendix describe how MRP funds are invested (Section 1.0), how fees are set (Section 2.0), how funds are allocated within the Program Account (Section 3.0), the process by which funds are disbursed (Section 4.0), reporting requirements (Section 5.0), and the Fee Ledger, which will track income from mitigation fees and expenditures (Section 6.0).

From an accounting standpoint, the MRP will seek to maintain a fee ledger in which the majority of funds in the account at any given time are allocated toward fulfillment of credits at mitigation projects. The Program Account will have sufficient funds to pay for ongoing monitoring, maintenance and long term management activities, as well as to implement any necessary contingency measures associated with implementation and ongoing management of mitigation projects. No money shall be removed from the fund for any use other than the Mitigation Reserves Program.

1.0 Investment of Funds

The MRP program account is within an established, interest-bearing King County Fund established solely for the use of the MRP. All of King County's cash – both receipts and disbursements, including fees collected through MRP – flows through U.S. Bank which is a member of the Federal Deposit Insurance Corporation (FDIC).

Moneys in the MRP Fund are invested according to a low-risk investment strategy managed by Finance and Business Operations Division of the King County Department of Executive Services.

The following excerpt from the King County website describes the investment strategy:

> The King County Investment Pool invests cash reserves for all County agencies and approximately 100 special districts and other public entities such as fire, school, sewer and water districts and other public authorities. It is one of the largest investment pools in the State, with an average asset balance of about $4 billion. On average, County agencies comprise 40 percent of the pool and outside districts 60 percent.
>
> The Executive Finance Committee (EFC) establishes County investment policies and oversees the investment portfolio to ensure that specific investments comply with both those investment policies and State law. The Pool is only allowed to invest in certain types of highly-rated securities, including certificates of deposit, U.S. treasury obligations, federal agency obligations, municipal obligations, repurchase agreements and commercial paper. The pool has averaged approximately a five percent rate of return over the past 13 years.
>
> *Source:* http://www.kingcounty.gov/operations/Finance/Treasury/InvestmentPool.aspx

All interest earnings from the investment pool accrue to the individual Funds constituting the investment pool according to the rate of earnings for the entire investment pool. Fund Managers (e.g., the MRP Manager) can direct allocation of each Fund's interest earnings to specific accounts within each Fund. MRP Fund interest earnings will be split evenly between Long-term Management and Contingency accounts within each service area (see Section 3.1), in proportion to the balance of all moneys allocated to each service area in the program. For example, if 20% of the MRP Fund balance is allocated to Service Area 1, 20% of the interest earnings for the MRP Fund will be allocated to Service Area 1, split evenly among Contingency and Long-term Management Accounts.

The Mitigation Reserves Program Fund is auditable by the State of Washington and is used exclusively for the mitigation per King County Code 21A.24.410. Additionally, the IRT will receive annual reports and audit the account as described in Section 5.0 (Program Account Reporting).

Each Mitigation Fee (which is the sum of Credit Fees and Land Fees. See Section 7.0 below and Appendix B, Definitions) will be deposited into the MRP Fund, and allocated to specified accounts according to the Service Area in which the impact occurred (see Section 3.0 below).

2.0 Mitigation Fees

Mitigation Fees will comprise two fees: a Credit Fee and a Land Fee. The Credit Fee price will reflect average costs for implementing all components of a mitigation project, based on cost analyses of recent projects completed by the King County Department of Natural Resources and Parks. Credit Fees will be used to implement all aspects of mitigation projects undertaken by the Mitigation Reserves Program (see Section 7.1 and 7.2, below).

The Land Fee prices will be based on an analysis of average cost of recent King County natural lands acquisitions within different areas and zoning categories (see Section 7.3, below).

The Mitigation Fee prices will thus be formulated to reflect full-cost accounting for establishment and management of mitigation sites, which includes: costs associated with site selection, permitting and design, construction, monitoring and maintenance, long term management, program administration, contingencies and property rights acquisition.

The federal rule states, "For in-lieu fee programs, the cost per unit of credit must include the expected costs associated with the restoration, establishment, enhancement and/or preservation of aquatic resources in that service area. These costs must be based on **full cost accounting**, and include, as appropriate, expenses such as land acquisition, project planning and design, construction, plant materials, labor, legal fees, monitoring, and remediation or adaptive management activities, as well as administration of the in-lieu fee program." 33 CFR 332.8(o)(5)(ii). The cost must also take into account contingency costs appropriate to the stage of project planning (*id.).*The cost per unit must also take into account the long term management resources necessary for management and protection (*id.*).

How Mitigation Fees Can and Cannot Be Used

Mitigation fees are intended for use in activities related to producing mitigation credit. Section 332.8(o)(5)(ii) of the federal rule states that credit costs may also be used for "administration of the in-lieu fee program." This statement implies that credit fees can be used for administrative activities, so long as they are directly related to production of mitigation credit.

Mitigation fees cannot be used for activities such as trail maintenance, litter patrol and other types of routine public land stewardship or maintenance activities unrelated to management of a mitigation site.

The following sections describe how credit fees collected through the MRP will meet the requirements for full-cost accounting as specified in the federal rule.

3.0 Allocation of Mitigation Fees

Upon receipt of mitigation fees, the MRP Manager will allocate funds to individual accounts for the service area in which the impact occurred. Moneys will be allocated to pay for mitigation project planning and implementation process, as well as account for financial assurance needs associated with contingencies and long-term management. The allocation rates were determined through an analysis of the expenditures on recent restoration projects used in calculating credit price (see Exhibit 11). The process for planning and implementing mitigation projects is described in Appendix K, Credit Fulfillment.

3.1 Service Area Accounts

Within each service area, there will be four "top level" *Service Area Accounts* that shall be available for use within the service area:

1. Land Fees Account, which contains 100% of Land Fees collected in the service area. These funds are exclusively for use in acquisition of property for use as roster sites or to secure Preservation Credits (see Appendix K, Section 5.0);

2. Contingency Account, funded by deposits of a percentage of Credit Fees collected in the Service Area. These funds are to be used for contingencies related to project implementation, e.g., implementation of adaptive management plans (see Appendix O);

3. Program Administration Account, which is funded by a percentage of Credit Fees collected in the Service Area. These funds will pay for program administration duties, including but not limited to:

    a. Site selection and concept designs
    b. Fee and Credit accounting
    c. Legal services
    d. Data management (e.g., maintaining MRP Database (see Appendix G, Section 6.0)
    e. Reporting
    f. Correspondence and meetings with the IRT and other regulatory agencies

g. Program development (e.g., working to improve how the program works to ensure highest quality mitigation)
h. Other program administration duties as necessary; and

4. The Long Term Management Account, which is funded by allocation of a percentage of Credit Fees collected in a Service Area. These funds are solely for use in long term management (i.e., for use in implementing long-term management plans included in IRT-approved Mitigation Plans (see Appendix K, Section 2.0). Long term management funds are not available for use on a project until the project enters the long term management phase (i.e., after the establishment phase is complete and all credit associated with a project is released. See Credit Release Schedule, Appendix K, Section 6.0 and Long Term Management, Appendix P).

With the exception of the Land Fees account, each of the Service Area Accounts is funded by a set percentage of the Credit Fees. The percentage of Credit Fees allocated to each account may be adjusted to meet program needs. Allocation percentages will be finalized prior to the first credit sale.

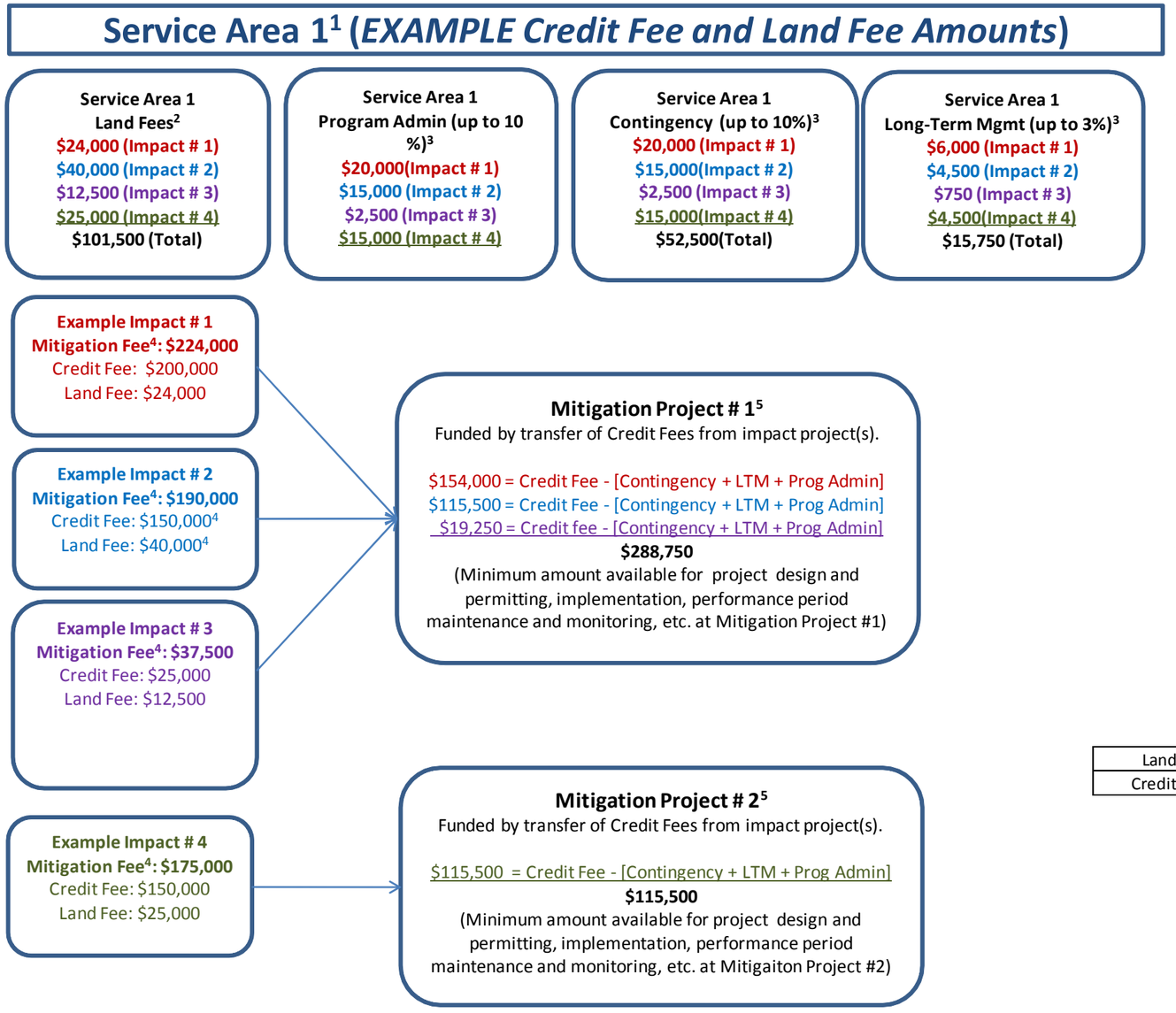
3.2 Mitigation Project Accounts

In addition to Service Area Accounts, there will be individual Mitigation Project Accounts. These accounts will be funded by allocation of approximately 80% of Credit Fees (i.e., the portion of credit fees which are not allocated to the Service Area Accounts).

To facilitate transparency in the disbursement process and to assist project managers with budget tracking, expenditures of Mitigation Project Account funds will be tracked using King County‘s financial management system; this system will track expenditures from each account by specific tasks performed. Staff involved in the process will charge their time against these account numbers and task numbers depending on the task on which they are working.

Figure 2 shows how the Mitigation Fees (i.e., Credit Fees and Land Fees) will be allocated within each Service Area. This model will be replicated for each of the seven MRP service areas. Mitigation Fee amounts used in the following figure are for **example purposes only.**

Figure 2. EXAMPLE Credit Fee and Land Fee Allocations



Notes:

(1) This accounting structure will be replicated for each of the seven service areas in the program.

(2) Land Fees will vary from one impact project to another, irrespective of the Credit Fee amounts, and vice versa. See Appendix F, Section 2.0 for a description of how Credit and Land Fees are determined.

(3) Percentages for Contingency, Long-term Management , and Program Administration are withdrawn from Credit Fees only (not Land Fees). See Appendix F, Section 2.0 and Exhibit 10.

(4) Mitigation Fee = Land Fees + Credit Fees

(5) Mitigation projects may be funded by transfers from one or more impact project fees.

ACCOUNT ALLOCATION (Maximum Percentages)

	Land Fee Account	Contingency Account	LTM Account	Program Admin Account	Mitigation Project Accounts
Land Fee	100%				
Credit Fee		10.0%	3.0%	10.0%	77.0%

4.0 Spending Authorization

Expenditure of funds from any account other than Program Administration Accounts for implementation of projects subject to the terms of this Instrument may only occur after receipt of written authorization from the Corps and Ecology after consultation with the IRT, pursuant to 33 CFR 332.8(i)(2) and pursuant to the Basic Agreement Article III.B and pursuant to the Spending Agreement template provided as Exhibit 18. The Corps and Ecology have pre-authorized the Sponsor to spend up to 75% of funds from the Program Administration Accounts upon initial receipt of mitigation fees from an applicant.

Written authorization from the Corps and Ecology to spend funds shall be in the form of the Spending Agreement found in Exhibit 18. Beyond the initial release of Administrative Funds, the Sponsor must submit a completed Spending Agreement form to the IRT, in connection with a proposed mitigation site and concept plan. (see Appendix K). Concurrent with initial IRT review, the District Engineer or his designee and Ecology may sign the Spending Agreement authorizing the subsequent release of funds to the Sponsor.

In cases of adaptive management, non-compliance or default the Corps and Ecology, after consultation with the IRT, may direct the use of MRP funds according to either an amended Spending Agreement or issuing a corrective action directive letter to the Sponsor (see Appendices S and R).

By signing this Instrument the Sponsor has agreed to abide by the direction of the Corps and Ecology in authorization, release, and use of MRP funds. The Sponsor acknowledges that failure to abide by the Spending Agreement or written requests from the Corps and/or Ecology is a violation of the program Instrument and may result in Program termination, among other penalties.

5.0 Program Account Reporting

The MRP Manager will submit annual reports according to 33CFR 332.8(i)(3), which states:

> (3) The sponsor must provide annual reports to the district engineer and the IRT. The annual reports must include the following information:
>
> > (i) All income received, disbursements, and interest earned by the program account;
> >
> > (ii) A list of all permits for which in lieu fee program funds were accepted. This list shall include: The Corps permit number (or the state permit number if there is no corresponding Corps permit number, in cases of state programmatic general permits or other regional general permits), the service area in which the authorized impacts are located, the amount of authorized impacts, the amount of required compensatory mitigation, the amount paid to the in-lieu fee program, and the date the funds were received from the permittee;

(iii) A description of in-lieu fee program expenditures from the account, such as the costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration;

(iv) The balance of advance credits and released credits at the end of the report period for each service area; and

(v) Any other information required by the district engineer.

The following sections of the federal rule describe reporting requirements:

33 CFR 332.8(q) *Reporting.*

(1) *Ledger account.* The sponsor must compile an annual ledger report showing the beginning and ending balance of available credits and permitted impacts for each resource type, all additions and subtractions of credits, and any other changes in credit availability (e.g., additional credits released, credit sales suspended). The ledger report must be submitted to the district engineer, who will distribute copies to the IRT members. The ledger report is part of the administrative record for the mitigation bank or in-lieu fee program. The district engineer will make the ledger report available to the public upon request.

(2) *Monitoring reports*. The sponsor is responsible for monitoring the mitigation bank site or the in-lieu fee project site in accordance with the approved monitoring requirements to determine the level of success and identify problems requiring remedial action or adaptive management measures. Monitoring must be conducted in accordance with the requirements in 33 CFR 332.6, and at time intervals appropriate for the particular project type and until such time that the district engineer, in consultation with the IRT, has determined that the performance standards have been attained. The instrument must include requirements for periodic monitoring reports to be submitted to the district engineer, who will provide copies to other IRT members.

(3) *Financial assurance and long-term management funding report.* The district engineer may require the sponsor to provide an annual report showing beginning and ending balances, including deposits into and any withdrawals from, the accounts providing funds for financial assurances and long-term management activities. The report should also include information on the amount of required financial assurances and the status of those assurances, including their potential expiration.

Finally, as provided in 33 CFR 332.8(i)(4), ~~t~~he district engineer may audit the records pertaining to the program account. All books, accounts, reports, files, and other records relating to the in-lieu fee program account shall be available at reasonable times for inspection."

6.0 Fee Ledger

King County will maintain two ledgers: one to track mitigation fees and expenditures, and a second to track debits and credits. Both ledgers will be organized by service area, and the two will be related to each other. The ledgers will be used to track the source of funding for mitigation projects as well as where and how impact mitigation fees are spent.

This section describes the fee ledger and Appendix G describes the credit ledger.

The fee ledger will track all income (Mitigation Fees) and expenditures within the program. The fee ledger will comprise separate ~~"s~~sub-ledgers" for each of the seven service areas. Each service area fee ledger will clearly show the following:

Mitigation fees collected for each impact project:

- Land Fee amount
- Credit Fee amount
- Impact project Permit Number

Deposits and Expenditures from the Land Fee Account:

- Origin of deposits (Impact Permit Number(s))
- Land Fee Expenditures (Acquisition project name, location, date, parcel number(s))

Deposits and Expenditures for the Contingency Account:

- Origin of deposits (Impact Permit Number(s))
- Contingency Expenditures (Mitigation Project Name)

Deposits and Expenditures for the Long-term Management Account:

- Origin of deposits (Impact Permit Number(s))
- Long-term Management Expenditures (Mitigation Project Name)

Deposits and Expenditures for the Program Administration Account:

- Origin of deposits (Impact Permit Number(s))
- Program Administration Expenditures

Deposits and Expenditures for each Mitigation Project Account:

- List of expenditures by Task categories covering all aspects of implementing mitigation receiving projects, e.g., administrative costs, design, permitting, construction, maintenance and monitoring, etc. (see Appendix K for implementation tasks).

Additionally, permit fees collected by DDES at impact sites will be tracked, although using a separate accounting system than the MRP Fee Ledger. Despite the separate accounting system, the MRP Manager will have detailed information available at all times for all permit fees related to any specific compensatory mitigation project through the MRP.

An example fee ledger is included in Exhibit 13.

7.0 Calculation of Credit Fee and Land Fee

Sections 7.1 and 7.2 describe the method by which credit prices will be set. Section 7.3 describes how the Land Fees will be determined. The prices of mitigation fees and land fees will be adjusted periodically to reflect costs associated with implementing mitigation projects through the program.

7.1 Explanation of Credit Fee Determination for Wetland Mitigation

The credit price has been established using a methodology intended to account for implementation of all aspects of mitigation projects outlined in this instrument, from review of available roster sites, to site selection, permitting and design, construction (including costs associated with contracting), near term maintenance and monitoring and long-term stewardship. The credit price also accounts for inclusion of contingency funds for each project. An initial credit price was based on four recent mitigation or restoration projects and determined using a three-step process for each project to determine a cost per credit for each project (see below). The final credit price resulted from a weighted average of costs per credit from the four projects.

The three-step process followed for each project was:

1. Analyze each project with the draft mitigation assessment methodology (the tool) to determine credits of lift created by each project. Each analysis resulted in a number of habitat credits, hydrology credits, and water quality credits for each project. These analyses were completed in the office by project managers who were familiar with the sites, and all aspects of the mitigation (or restoration) projects.

2. Determine full costs for all projects, including all expenditures to date and all expected future expenditures necessary to complete each project (achieve desired performance standards). Project budgets were reviewed and analyzed thoroughly. In many cases, all necessary projects tasks and associated costs were already included. However, there were exceptions. For instance, in some cases budgeted costs would have been insufficient to cover all requirements for implementing a mitigation project according to the federal rule. In these cases, for analysis purposes only, a proportionally appropriate amount of funds were added to the total project budget before determining the cost per credit.

3. Finally, total (adjusted) project costs were divided by the total number of credits (i.e., the sum of all functional credit types) of lift associated with the project to arrive at the cost per credit. The same method was used to determine cost per credit for each of the four projects.

Due to the difficulty in determining which proportion of project costs were related to achieving which proportion of the different types of credits, each functional subtype of credit (i.e., habitat, hydrology and water quality) were assumed to have cost the same to produce. So each type of credit costs the same as the next.

A detailed spreadsheet showing the analysis methodology by which the base credit price was calculated is included in Exhibit 11.

The projects included in the pricing analysis are real projects. However, the names of the projects were changed to Project 1 through Project 4. Some of these projects are active and being completed as mitigation; because costs added for analysis purposes have changed the total budget of the project, project names were changed to avoid any confusion that may result from the total budget in this analysis being different than a total budget agreed upon in contract negotiations.

7.2 Explanation of Credit Fee Determination for Aquatic Area Mitigation

In cases where the tool is inappropriate (e.g., for aquatic area or aquatic area buffer impacts), mitigation requirements may be determined according to area-based ratios. In these cases, costs will be determined according to the type of impact (e.g., considering aquatic area type, landscape position and value to society) and then estimating the amount, type, and cost of mitigation that will appropriately offset the impact. In these cases, costs may be based on the costs of recent projects most similar to the type of mitigation likely to be implemented. Alternatively, the MRP may set the base price using DDES bond-quantity worksheet (Exhibit 11, Part 3) or subsequent versions of the worksheet. DDES uses this worksheet to estimate the bond an applicant must post for permittee-responsible mitigation. The bond amount is intended to provide DDES sufficient funds to complete a project if an applicant does not perform required onsite or permittee-responsible mitigation, or to correct a project if the project fails to meet performance standards.

7.3 Land Fees

The purpose of charging applicants Land Fees is to ensure that mitigation 'rights' on publicly-owned land are not given away to private interests without reasonable compensation. As such, Land Fees are added to the Credit Fees; together the Land Fees and Credit Fees constitute the Mitigation Fee. In a credit and function-based in-lieu fee system, there will be cases in which it will be difficult or impossible to assess the actual cost of the publicly-owned area that will eventually be used for an MRP project, because the applicant and King County staff may be 'blind' to the mitigation receiving site when credit fees are collected. In some cases receiving sites will be acquired after an impact occurs to meet a specific functional need not offered by sites already on the MRP —Roster" (see Appendix J).

It was necessary to devise a system for calculating the Land Fee that is equitable for all applicants – whether or not a receiving site has been determined when the applicant buys credits. To meet this need, King County will base the Land Fee on the estimated costs of acquiring new lands for receiving sites in the same service area where impacts occurred. Anticipated land cost will be estimated by determining average land costs per acre for each of four zoning categories in three geographic areas of the county using purchase prices for King County land acquisitions data for the most recent four-year period (2006-2009, to begin).

This average cost per acre will be multiplied at a 1:1 ratio by the acreage of the impact to determine the Land Fee charged to the applicant.

For example, to determine the base Land Fee for a 1.2 acre impact in the Rural Area of North King County, the following equation would be used:

(1.2 acre impact) x (Avg. acquisition $/acre for Rural, North area) = Land Fee

Land acquisition data used to calculate Land Fees are included as Exhibit 11, Part 2 of this Instrument.

This average land cost per acre will be updated annually. This will ensure Land Fees reflect current market conditions and that fees collected are sufficient to acquire new lands.

This strategy supports 'no net loss' policies in the context of both aquatic resource functions and aquatic resource area. This is because the impacted functions are replaced at a Roster site using the credit fees to implement a mitigation project, while land area is replaced through future acquisition made possible by the Land Fee.

King County retains the right to adjust land cost surcharges based on site-specific and project-specific conditions.

Table 1 shows the categories for which average land costs per acre will be calculated.

Table 4. Land Fees ($/acre) *

Land Type	North KC[4]	South KC[4]	Vashon/Maury
Rural	$65,636	$52,175	$45,337
Agricultural	$32,949		Not applicable
Forest	$6,982		Not applicable
Urban	$302,673		Not applicable

**Prices as of April, 2010 based on KC real estate transactions in each type/area over four years from 2006-2009. See Exhibit 11 of Program Instrument for detailed information.*

APPENDIX G: CREDIT ACCOUNTING

The MRP seeks to achieve a net gain in ecological functions across the landscape; **at minimum the program must achieve no net loss of ecological function**.

From a credit accounting standpoint, the MRP will seek to maintain a surplus of credits available to sell, neither amassing a significant surplus of credits, nor selling all available advance credits for a particular service area. In cases where demand for MRP mitigation credits is higher than anticipated, the MRP may request additional advance credits from the IRT, which would require an amendment to the instrument. The intent is to "earn back" credits through mitigation prior to drawing down the total amount of advance credit in a given service area.

1.0 Balancing Credits by Functional Type

Until the program accrues impact fees and implements mitigation projects, it is hard to predict exactly how mitigation credit types will balance with impact debits in each functional type (see Appendix D). For example, finding mitigation sites and designing projects to earn habitat credits may prove easy, and implementing mitigation projects that will earn hydrology and water quality credits may be more difficult. In some service areas, watershed needs assessments may indicate that an imbalance across functional types is desirable; in other cases balancing functional debit and credit types may be the goal. As the program accrues mitigation fees and implements mitigation through time, the type and amounts of debits and credits, and the balance among them, will be tracked and reported to the IRT (via the Credit Ledger, see Section 2.0, below). MRP staff will consult with the IRT to discuss if balancing across functional credit subtypes should be attempted, or if "trading" among functional subtypes will be preferable. It is likely to vary by watershed based on specific watershed needs. Tracking each of the three functional subtypes of debits and credits separately will allow these decisions to be made in an explicit and transparent way.

One objective of the MRP is to fully offset functional losses resulting from impacts with equivalent or greater functional gains in ways that address watershed needs. The sections below describe how the sponsor will track credits according to functional categories (i.e., habitat, hydrology and water quality) and ensure that losses through time are offset by equivalent or greater functional gains in each respective functional category. For instance, if hydrologic functions, e.g., infiltration, provided by a wetland are reduced due to an unavoidable permitted impact, then equal or greater hydrologic functions should be replaced through mitigation projects over time since maintaining (and when possible, increasing) hydrologic functions is a known watershed need throughout King County. Section 1.1 outlines the process for tracking functional credit types and Section 1.2 outlines the timing considerations. Section 1.3 outlines the compliance measures with respect to offsetting functional losses with equivalent or greater functional gains. All of the conditions below apply for each of the program service areas.

1.1 Tracking Functional Gains and Losses

The sponsor shall be responsible for taking the following steps to ensure functional losses are mitigated through implementation of projects that achieve equivalent or greater functional gains within each service area:

A. When a mitigation credit is sold to offset an unavoidable impact in a given service area, the sponsor shall identify, quantify and record the debits of each functional type lost as a result of the impact (see Section 6.0 of this Appendix G).
B. The sponsor shall consider these functional losses during the process of selecting mitigation sites in the service area (see Appendix J) and strive to design and implement projects that fully compensate for functional losses in a manner that is consistent with addressing watershed needs.
C. The sponsor shall quantify the functional credit types —earned" through implementation of a mitigation project (see Section 6.0 of this Appendix G).
   For each service area the sponsor shall maintain a ledger of all debits and credits, including the functional type of each credit and debit (see Section 4.0 of this Appendix G).

1.2 Timing Considerations for Achieving Functional Balance

The following conditions apply with respect to fully offsetting functional losses with equivalent or greater functional gains within a particular service area.

A. Following the sale of any credits in a service area, to the extent practicable, the next mitigation project the sponsor implements within that service area should attempt to fully compensate for the functions lost to the impact(s) for which credits were sold if the best available science dictates that this strategy is consistent with watershed needs.
B. When fully offsetting functional losses in a given functional category is consistent with meeting science-based watershed needs, and an implemented mitigation project in a service area does not achieve equal or greater credits of the three functional types as the functional debits lost to impacts, the sponsor shall prioritize meeting any outstanding functional credit type deficit in the next mitigation project implemented in the service area (see Appendix J, Section 3.2).
C. If there is still a deficit in one or more functional credit types after two mitigation projects are implemented following a credit sale, and addressing the deficit is consistent with meeting science-based watershed needs, then the next mitigation project implemented must address the functional deficit.
D. If functional losses are not offset by the third implemented mitigation project subsequent to a given credit sale or if more than ten (10) years have passed since the initial credit sale for which there is still a functional deficit, and addressing the deficit is consistent with meeting science-based watershed needs, then the conditions outlined in Section 1.3 below shall apply.

1.3 Functional Balance Compliance Measures

The goal of fully offsetting functional losses with equivalent or greater functional gains is consistent with the intent of the Federal Rule (See Preamble to Rule, 33 CFR Parts 325 and 332 pp. 19596 and 19601), but the text of the rule allows the district engineer discretion to approve out of kind mitigation when such mitigation occurs in a watershed context [33 CFR 332.3(e)]. King County recognizes the importance of fully offsetting functional losses in cases where doing so addresses science-based watershed needs. For example, maintaining and increasing hydrologic functions within the landscape is an important watershed function region-wide to address; as such, watershed needs would require that any losses of hydrologic function would need to be replaced in-kind.

If the sponsor fails to meet the requirements specified in Sections 1.1 and 1.2 above, King County shall restrict operations of the MRP in the affected watershed in the following ways:

A. If the third project implemented within a service area following a given credit sale in the same service area does not address outstanding functional deficits, or if more than ten (10) years have passed since an initial credit sale for which there is still a functional deficit, then no more credit sales of that functional type shall be allowed in that service area.
B. Money from future sales of credit types not restricted by measure 1.3.A above shall be used to address the functional deficit(s) in the affected functional category(ies).
C. The restriction on sales of credits in functional categories restricted per 1.3.A above shall continue until the sponsor implements a mitigation project that addresses the deficit (i.e., that the credit ledger reflects the deficit in a functional credit category has been eliminated).

2.0 Wetland Credit/Debit Ledger

King County will maintain a Wetland Credit/Debit Ledger to account for all wetland and wetland buffer credit transactions. This ledger will be used to track credits that are sold as well as credits that are released as mitigation projects meet performance success standards (see Appendix K, Section 6.0, Credit Release Schedule).

The Credit Ledger template is shown in Exhibit 12.

Upon program certification, the Credit Ledger will reflect the amount of "Advance Credits" advanced by the IRT (see Appendix E).

King County will compile an annual ledger report for the District Engineer of the Seattle District, U.S. Army Corps of Engineers and the Department of Ecology that will include the beginning and ending balance of available credits, permitted impacts for each resource type, all additions and subtractions of credits and any other changes in credit availability (e.g., additional credits released or if credit sales are suspended).

The credit ledger will contain basic information about each impact site and mitigation project. The MRP Database (Section 6.0, below) will contain much more detail about each of the projects.

The Credit Ledger and the MRP database will be linked by a "unique identifier" for each record. For impact projects, the unique identifier will be the DDES permit number for the project; for mitigation projects the unique identifier will be a unique project name for each mitigation project.

3.0 Aquatic Areas Ledger

King County will also maintain a ledger to track aquatic area and aquatic area buffer impacts and lift. The "Aquatic Areas Ledger" is necessary because the tool used to calculate wetland credits and debits (Appendix D, Section 3.0) is only designed to assess wetlands, not wetland buffers and other aquatic resources such as rivers and streams.

The template for the Aquatic Ledger is included as Exhibit 12, Part 2. More detailed information about impacts and resulting mitigation will be recorded and tracked in the MRP Database (Section 6.0, below).

4.0 Credit Ledger Reporting

The MRP Manager will submit annual Credit Ledger reports (for both wetlands and aquatic areas) to the IRT according to the requirements specified in the federal rule, 33CFR 332.8(q)(1):

> (1) *Ledger account.* The sponsor must compile an annual ledger report showing the beginning and ending balance of available credits and permitted impacts for each resource type, all additions and subtractions of credits, and any other changes in credit availability (e.g., additional credits released, credit sales suspended). The ledger report must be submitted to the district engineer, who will distribute copies to the IRT members. The ledger report is part of the administrative record for the mitigation bank or in-lieu fee program. The district engineer will make the ledger report available to the public upon request.

In addition to annual credit ledger reports, the MRP Manager will also submit reports from the MRP Database (see Section 6.0, below) with details about the ecological attributes of impacts and mitigation projects.

5.0 IRT Concerns with Use of Credits

If an IRT member has a concern with how MRP credits are being used or whether use is consistent with the terms of the instrument, the concerned IRT member may notify the Corps and/or Ecology in writing of the concern per 33 CFR 332.8(s). This section of the rule states, "Resolution of the concern is at the discretion of the district engineer consistent with applicable statutes, regulations, and policies regarding compensatory mitigation requirements for DA permits. Nothing in this section limits the authorities designated to IRT agencies under existing statutes or regulations."

Further, IRT members with permitting authority retain the right to enforce permit conditions on any permits issued according to state or local regulations.

6.0 MRP Database

The MRP database will support accounting functions, map production, compliance reporting and efficient program implementation across King County departments. The database will include information about Roster sites and any related credit fulfillment projects that have been undertaken on them. Information about impact sites that has been recorded during application of the mitigation assessment tool will also be tracked in the database. While the MRP requires "decoupling" of impact sites from receiving sites, the database will nonetheless allow King County to analyze how the nature and type of impacts within a service area relate to the nature and type of mitigation performed.

Tracking impacts (and impact site attributes) and mitigation receiving sites (including mitigation project information) in the same database will facilitate analysis of impacts and mitigation within service areas to ensure adequate and appropriate mitigation is implemented for impacts in each service area. For both impact sites and receiving sites, the database includes fields for site location, Watershed Resource Inventory Area (WRIA), service area, habitat types, HGM class, Cowardin class, environmental functions and opportunities for lift. The database will be regularly updated as additional sites are identified and are determined to be suitable according to program criteria.

The database will also include fields that identify establishment, restoration, enhancement, and preservation projects that have occurred on Roster sites in the past, or which are anticipated to occur outside of the MRP in the future. The purpose for including this information in the database is to identify potential scale efficiencies and partnerships that may be achieved by aligning funding, planning and construction resources. It is also to avoid conflicts between MRP activities and activities being undertaken by other programs that may have different objectives, and to clearly delineate project actions that are providing mitigation credit, and those being undertaken for purposes other than mitigation. The projects occurring on the Roster sites outside of the MRP will generally fall into three categories:

A. Known/prioritized habitat enhancement need, as identified within a WLRD study or the Parks Site Management Guidelines for King County Public Lands. This category captures public lands sites that have a known generalized restoration/enhancement need, though a specific restoration or enhancement project has yet to be developed.

B. Proposed or ongoing multi-phased, large scale restoration project, as identified within Water and Land Resources Division (WLRD) capital improvement projects budget.

C. Proposed, or ongoing multi-phased, small scale restoration or enhancement projects, as included within WLRD's Small Habitat Restoration Program annual project list or River and Floodplain Management Section annual project list, as long as additional mitigation would not inhibit these projects from achieving their primary goal of reducing flood hazards.

6.1 Impact Site Data

For Impact sites the MRP Database will store detailed information about each impact site, including:

IMPACT SITE REPORT
Project Name:
Permit Number:
Name of Reviewer:

General Location Details:

Parcel ID Number(s):
Street Address:
Zoning:
WRIA, Watershed, Basin, CAO Basin Location
Elevation
Township, Range, Section, QS, Latitude/Longitude
Latitude and Longitude

Type(s) of Critical Area Disturbed:

Wetland: Wetland Buffer:
Aquatic Area: Aquatic Area Buffer:
Wildlife Habitat Network: Wildlife Habitat Conservation Area

Description of Wetlands and Buffers:

Wetland Categor(ies)
Area disturbed: (sq. ft)
Number, species and sizes of trees, the extent of a shrub layer, and the extent of groundcover to be impacted at aquatic sites.
Hydrogeomorphic Classification:
Habitat Type:
Summary of Rating Scores
Water Quality Functions:
Description:
Hydrologic Functions:
Description:
Habitat Functions:
Description:
Wetland (Category) Buffer - Area disturbed: (sq. ft)
Hydrogeomorphic Classification:
Habitat Type:

Description of Aquatic Areas and Buffers:

Type of Area disturbed: (sq. ft) or (lineal feet)
Hydrogeomorphic Classification:
Aquatic Area Name:
WRIA Stream Number:

6.2 Mitigation Site Data

The MRP Database will store the following types of information about mitigation receiving site projects:

RECEIVING SITE REPORT:
Natural Area Name:
Managing Agency:
Staff Contact:
Site Management Guidelines:
IAC/RCO Funding:
Special Consideration:

General Location Details:
Parcel ID Number(s):
Street Address:
Elevation CAO Basin Location: WRIA: Watershed:
Basin: Subbasin:
Township: Range: Section: QS: Latitude/Longitude
Critical Area Information:
WETLANDS
Wetland #1 Present (GIS):
Wetland NWI Code (GIS):
Wetland Habitat Type (GIS):
KC SAO Rating (GIS):
Wetland Acreage (GIS):
SAO ID# (GIS):
Wetland Buffer Habitat Type:
Wetland #1 HGM (Non-GIS):
Wetland Habitat Type:
KC SAO Rating:
Wetland Size:
Approximate Area to be Established, Restored, Enhanced, or Preserved:
Functional Lift Opportunities:
Additional Information:

Summary of Wetland Rating Scores
KC CAO Category:
Water Quality Functions:
Description:
Hydrologic Functions:
Description:
Habitat Functions:
Description:
Additional information about functions and values:

WETLAND BUFFERS
Wetland HGM Buffer:
Wetland Habitat Type:
Wetland Buffer Size:
Approximate Area to be restored:

RECEIVING SITE REPORT (continued):
Restoration Opportunities:
Additional Information:

AQUATIC AREAS
Aquatic Area #1 (GIS):
HGM (GIS):
KC SAO Rating (GIS):
Aquatic Area #2 (GIS): HGM (GIS):
KC SAO Rating (GIS):

Aquatic Area (non-GIS):
Hydrogeomorphic Classification:
Habitat Type:
Aquatic Area Name:
Stream Type:
WRIA Stream Number:
Restoration Opportunities:
Additional Information:

AQUATIC BUFFERS
Aquatic Area Buffer:
Hydrogeomorphic Classification:
Habitat Type:
Description:

WILDLIFE NETWORK
Wildlife Habitat Network:
Documentation:
This section includes reports about the Receiving Site (click on the link to access report):

IDENTIFIED PROJECTS
Identified Site Projects (includes CIP and SHRP):
This section includes identified restoration projects for this Receiving Site (click on the link to project information):

In addition to tracking debits at impact projects and credits at mitigation projects by aquatic resource type, debits and credits will also be categorized by jurisdictional authority, i.e., whether an impact site or mitigation project was permitted under local, state and/or federal jurisdiction.

COMPENSATION PLANNING FRAMEWORK

Appendices H through Q establish the Compensation Planning Framework, which provides information about each of the service areas covered by the program and outlines the process by which mitigation projects will be implemented. The Compensation Planning Framework includes descriptions of all steps involved in the mitigation process, including receiving site selection, project planning and implementation and long-term maintenance, monitoring, and stewardship provisions. This Compensation Planning Framework describes program elements designed to meet requirements of 33 CFR 332.8(c). The table below shows the required elements of the federal rule and the sections of this instrument that address the requirements:

Table 5. Where Sections of the Federal Rule are Addressed in This Instrument

33 CFR Federal Rule Section	Summary description of federal rule requirement	Relevant Section(s) of this Instrument
§332.8(c)(1)	Compensation Planning Framework purpose; need for watershed approach	Appendix H: Mitigation in a Watershed Approach
§332.8(c)(2)(i)	Service area descriptions	Appendix I, Sections 1.0 – 7.0 and maps included as Exhibits 1-8
§332.8(c)(2)(ii)	Threats to aquatic resources	—Threats" subsections in sections Appendix H, Sections 1.0 – 7.0
§332.8(c)(2)(iii)	Analysis of historic losses to aquatic resources	—Historic Losses" subsections in Appendix H, Sections 1.0 – 7.0
§332.8(c)(2)(iv)	Current aquatic resource conditions	—Physical Description and Current Aquatic Resource Conditions" subsections in Appendix H, Sections 1.0 – 7.0
§332.8(c)(2)(v)	Aquatic resources goals and objectives for each service area	—Goals for Mitigation in a Watershed Context" subsections in Appendix H, Sections 1.0 – 7.0
§332.8(c)(2)(vi)	Prioritization strategy for implementing mitigation	Appendix I, Part 2 and Appendix J
§332.8(c)(2)(vii)	Preservation Objectives	Appendix I, Part 2; Appendix J; and Appendix K, Section 5.0
§332.8(c)(2)(viii)	Description of public and private stakeholder involvement	Appendix J, Section 3.1 and Appendix K, Section 3.0
§332.8(c)(2)(ix)	Long term protection and management strategies	Appendix P
§332.8(c)(2)(x)	Program evaluation and reporting	Appendix N and Appendix U
§332.8(c)(2)(xi)	Other compensation planning information as required by the Corps and/or Ecology	Will address in amendments to this instrument as necessary.

APPENDIX H: MITIGATION IN A WATERSHED APPROACH

Making mitigation decisions according to a "watershed approach" is an important requirement of the federal rule, and is a guiding principle for the MRP. The federal rule states:

> "*Watershed approach* means an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by DA permits. The watershed approach may involve consideration of landscape scale, historic and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for DA permits." [33 CFR 332.2]

This section provides an overview of how the MRP will prioritize selection of mitigation receiving sites to meet watershed needs.

The first two steps in the mitigation decision-making process apply to all impact projects as required by federal, state, and local rules:

1. **AVOID** and **MINIMIZE** impacts as required by King County Code, federal Clean Water Act, state policies, etc., and
2. Exhaust all ecologically-appropriate **ONSITE** mitigation options.

When unavoidable impacts to aquatic areas are allowed and mitigation fees are collected to enable offsite mitigation, decisions will be made according to the following stepwise approach:

Step 1. Document Impacts

a. DDES permit staff completes impact site assessment and data collection, and provides data to MRP Manager. The type of information collected is shown in Appendix G, Section 6.0 of this instrument.

b. MRP Manager enters impact description and data into MRP Database (see Appendix G, Section 6.0)

Step 2. Determine watershed needs in subbasin where impact(s) occur(s)

Sections 1.0 through 7.0 in Appendix I of this instrument review needs of each service area, but given the number of individual subbasins in King County, subbasin needs are not included.

a. The MRP manager will review best available science and document subbasin needs. MRP Manager will consider all available watershed plans, analyses,

watershed characterization efforts, staff expertise, etc. in a manner consistent with how watershed needs have been determined for each service area (see Appendix I). Any other special factors or attributes of particular subbasins will be considered as well, including presence of fish enhancement facilities, existing or planned major restoration projects, existing or planned major impact projects, etc.

b. The MRP Manager will present and discuss subbasin needs analysis to a "Credit Allocation Team" or "CAT" (see Appendix J, Section 3.1) during an initial meeting to identify the type and location of potential mitigation sites to mitigate for the impact(s) for which fees have been collected.

c. Documentation of subbasin needs will be presented to the IRT (as impacts accrue and mitigation site selections are proposed, not in advance).

Step 3. **Determine if functions lost at impact sites are critical to the ecological needs of the subbasin** (choose (a) or (b) below)

a. If impacts are to functions that are of critical importance to the subbasin, the MRP Manager and Credit Allocation Team will **look for a mitigation receiving site within subbasin where the impact(s) occurred** that mitigates the functions lost at the impact site(s) and meets sustainability criteria.

Due to the requirement to acquire land and complete initial physical and biological improvements by the end of the third growing season after an applicant purchases a mitigation credit (33 CFR 332.8(n)(4)), in cases when appropriate in-subbasin mitigation sites/projects cannot be identified within 18 months, the MRP Manager shall seek a site for out-of-subbasin mitigation. This mitigation at the selected site should address watershed needs according to information in Appendix I of this instrument and any new information available at the time the decision is being made. This 18-month time frame is intended to be a general guideline to ensure mitigation occurs according to the timeline outlined in the federal rule. (*Go to Step 4)*

-OR-

b. If MRP Manager and CAT determine functions lost at impact site(s) are not of critical importance to the subbasin:

Look for a mitigation site in the service area that meets watershed needs and meets sustainability criteria according to *Selecting Wetland Mitigation Sites Using a Watershed Approach* (Hruby et al., 2009). *(Go to Step 4)*

Step 4. **Consider type, amount, and location of impacts to functions** and **consider needs of subbasin** (if arriving at Step 4 from 3a) **or service area** (if arriving from step 3b)

a. Credit Allocation Team reviews impact site(s) data (database report, see Appendix G, Section 6.0) and reviews map of available Roster sites and Roster site data (database report, see Appendix G, Section 6.0).

b. CAT selects one or more Roster site(s) addressing subbasin or watershed needs for recommendation to the IRT.

c. MRP Manager presents to the IRT the site selection recommendations and rationale for the site selection, including documentation of subbasin and/or watershed needs.

Following review and approval by the IRT of the selected site(s) and associated concept plans (see Appendix K, Section 3.0) King County staff will develop a Mitigation Plan for IRT review. Upon IRT approval of the Mitigation Plan, the MRP Manager will begin implementation of the mitigation project(s) according to the credit fulfillment steps outlined in Appendix K of this instrument. In all cases, "land acquisition and initial physical and biological improvements must be completed by the third full growing season after the first advance credit in that service area is secured by a permittee, unless the district engineer determines that more or less time is needed to plan and implement an in lieu fee project." (33 CFR 332.8(n)(4)) Furthermore, the MRP will seek mitigation sites that are sustainable and that address watershed needs.

In the event of failure to meet this schedule without appropriate justification and approval by the Corps and Ecology following consultation with the IRT, King County shall be subject to non-compliance provisions outlined in the Basic Agreement, Article IV.N and Appendix S of this instrument. Additionally, "if the sponsor fails to provide the required compensatory mitigation, the district engineer may pursue measures against the sponsor to ensure compliance." (33 CFR 332.3(l)(3)). These measures will be discussed with the sponsor and/or other responsible parties and, "may include site modifications, design changes, revisions to maintenance requirements, and revised monitoring requirements. The measures must be designed to ensure that the modified compensatory mitigation project provides aquatic resource functions comparable to those described in the mitigation plan objectives." (33 CFR 332.7(c)(2),(3))

1.0 Ecological Condition and Watershed Needs

The MRP has access to a wealth of information about ecological conditions of King County's watersheds to use in making decisions about implementing mitigation according to a *watershed approach* as required by the federal rule (i.e., determining watershed needs). These resources provide a great deal of information enabling mitigation decisions to be made according to a watershed approach.

For example, each of the watersheds in King County has a "salmon conservation plan" to guide salmon conservation efforts; there is a county-wide *Flood Hazard Management Plan*; King County recently completed shoreline inventories and characterizations of nearly all King County shorelines for the update to the Shoreline Master Program; and there are basin plans and reconnaissance reports for many basins throughout the County. Individually, these planning efforts may focus on a particular geographic area or a fairly narrow spectrum of ecological "services" within the landscape (e.g., flood risk reduction, water quality improvement or salmon conservation).

Collectively, these reports, plans and analyses provide a more complete picture of how the ecological conditions in King County have changed through time in the face of development, and which ecological functions within a watershed are most important to protect and/or restore; this body of work will provide a solid scientific basis (as well as information about societal value of resources) for making decisions about how to implement mitigation that will achieve ―no net loss" policies, and have the greatest benefit to aquatic resources in King County.

The information available to guide mitigation decisions is by no means static. Scientists and planners in the KCDNRP continue to collect new data, perform new analyses and employ innovative methods in examining the ecological systems across the county landscape. As new reports and analyses become available, they will be added to the resources informing mitigation decisions through the MRP and incorporated by reference into this instrument.

For instance, the MRP intends to incorporate into this Compensation Planning Framework future watershed characterization efforts for King County watersheds, such as those that result from Ecology's watershed characterization efforts funded by a grant from the US EPA.

Perhaps the best and most important source of information to draw upon in making decisions about mitigation lies in expertise of King County staff members; these knowledgeable staff members will make up the Credit Allocation Team (Appendix J, Section 3.1). Given the important decision-making role the Credit Allocation Team (CAT) will play, the information about ecological conditions within the service areas in this Compensation Planning Framework is intended to serve as a starting point for mitigation decisions, and also to provide a measure of consistency in the event of staff turnover.

Appendix I includes information about each of the MRP service areas, including the following sections for each service area:

- Overview
- Physical Description
- Historic Aquatic Resource Losses
- Threats
- Goals for Mitigation in a Watershed Context
- Advance Credits Requested

Furthermore, Appendix I, Part 2 lists all known relevant scientific analyses, reports and other planning documents to guide a watershed approach to mitigation decision-making in each service area.

2.0 Other Resources for Decision-Making

In addition to information related to conditions within a particular watershed, there are also resources available to guide decision-making processes. These resources will help guide the *process* for making decisions in a watershed approach.

The multi-stakeholder Mitigation that Works Forum recently completed a report, *Making Mitigation Work: The Report of the Mitigation that Works Forum* (Ecology, 2008), which provides an excellent overview of key strategies for implementing successful mitigation in

Washington State. Recommendations of this effort have been incorporated into this program instrument, and will guide mitigation decision-processes employed by the MRP.

Another Ecology publication*, Protecting Aquatic Ecosystems: A Guide for Puget Sound Planners to Understand Watershed Processes* (Ecology, 2005) should provide CAT members with a useful framework for considering watershed processes when making mitigation decisions.

Also, a document produced during King County's recent Shoreline Master Program update, *King County Shoreline Master Program Appendix E: Technical Appendix* (King County, 2007), contains a section which "discusses various strategies and methodologies for undertaking restoration analysis, and discusses how King County will approach restoration planning."

Ecology has also recently published guidance on assessing the potential for success and sustainability of mitigation projects: *Selecting Wetland Mitigation Sites Using A Watershed Approach* (Hruby et al., 2009) (see Appendix D, Section 3.0).

When completed, Ecology's EPA-funded watershed characterization work should also provide decision-making guidance for the MRP.

Through the course of the program, King County staff will seek new and innovative tools to guide decision-making processes for the MRP with the overarching goal of implementing the best possible mitigation throughout the watersheds of King County.

APPENDIX I: SERVICE AREAS

Service areas for the MRP correspond generally to Watershed Resource Inventory Areas (WRIAs) with the exception that WRIA 7 and WRIA 8 are divided into sub-watersheds. King County DNRP and DDES, as well as other King County agencies, use WRIA boundaries in planning efforts and in making resource management decisions so following this model makes sense for the MRP. Maps of the service area boundaries are included as Exhibits 1-8.

With the exception of the White/Puyallup River Service Area (WRIA 10) and the Skykomish Service Area (WRIA 7), the MRP Roster includes numerous sites within each service area, ensuring that there will be an adequate number of Roster sites from which to choose for mitigating impacts to particular aquatic resource types. Service areas are as follows:

- Snoqualmie River Watershed (WRIA 7)
- Skykomish River Watershed (WRIA 7)
- Cedar River - Lake Washington Watershed (WRIA 8)
- Sammamish Watershed (WRIA 8)
- Green/Duwamish Watershed (WRIA 9)
- Central Puget Sound Watershed (WRIA 8, 9)
- White/Puyallup River Watershed (WRIA 10)

Sections 1.0 through 7.0 provide physical descriptions of the service areas, as well as descriptions of historic aquatic resource losses, current and future threats to aquatic resources, goals for mitigation in a watershed context and the number of advance credits requested. This information is summarized for the purposes of this instrument. Plans, reports and analyses from which information was drawn are cited in the text, and also listed in Appendix I, Part 2. These plans were developed by natural resources professionals from King County and other agencies and institutions (e.g., WRIA Forum staff, University of Washington researchers); information contained in the referenced plans was derived through a number of strategies, including field work as necessary to obtain valid, high quality data. In this way, information about service areas is based in an —appropriate level of field documentation" as required in CFR 33 332.8(c)(2)(iv).

1.0 SNOQUALMIE RIVER WATERSHED (WRIA 7)

Service Area Overview

The Snoqualmie Service Area comprises roughly 667 square miles and contains 120 parcels on the Roster of potential receiving sites. Land uses in this service area are predominantly forestry, agriculture and rural residential, with some urban residential and commercial land uses, especially

near the cities of Duvall, Carnation, North Bend and Snoqualmie, and the unincorporated areas around Fall City and Preston.

Exhibit 2 shows a map of the service area, including the Roster Sites. Exhibit 9 includes a list of all the Roster Sites. Table 6 below provides a summary overview of the service area:

Table 6. Snoqualmie Service Area Overview

Attribute	Value	Notes
Size*	667 square miles	This is the portion of the watershed within King County
Area in unincorporated KC*	651 square miles	Excludes incorporated areas
Number of subbasins*	127	
Predominant land uses	Forestry, agricultural, rural residential	
Number of parcels on the Roster	120	
Advance Credits requested	60 (20 of each functional type)	

** Source: KC GIS*

Physical Description and Current Aquatic Resources Conditions

The *Snoqualmie Watershed Water Quality Synthesis Report* (Kaje 2009) provides the following description of the watershed:

> —The Snoqualmie River watershed covers nearly 700 mi^2 and is located almost entirely within King County with a small fraction in Snohomish County. The river originates as a west-flowing drainage from the crest of the Cascade Mountains. Its principal forks – the North Fork, Middle Fork and South Fork – come together near the city of North Bend to form the mainstem Snoqualmie River. Approximately forty miles upstream from its confluence with the Skykomish River, the Snoqualmie plunges 270 ft. over Snoqualmie Falls near the City of Snoqualmie before flowing northward past the cities of Carnation and Duvall toward the Snohomish County line. The Snoqualmie and Skykomish Rivers converge near the city of Monroe to form the Snohomish River, second only to the Skagit River in size among Puget Sound rivers. [A map in the original document] provides an overview of the watershed.
>
> —The higher elevation areas are dominated by forests in a combination of public and private ownership. The upper watershed lies mostly within the Mount Baker Snoqualmie National Forest and includes significant portions of the Alpine Lakes Wilderness. According to a 2001 analysis of land cover, nearly 70% of the watershed is forested, split fairly evenly between coniferous and mixed (i.e., a combination of coniferous and deciduous) forest cover. The analysis categorized an additional 3.4% as a combination of —recently regenerated forest" (2.6%) or as —recent clear cuts" (0.8%). The percentage of forest cover varies widely by subbasin, from a low of 49% in the Snoqualmie Mainstem to over 88% in Griffin Creek.

—At the opposite end of the watershed elevation range lie the agricultural lands along the valley floor. As described further in [another section of the document], over 14,000 acres (3.9% of the watershed) are designated as an Agricultural Production District (APD) that lies mostly within the 100-year floodplain of the Snoqualmie River.

—Prior to European settlement, much of the Snoqualmie floodplain was forested, particularly upstream of present-day Duvall. Historical documents suggest that the immediate riparian corridor was dominated by hardwoods, such as alder, willow, vine maple and cottonwood, with less than 10% represented by conifers (Collins and Sheikh, 2002). However, the cedar and spruce that were the dominant species among streamside conifers were far larger than other riparian trees, accounting for roughly 40% of the total basal area. In 2000, forest cover along the river and valley floor was estimated as comprising only 16% of its pre-European settlement level. In addition, the historic floodplain featured numerous oxbows and wetlands (Collins and Sheikh, 2002) that likely facilitated exchange between groundwater and surface water year-round. Only 19% of pre-settlement wetlands were estimated to remain in 2000.

—Agricultural zones are flanked in most subbasins by unincorporated rural residential areas, the most prevalent land use in the watershed after forestry. Residential density varies widely across the watershed. The highest densities are found in the unincorporated towns of Preston and Fall City, both located in the vicinity of the Raging River, as well as in several lakeside communities, including Lake Marcel, Lake Joy, Lake Margaret and Ames Lake. In the majority of rural residential areas, the King County Comprehensive Plan calls for a housing density range from one residence per 2.5 acres to one residence per 10 acres.

—Finally, approximately 13.2 square miles (1.9%) of the watershed lies within the city limits of Duvall, Carnation, Snoqualmie and North Bend, and an additional 1.3 mi2 in the City of Sammamish within the Patterson Creek subbasin. All four cities along the Snoqualmie River have a long and storied history in the watershed and still maintain a great deal of their historic character, even as residential and commercial development have expanded into surrounding areas. Their populations range from less than 2,000 in Carnation to more than 9,000 in Snoqualmie."

Historic Aquatic Resource Losses

The report *Historic Habitat Conditions in the Snoqualmie River Valley* (Collins and Sheikh, 2002) provides the following discussion of historic losses in the Snoqualmie:

—Historically wetlands occupied low areas marginal to the meander belt. Seasonal flooding and tributaries replenished such —valley wetlands." Historic records indicate that vegetation in a large wetland complex between about RM 4 and RM 11 was primarily shrubs and small trees with scattered small spruce trees. Ponds and wetlands also occupied many oxbows created by historical channel avulsions. The pre-EuroAmerican-settlement forest, reconstructed from GLO field notes, was dominated by hardwoods,

including red alder, willow, vine maple, big leaf maple, black cottonwood, and crabapple. Western red cedar and Sitka spruce, while less common, were the largest trees. Combining LIDAR and georeferenced GLO field data in a GIS shows that tree species grew in distinct elevation ranges relative to the riverbank, with spruce, willow, and alder being most tolerant of flooded conditions, growing 1-4 m lower than the riverbank. Forest composition varied with distance from the river, with alder and willow more dominant in immediate streamside areas.

—Since ~1870, only a few additional oxbows have been created, because the river migration rate is generally low; most oxbows that now exist were created prior to the earliest mapping in ~1870. Valley wetlands, on the other hand, are substantially diminished in area, in 2000 being less than one-fifth (19%) the pre-settlement wetland area. Forest cover in 2000 is about one-sixth (16%) its mapped pre-settlement extent.

—The historical data can be applied to various restoration opportunities, including: (1) hydraulically reconnecting the river to oxbow ponds and wetlands where that connection has been lost; (2) planting along the river and oxbow ponds and wetlands; (3) restoring ditched floodplain tributary creeks; and (4) restoring valley wetlands."

Threats

The *Snoqualmie Watershed Water Quality Synthesis Report* (Kaje 2009) provides the following description of threats facing the Snoqualmie watershed:

While each city, town, rural neighborhood and agricultural area features unique assets and challenges, certain common trends are likely to play a part in shaping the future environmental health of the watershed:

- Each city in the watershed is likely to grow in area and in population, though at different rates. This may lead to higher residential and commercial densities in surrounding areas, but will also bring municipal sewer services to many neighborhoods that currently rely on on-site sewer systems.
- Growth in unincorporated residential areas is limited by the lack of infrastructure (sewer services in particular) and by State and County policies that seek to concentrate growth in more urban areas. Still, many rural areas are likely to see substantial growth through the division of very large lots into smaller ones. This may lead to further loss of forest cover and wetlands, as well as habitat fragmentation.
- Agriculture in the Snoqualmie valley is no longer dominated by dairies and today's broader mix of agriculture types is likely better for water quality. However, the survival of agriculture will depend in large part on its economic viability. This is especially true for the small-scale farms that make up a large portion of the farming community in the watershed.

- Federal and state forests are not likely to be converted to other uses in the foreseeable future, and large tracts of privately held timberlands may remain economically profitable in the long-term. The highest risk of forest conversion to other uses likely lies in the smaller-tract forest parcels along the fringes of existing rural residential areas.
- Modern approaches to storm water, forest and farm management can ameliorate some of the impacts associated with population growth and landscape changes. Whether better practices can offset the impacts associated with growth remains to be seen.

These and other trends, as well as the backdrop of climate change, will substantially shape the future of the Snoqualmie River watershed, including its aesthetic beauty, human health and its ecological integrity.

Advance Credits

The MRP requests sixty (60) advance credits, 20 of each functional type (i.e., 20 habitat credits, 20 hydrology credits, and 20 water quality credits) for the Snoqualmie Service Area., The Snoqualmie Service Area is the largest service area served by the MRP, and more than 97% of the service area is within unincorporated King County. With the exception of the eastern half of the Service area which is predominantly public or permanently protected land in forestry land use, many other basins in the service area are predominantly in rural residential land uses. Also, as shown in Figure 1 in Appendix E, there are several basins that have experienced relatively high permit volumes recently.

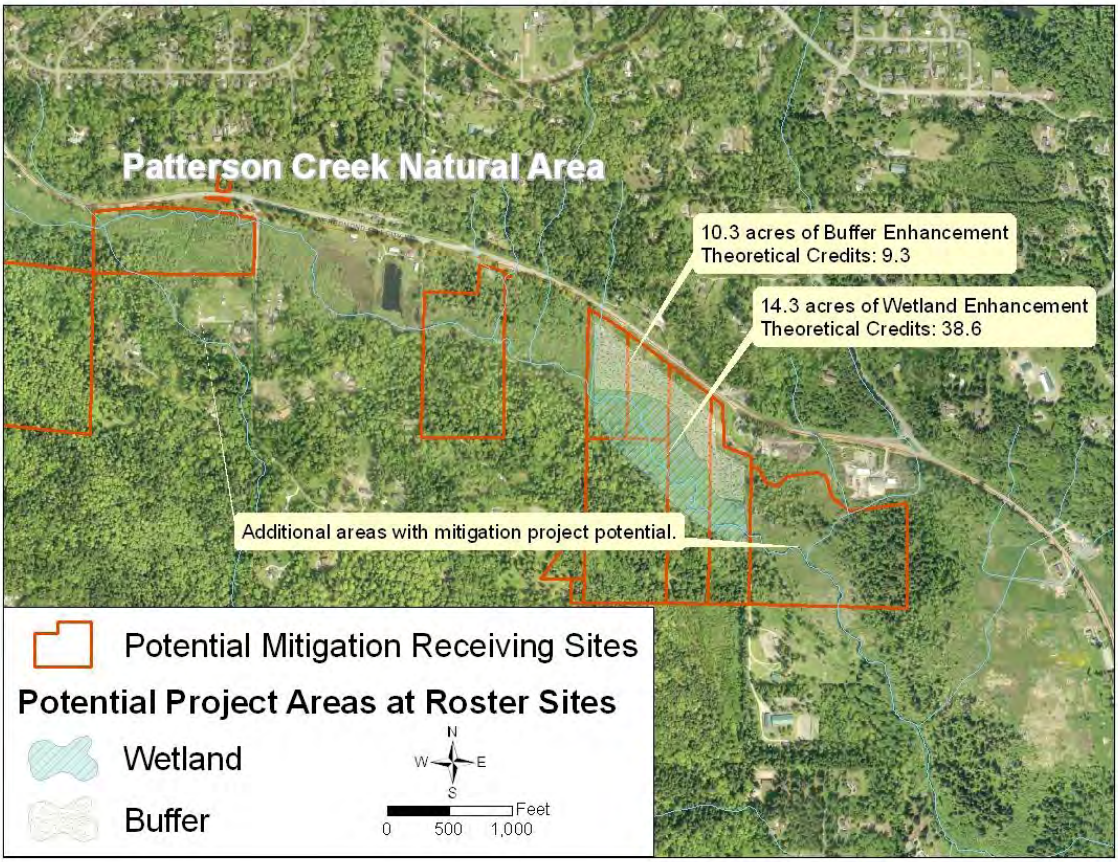
There are several Roster sites at which significant credit could be generated. The figures below show the Patterson Creek Natural Area Roster sites, and include estimates of potential credit.

Although there are two mitigation banks serving this area, other offsite compensatory mitigation options are likely needed.

Patterson Creek Natural Area

Roster sites at the Patterson Creek Natural Area offer potential to generate significant credit. Figure 3 shows areas where wetland and buffer enhancement could occur.

Figure 3. Patterson Creek Natural Area



The theoretical credits generated by the wetland and buffer enhancement areas were estimated by using the tool to quantify lift that might result from enhancement projects in each of the areas shown.

For comparison purposes, Project 1 shown in the Credit Pricing worksheet (see Exhibit 11) is a recently completed project which, according to post-project application of the tool, would have generated an estimated 40 habitat credits. Project 1 was similar acreage and type of project to potential projects at Patterson Creek Natural Area.

In addition to the potential to generate credit at the Patterson Creek Natural Area, there are several other Roster sites in the Service Area providing wetland enhancement potential, including Carnation Marsh Natural Area, Fall City Natural Area, the Tolt River Natural Area and the Middle Fork Snoqualmie Natural Area.

Both the Salmon Conservation Plan (Snohomish Basin Salmon Recovery Forum. 2005) and the Snoqualmie Watershed Water Quality Synthesis Report (Kaje 2009) cite restoration in the Patterson Creek subbasin as priority actions in the Snoqualmie Watershed. The Snoqualmie Watershed Water Quality Synthesis Report provides the following as priority actions for Patterson Creek:

- Protect existing functional forested areas and wetlands along tributaries
- Focus restoration efforts along the Patterson Creek Mainstem to address temperature

Goals for Mitigation in a Watershed Context

When there is a mitigation need, specific receiving sites in this service area (as with all service areas) will be chosen on a case-by-case basis based on the nature and location of the impacts and current restoration/enhancement needs in the service area.

Two recent publications will provide the CAT with guidance in making mitigation decisions: the *Snohomish River Basin Salmon Conservation Plan* (Snohomish Basin Salmon Recovery Forum, 2005) and the *Snoqualmie Watershed Water Quality Synthesis Report* (King County, 2009)

The *Snohomish River Basin Salmon Conservation Plan* (~~"t~~he plan") contains excellent information about current conditions, limiting factors and opportunities for restoration in the Snoqualmie watershed. Although the focus of the plan is on salmon conservation, the information is relevant to wetland and buffer protection and enhancement, as well. Information from this plan and other planning documents will be considered by the CAT in prioritizing and selecting receiving sites from the Roster.

The plan suggests a focus in the watershed on managing riparian lands to preserve and restore their ecological functions and values. Specific recommendations within the plan include:

- Preservation to reduce further degradation and to support natural hydrological and sediment processes
- Reconnection of off-channel habitat
- Restoration of shorelines conditions
- Riparian enhancement

The *Snoqualmie Watershed Water Quality Synthesis Report* (Kaje 2009)(~~"t~~he report") provides an excellent overview of current conditions in the Snoqualmie River Service Area. This report focuses primarily on type, location and probable sources of water quality impairments in waterways throughout the Snoqualmie River Watershed. The report includes careful examinations of recent water quality data and recommendations for ecological enhancements for each subbasin.

Though the report's specific recommendations are too numerous to list here, this report and others listed in Appendix I, Part 2 will serve as an invaluable resource in selecting mitigation receiving sites in a watershed context. The report also suggests ~~"r~~iparian enhancement" as a priority action in many of the subbasins, as well as along the mainstem river and major tributaries, including the Tolt and the Raging Rivers.

Among multiple watershed-scale conclusions related to improving water quality and ecological conditions in the watershed, the reports states, ~~"I~~ntact wetlands and forests are the best defense against water quality degradation. Local jurisdictions should place a premium on protecting these

assets in perpetuity." The report also recommends next steps for King County agencies to "apply the report's findings to project design in an effort to help address high priority water quality impairments in specific locations" and to use the report to "better prioritize restoration actions on County lands."

Wetlands in higher watershed strata (e.g., depressional wetlands in upland areas away from creeks and rivers) play an important role in the Snoqualmie watershed. Wetlands in upper watershed strata attenuate high flows during heavy rain events that may cause down-gradient flooding, and also play an important role as nutrient sinks and in filtering other pollutants – functions which improve down-gradient water quality. These benefits are also important to consider in implementing mitigation in a watershed approach.

2.0 SKYKOMISH SERVICE AREA (WRIA 7)

Service Area Overview

The Skykomish Service Area comprises the 271 square miles of the Skykomish River watershed within King County, and does not currently contain any sites on the Roster (Exhibit 3).

Table 7. Skykomish Service Area Overview

Attribute	Value	Notes
Size*	271 square miles	
Area in unincorporated KC*	270 square miles	
Number of subbasins*	10	
Predominant land uses	Forestry, recreation	
Advance Credits requested	15 (5 of each functional type)	Anticipated need is low

** Source: KC GIS*

Land use through much of this service area is largely forestry, and much of the land is in public ownership. The *Snohomish River Basin Salmon Conservation Plan* (2005) contains excellent information about current conditions, limiting factors and opportunities for restoration. Information from this plan and other planning documents will be considered in prioritizing and identifying receiving sites for future inclusion on the Roster.

Physical Description and Current Aquatic Resources Conditions

The *King County flood Hazard Management Plan* (King County 2006) provides the following description:

> "The South Fork Skykomish drainage is in good ecological condition relative to other King County drainages. The vast majority of the area is managed for natural resources or is relatively unmanaged as wilderness and is mostly in federal ownership. The dominant federal agency is the U.S. Forest Service, which manages

most of the drainage for wilderness and natural resource values, primarily timber, fish and wildlife, water quantity and quality, and recreation.

Historic Aquatic Resource Losses

The *King County Flood Hazard Management Plan* (King County 2006) provides the following description of historic changes in the South Fork Skykomish basin (the area of the Skykomish watershed constituting the MRP service Area):

> "There are potential impacts from forestry-related uses throughout this drainage basin, generally upstream of the flood hazard management corridor, which can have effects on downstream flooding and channel conditions. These impacts include altered watershed hydrology, increased erosion and sediment caused by timber removal and forest roads, and reduced levels of large woody debris. These changes contribute to a reduction in instream habitat. Many forestry-related impacts are legacies of historical timber harvesting using harvest and forest road building rates and practices that are not used anymore. Thus the future prognosis is good for protecting and restoring natural hydrology, sediment and large woody debris functions on timber lands, although this may take decades in degraded areas such as along the Beckler River.
>
> "Residential development is absent from the vast majority of the drainage. Such development is concentrated in a few locations along the mainstem of the South Fork Skykomish near the Town of Skykomish, the unincorporated community of Baring, and along the lowermost reaches of a few of its larger tributaries, mainly the Miller, Tye and Foss Rivers. Residential development in these areas, while rural in nature, often encroaches on river banks and floodplains. In many places river-side development has reduced the quantity and quality of riparian forests and resulted in bank hardening. These impacts, in turn, alter natural rates of erosion, channel migration and large woody debris recruitment.
>
> "The South Fork Skykomish valley is also an east-west transportation corridor for BNSF Railway and State Highway 2 over Stevens Pass. A small network of minor residential roads exists along the valley floor. These features often run along, near or over the river, lower portions of its tributaries and associated floodplains and historical channel migration areas. Where these developments co-exist with stream channels, the stream banks are often stabilized, limiting natural rates of erosion, channel migration and large woody debris recruitment."

Threats

In comparison with other King County watersheds, there are relatively few threats facing the Skykomish Service area, since the "vast majority of the area is managed for natural resources or is relatively unmanaged as wilderness and is mostly in federal ownership. The dominant federal

agency is the U.S. Forest Service, which manages most of the drainage for wilderness and natural resource values, primarily timber, fish and wildlife, water quantity and quality, and recreation" (King County 2006).

However, there are threats from future development in and around the town of Skykomish, as well as threats related to forestry-related uses which could, for example result in loss of forested wetlands with related loss in wetland functions. The *Snohomish River Basin Salmon Conservation Plan* cites, "In the Skykomish River – Lower Mainstem, Skykomish River – Upper Mainstem, Pilchuck River - Middle, and Sultan River - Lower subbasins, intact forest cover is predicted to decrease by about 10% in the next 25years, based on current trends."

Effects from climate change also pose a threat to aquatic resources in the service area, though a full review of scientific studies of specific effects on aquatic resources in the service area has not been conducted. Likely future conditions resulting from climate change will be considered when planning mitigation projects in the service area.

Advance Credits

The MRP requests 15 Advance Credits, 5 of each functional type (i.e., 5 habitat credits, 5 hydrology credits, and 5 water quality credits) for the Skykomish Service Area.

Though the service area is relatively large, the vast majority of the Service Area is in public ownership, and there is anticipated to be very little development pressure. This area is also served by two private mitigation banks, so other offsite compensatory mitigation options exist.

There are no current Roster sites in the service area, but potential exists to find sites for projects, and this small amount of credit would allow the program to meet mitigation needs for applicants with unavoidable impacts and no onsite mitigation options.

Goals for Mitigation in a Watershed Context

Receiving sites in the service area will be chosen on a case by case basis based on the nature of the impacts and current restoration needs. The Snohomish River Basin Salmon Conservation Plan (Snohomish Basin Salmon Recovery Forum. 2005) states, "…the *Ecosystem Diagnosis and Treatment* model predicts the greatest gains would result through removal of bank armor, floodplain reconnection, and riparian planting." Although the model is intended to predict conditions relevant to Chinook salmon population performance, improving wetland conditions would have ecological benefits to other aquatic resources, as well.

These recommendations suggest key criteria of mitigation receiving sites in this service area might include the potential to preserve intact forest land or enhance river channel conditions through removal of bank armor, floodplain reconnection and riparian planting and wetland enhancement.

Additionally, the Salmonid Habitat Limiting Factors Analysis: Snohomish River Watershed - WRIA 7 Final Report (Haring 2002) recommends the following actions related to salmon conservation, many of which could be appropriate as mitigation projects in the Service Area:

- Restore or improve floodplain function where constricted

- Complete cleanup of BNSF RR maintenance site in Skykomish
- Enhance riparian function through increased presence of conifers and restored riparian function in areas where the floodplain is currently constricted.

Additional Information

Appendix I, Part 2 of this instrument contains a complete list of known analyses, reports and other documents the CAT will have at their disposal when making decisions about mitigation in the portion of the Skykomish River Watershed within King County.

3.0 CEDAR RIVER/LAKE WASHINGTON WATERSHED (WRIA 8)

Service Area Overview

The Cedar River-Lake Washington Service area comprises 563 square miles of WRIA 8, including all of WRIA 8 except the Sammamish River Watershed, which is a separate service area, and the portion of WRIA 8 which drains directly to Puget Sound, which is in the Central Puget Sound service area. There are 96 potential mitigation receiving sites the service area (Exhibit 4).

According to the *Lake WA/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan* (2005), this service area together with the Sammamish Watershed, is home to more than 20% of the state's population. Though much of the watershed has been developed, there are still areas of high quality aquatic habitat throughout the service area.

Table 8. Cedar River/Lake Washington Service Area Overview

Attribute	Value	Notes
Size*	365 square miles	This is the portion of the watershed within King County
Area in unincorporated KC*	225 square miles	Excludes incorporated areas
Number of subbasins*	72	
Predominant land uses	Rural residential, urban, protected land for municipal water supply	
Number of parcels on the Roster	96	
Advance Credits requested	30 (10 of each functional type)	

** Source: KC GIS*

Physical Description and Current Aquatic Resources Conditions

The *2006 King County Flood Hazard Management Plan* (King County 2006) describes the physical conditions of the Cedar River watershed:

> —The Cedar River basin is divided by several dams built during the last century. The upper river, above the dams, is distinctly different in character and management from the lower river. The entire upper watershed, which covers about two-thirds of the overall

basin, is preserved in forest and is managed by the City of Seattle for the primary purpose of municipal water supply and secondary purpose of hydroelectric power generation. The lower part of the watershed, downstream of Landsburg, is typified by residential, commercial and industrial uses.

—The lowest 5 miles of the river and its floodplain are almost entirely within the City of Renton and its urban growth boundary. This area contains parks, single- and multi-family residential development, commercial development, and portions of the downtown business core. Key features in the lower Cedar River valley include the City of Renton's Maplewood Golf Course, a Boeing Company plant, Renton Municipal Airport, the Renton Public Library, which is built on top of a platform spanning the river, several major subdivisions and two recently active landslides that abut the river channel.

Eastward from the Renton urban area, commercial and industrial uses drop off and residential uses decrease in density, becoming dominated by rural and medium-density residential development near City of Maple valley around River Mile 15. Between Maple Valley and the Landsburg Diversion, residential development tapers further. Training levees (levees that help direct, but do not contain flood flow) and revetments line the riverbanks along many of the meander bends along the lower and middle portions of the river. Most of these were built in the 1960s and 70s to prevent lateral migration of the river that might cause flood or erosion damage to developed properties and the infrastructure that supports them. Hundreds of acres of open space lands along the Cedar River between the City of Renton and Landsburg are owned by King County.

In addition to its mainstem channel, the Cedar River contains an array of aquatic habitats outside the mainstem channel but within the river's floodplain. King County (1993) identified 68 aquatic habitat features on the valley floor, including tributary streams, wall-base tributaries, side channels and riparian wetlands. Some of these features, such as wall-base tributaries, are often the most productive salmonid habitats of river systems in the Pacific Northwest (Peterson and Reid 1984). Typically they are formed in swales or channels left behind by past river channel migrations. Many are small, highly complex habitats that are currently out of the direct influence of mainstem flood flows; others are important for routing floodwaters across the valley floor. Such habitats are typically subject to some instability due to flooding. Many have been damaged or lost to changes in land use practices on the floodplain, and new habitats are rarely created because revetments or levees prevent river channel migration in most places (King County 1993).

In addition to the mainstem basin, the Cedar River Lake Washington Service area also comprises the basins for May Creek, Coal Creek, Mercer Island, Mercer Slough, Kelsey Creek, Fairweather Creek, Yarrow Creek, Juanita Creek, Forbes Creek, Lyon Creek, McAleer Creek, Thornton Creek, and Ravenna Creek, though many of these subbasins are entirely within incorporated cities.

Lake Washington is also a key aquatic resource in the Service Area. The *Lake Washington Existing Conditions Report* (TertraTech and Parametrix, 2003) describes

conditions and key features of the King County's largest lake in detail, as well as management goals for maintaining and improving water quality in the lake.

Historic Aquatic Resource Losses

Much of the planning and research focus in the Cedar River Lake Washington Service area has focused on Salmon Recovery and flood risk reduction. It is clear, however, that a large proportion of the Service area has experienced heavy development, with the vast majority of predevelopment aquatic resources being affected by development.

Many of the MRP Roster sites are within the mainstem floodplain. The King County Flood Hazard Management Plan (King County, 2006) provides an overview of historic changes in the service area, much of which is related to changes to the mainstem river and within its floodplain:

—The physical structure and ecological processes of the mainstem Cedar River have been altered considerably from pre-development conditions as a result of water supply operations, land development and channel modifications (King County 1993).

—Changes to the river were initiated by logging, agriculture, coal mining, light rural development and railroad construction in the late 1880s. By 1887, land clearing associated with early agriculture and residential floodplain development was extensive enough to be considered a main contributor to that year's major flood (Paul 1937).

—The lower Cedar River was rerouted and channelized in about 1914, when the outlet of Lake Washington was switched to the present location of the Lake Washington Ship Canal. As a result of these activities, the elevation of Lake Washington dropped about nine feet and a large delta wetland at the mouth of the Cedar River, presumably with complex channels and diverse habitat structure, was lost (Chryzastowski 1983). A consequence of the river's extensive bank armoring has been a decrease of local inputs of gravel and large woody debris from bank erosion, which otherwise would improve salmonid habitat. The primary miles downstream of Landsburg are largely unaffected by bank armor down to about River Mile 18. Downstream of about River Mile 18, the presence of bank armor steadily increases, while at the same time there are fewer eroding cliffs. Where eroding cliffs do occur, their sediment has a much smaller fraction of gravel than the upstream eroding cliffs (Perkins et al. 2002).

—Even with lesser fractions of gravel contributed by landslides in the lower river reaches, these landslide areas benefit habitat in the lower Cedar River by contributing coarse sands, and as a result of the physical bulk of some landslide deposits, cause hydraulic diversity.

—There are several obvious bluffs along the Cedar River that historically have slumped and dumped large amounts of sand and gravel into the river, often becoming places that salmon congregate to spawn. Known slump areas are located in the following neighborhoods: Maplewood at River Mile 4.0; Elliott Park at River Mile 5.0; Lion's Club at River Mile 11.9; Royal Arch at River Mile 14.2; and Arcadia at River Mile 19.3. The

landslide resulting from the Nisqually earthquake in 2001 provided the additional benefit of creating side channel and off channel fish habitat in an area now considered a reference reach for salmon habitat recovery efforts in the Cedar River.

—Riparian conditions in the lower Cedar are also much altered from pre-development conditions. King County (1993) estimated that the presence of riparian forest varied from zero percent in the channelized Renton Reach (River Mile 0.0 to 1.6) to 40 to 60 percent in the lower mainstem (River Mile 1.6 to 14.8) to 60 to 80 percent in the reaches approaching Landsburg (River Mile 14.8 to 21.6). Where riparian forests exist, they are often dominated by immature or deciduous trees. Ecological conditions improve closer to Landsburg.

—Managing for retention of naturally occurring large woody debris in the Cedar River and elsewhere in King County has only occurred since the *1993 King County Flood Hazard Reduction Plan* was adopted. Prior to then, there was an extended history of actively removing large woody debris which, when combined with immature or absent riparian forests, have contributed to relatively low current levels of large woody debris. Although more large woody debris is clearly evident in the river channel than in the early 1990s, it remains low relative to rivers in unmanaged areas.

—The effects of these changes and channel alterations can include reduction in the number and size of pools. In the early 1990s, King County (1993) estimated the number of —large" pools—pools that are at least one channel width in length—and found that the frequency ranged from zero in the Renton reach to 2.6 to 3.9 per mile in upper reaches. This is approximately 70 percent fewer large pools than would be expected to occur in unmanaged systems (Sedell and Everest 1991).

—In addition to its mainstem channel, the Cedar River contains an array of aquatic habitats outside the mainstem channel but within the river's floodplain. King County (1993) identified 68 aquatic habitat features on the valley floor, including tributary streams, wall-base tributaries, side channels, and riparian wetlands. Some of these features, such as wall-base tributaries, are often the most productive salmonid habitats of river systems in the Pacific Northwest (Peterson and Reid 1984). Typically they are formed in swales or channels left behind by past river channel migrations. Many are small, highly complex habitats that are currently out of the direct influence of mainstem flood flows; others are important for routing floodwaters across the valley floor. Such habitats are typically subject to some instability due to flooding. Many have been damaged or lost to changes in land use practices on the floodplain, and new habitats are rarely created because revetments or levees prevent river channel migration in most places (King County 1993).

—In summary, Cedar River management prior to the 1990s largely occurred without preservation or restoration of ecological process as a goal. As a result, the Cedar River exhibits a much-reduced range of ecological processes—such as flooding, channel migration, sediment and large woody debris recruitment, transport and storage—and is

much less physically complex than in predevelopment conditions. Despite this, areas such as the Belmondo Reach, from about River Mile 9 to River Mile 10.6, indicate that much complexity could be regained if limitations to channel migration are removed or set back and mature native riparian forests are reestablished. This reach is characterized by relatively little armoring, a relatively high quality riparian forest, accumulations of large woody debris, and active channel migration back and forth across its floodplain."

Threats

In discussing current conditions and limiting factors in the service area, the Salmon conservation Plan for the Cedar River/Lake Washington/Lake Sammamish Watershed states that development in WRIA 8 for human uses has dramatically altered aquatic resource conditions and the processes that form and maintain them. The factors that limit salmon habitat are similar for the lakes, rivers, creeks and wetlands within the watershed, although the magnitude of impact varies by type of water body and specific watershed area. It is important to understand that the limiting factors interact with one another to worsen the habitat problems seen in the aquatic systems. The factors that limit habitat in the service area generally include:

- Altered hydrology (e.g., low base flows, higher peak flows following storms, and increased ‗flashiness', which means more frequent and rapid responses when it rains)
- Loss of floodplain connectivity (e.g., reduced access to side-channels or off-channel areas due to bank armoring and development close to shorelines)
- Lack of riparian vegetation (e.g., from clearing and development)
- Disrupted sediment processes (e.g., too much fine sediment deposited in urban streams, or sources of spawning gravel disconnected from the river channel)
- Loss of channel and shoreline complexity (e.g., lack of woody debris and pools)
- Barriers to fish passage (e.g., from road crossings, weirs, and dams)
- Degraded water and sediment quality (e.g., pollutants and high temperatures)

Effects from climate change also pose a threat to aquatic resources in the service area, though a full review of scientific studies of specific effects on aquatic resources in the service area has not been conducted. Likely future conditions resulting from climate change will be considered when planning mitigation projects in the service area.

Advance Credits

The MRP is requesting thirty (30) advance credits (10 of each functional type - i.e., 10 hydrology credits, 10 water quality credits, and 10 habitat credits) for the Cedar River Service Area based on predominant pattern of rural and suburban residential land uses in the lower reaches of the Service area. Nearly all of the subbasins in the Service area within unincorporated King County have moderately high permit volume, suggesting moderate development pressure (see Figure 1 in Appendix E). Though the Cedar River Service Area is relatively large, much of the upper watershed is protected as the City of Seattle municipal water supply. The portion of the watershed likely to experience intense development pressure is relatively smaller.

Much of the Service Area in unincorporated King County is relatively close to the Cedar River mainstem, which is where the majority of the Roster sites in this Service area are located.

Roster sites in the Cedar River Service Area are generally smaller and offer fewer areas with potential to implement large wetland enhancement or restoration projects. However, many roster sites have potential for mitigation projects to improve river and stream buffers.

The three sites listed below have been identified as Roster sites within the Cedar River Service area with some potential to generate credit:

1. Ricardi Reach (Mainstem Cedar River). Ricardi Reach Natural Area contains a 6-acre forested wetland along the Cedar River, including a side channel off of the mainstem.
2. Cedar Grove Natural Area/Rainbow Bend (Mainstem Cedar River). Cedar Grove Natural Area contains a 30-acre forested/scrub-shrub wetland. These parcels all contain typical riparian red alder and black cottonwood forest, with a smaller proportion of coniferous trees and dense shrub. While there is a significant component of native shrubs in the understory, there is also a presence of non-native species including Japanese knotweed, Himalayan blackberry and butterfly bush.
3. Jones Reach (Mainstem Cedar River)

The three year work plan - WRIA 8 Implementation Priorities - cites projects in these areas as priorities in the Service Area. (Source: http://www.govlink.org/watersheds/8/pdf/WRIA83-Year-List4-21-08.pdf)

Potential also exists for acquisition of new Roster sites in the Service Area. Along an approximately 5-mile reach in the lower Cedar (all in unincorporated King County) King County staff has identified more than 80 parcels for potential acquisition. These parcels total more than 400 acres and range in size from 0.13 to 78 ac; the parcels intersect mapped wetlands covering an area of more than 70 acres.

Existing Roster sites with potential to generate some credit, and the potential for acquisition of new Roster sites, justifies the requested amount of Advanced Credit.

Goals for Mitigation in a Watershed Context

Protecting and enhancing eligible receiving sites on the MRP Roster in the Cedar River-Lake Washington Service Area will be an important component of meeting overarching goals outlined in Salmon Conservation Plan. These goals are to:

- Improve water quality,
- Reduce flood hazards,
- Protect open space, and
- Enhance management of stormwater run-off.

The *Cedar River Basin Plan and Nonpoint Pollution Action Plan* (King County, 1997) (—the plan") points to similar priorities for the Cedar River basin. The plan contains myriad specific project recommendations to help meet ecological needs of the watershed.

The plan states:

—Analysis of the water resources of the basin, which is documented in the Cedar River Current and Future Conditions Report, showed that, among the many significant conditions, three are particularly critical in the Cedar River Basin:

- Serious flooding in the lower Cedar River threatens human lives and takes a substantial toll on homes and business.
- The Cedar River and its tributaries contain much of the best remaining aquatic habitat in the Lake Washington system, although over half of the historic habitat suitable for fish propagation and rearing has been lost or degraded.
- The Cedar River basin is the primary clean water supply for Lake Washington and is a regional source of potable surface and groundwater. However, future development in the basin places this regional resource at increasingly greater risk."

The plan makes a series of major recommendations to ensure the ecological conditions in the Cedar River basin will —ensure a lasting legacy for future generations in the region:"

1. —Reduce Flood Damage: Eliminate the risk that flooding poses to human lives and reduce the economic and property damage from flooding.
2. Protect and Restore Aquatic Habitat: Protect and restore natural salmon runs and other aquatic resources, where feasible, by protecting existing high-quality habitat and restoring degraded habitats.
3. Maintain Water Quality: Maintain current water quality in the Cedar River basin by requiring appropriate treatment from new development and reducing pollutants from existing sources.
4. Protect Aquifers Used For Drinking Water: Protect basin aquifers to ensure the availability of abundant and clean drinking water and stream base flows through measures that maintain and enhance groundwater recharge and protect water quality.

5. Watershed Management: Establish a watershed management plan."

With the exception of recommendation 5 (on which the MRP has little direct bearing), decisions about mitigation in the Cedar River Service Area should work toward achievement of these broad goals for the watershed.

Additional Information

Appendix I, Part 2 of this instrument contains a complete list of known analyses, reports and other documents the CAT will have at their disposal when making decisions about mitigation in the Cedar River/Lake Washington Watershed.

4.0 SAMMAMISH WATERSHED (WRIA 8)

Service Area Overview

The Sammamish Service Area comprises 171 square miles of the Sammamish River watershed within King County. This service area is completely within WRIA 8. There are 96 parcels that are potential mitigation receiving sites within the service area (Exhibit 5).

Table 9. Sammamish River/Lake Sammamish Service Area Overview

Attribute	Value	Notes
Size*	170 square miles	This is the portion of the watershed within King County
Area in unincorporated KC*	99 square miles	Excludes incorporated areas
Number of subbasins*	56	
Predominant land uses	Rural and suburban residential	
Number of parcels on the Roster	96	
Advance Credits requested	45 (15 of each functional type)	

** Source: KC GIS*

Physical Description and Current Aquatic Resources Conditions

The Service Area has several distinct subbasins that constitute the Sammamish Service Area: Issaquah Creek, the East Lake Sammamish Basin, the Sammamish River Corridor and the Bear Creek System. Each of these areas is described below.

The 2006 *King County Flood Hazard Management Plan* (King County 2006) describes the physical conditions of the broader Sammamish watershed, including descriptions of three of the major subbasins in the service area:

—The Sammamish River flows 14 miles from the weir at the outlet of Lake Sammamish to its mouth in Lake Washington and is the lowest portion of the Sammamish basin,

draining 240 square miles. Major tributaries to the river include Bear, Little Bear, North and Swamp Creeks. Tributaries contributing to the watershed through Lake Sammamish include Issaquah, Tibbetts and Laughing Jacobs Creeks.

The Sammamish is a low-gradient river, dropping only 14 feet in elevation over its 14-mile length. The floodplain is generally a half-mile wide, covering much of the valley floor through the upper and middle portions of the river, but it narrows to near the bank-full width for most of the lower half of its length. The entire river is part of a flood control project completed by the U.S. Army Corps of Engineers in 1966 that channelized, dredged and straightened the previously meandering channel network.

The Sammamish River has undergone dramatic alterations. When Lake Washington‘s level was lowered by nine feet as a result of construction of the Lake Washington Ship Canal, floodplain farming became possible on a large scale as many of the valley's wetlands were drained. Subsequently, much of the river was straightened, and projects to reduce flooding through dredging and bank armoring further eliminated connections between the river and its floodplain.

Dredging and channel straightening have shortened the river to only about half its historical length, and wetland areas were reduced from approximately 3,000 acres to 150 acres (King County 2002b). These actions have altered sediment transport and reduced aquatic habitat quantity and quality. Adjacent land uses and bank armoring have degraded riparian conditions, leaving a riparian area largely devoid of mature trees, and affecting sediment and large woody debris contributions from riparian areas. The channel and in-stream habitat have been highly simplified, with less than 1 percent pool habitat (R2 Resource Consultants 1999).

The river also exhibits extremely high temperatures during summer and early fall. To some extent, the Sammamish River would naturally be warm since it drains the surface waters of a large lake. However, loss of channel diversity and riparian vegetation has resulted in water temperatures higher than historical levels and approaching the thermal tolerance of many fish species. The Sammamish River is used by federal Endangered Species Act-listed Chinook salmon as well as coho and sockeye salmon, including kokanee salmon, and rainbow and cutthroat trout (Kerwin 2001). There are historical accounts of salmonid spawning in the Sammamish River prior to its modifications but today there is little or no spawning. Thus the river serves as a migration and rearing corridor for salmon spawning streams such as Bear, Issaquah, Little Bear, North and Swamp Creeks and a myriad of smaller streams that still retain some salmon use, mostly for coho salmon and cutthroat trout.”

ISSAQUAH CREEK BASIN

The Issaquah Creek Basin encompasses 61 square miles within the Sammamish service area and incorporates eight subbasins of the Issaquah Creek basin system: North Fork Issaquah, East Fork Issaquah, Fifteenmile, McDonald, Holder, Carey, Middle Issaquah and Lower Issaquah Creeks.

Tibbetts Creek is sometimes included within the Issaquah Creek basin planning area however it is not a tributary (it drains directly to Lake Sammamish).

The Issaquah Creek basin is very diverse in both its natural features and land uses, which include parks, forestry, mining, livestock farming, residential, commercial and light industrial development. The City of Issaquah, located in the basin's northwestern end, overlaps both the Tibbetts and Issaquah Creek basins.

Aquatic resources in the basin include a variety of streams, wetlands, and lakes that range in condition from almost pristine to very degraded. Some exhibit an advanced degree of degradation as a result of historical and current land use activities. At present, land use in the basin is predominantly rural, with approximately 80 percent of the basin area covered by second growth forests.

BEAR CREEK BASIN

The Bear Creek basin covers a 51 square mile area in eastern Redmond, northern King County and southern Snohomish County. The basin is divided into four major subbasins: Upper Bear Creek, Cottage Lake Creek, Evans Creek and Lower Bear Creek. Bear Creek is the most productive spawning salmonid basin for its size in the Puget Sound area, often with over 30,000 fish returning annually. The basin contains many acres of diverse wetlands and a unique and abundant freshwater mussel population. The basin also includes regions of severely erodible hillsides that threaten both stream resources and public safety.

The Upper Bear Creek subbasin contains the rolling, mainly rural countryside upstream of its confluence with Cottage Lake Creek. Fish use is very high, particularly along the main stem of the creek but also in the numerous lateral tributaries draining the eastern uplands. The Upper Bear subbasin contains excellent spawning and rearing areas in diverse stream habitat and extensive wetland systems. Upper Bear is host to a large population of fresh water mussels that are indicative of high quality water.

The Cottage Lake Creek subbasin also enjoys very high fish use, particularly downstream of Cottage Lake but also farther upstream and in its lateral tributaries. The upper part of the subbasin is rural but development is proceeding rapidly downstream of Cottage Lake. Cottage Lake Creek is noted for its rare run of naturally spawning chinook salmon.

The two lower subbasins exhibit locally good fish habitat and wetland conditions but also show impacts of more intense urbanization. Steep, incised ravines in the Evans Creek subbasin connect rapidly developing uplands with the broad, wetland/agricultural valley of Evans Creek below. The Lower Bear Creek subbasin, extending from the confluence of Cottage Lake Creek downstream to Sammamish River, includes the most intensely developed areas of the basin in the City of Redmond. The broad floodplain of Bear Creek impacts land use in the area; that land use in turn affects the migration of fish through this subbasin into all other parts of the stream system.

It is estimated that there are approximately 1,050 acres of wetlands in the Bear Creek basin and 725 acres in the Evans Creek basin. They are predominantly scrub shrub and forested wetlands that range in size from one acre to more than 80 acres. The majority of the wetlands are located in

the upper hilly plateau region of the basin or along the valley floor adjacent to the mainstems of their tributaries. The wetlands in both stream basins provide extensive areas of wildlife habitats and water storage.

EAST LAKE SAMMAMISH BASIN

The East Lake Sammamish basin encompasses about 16 square miles of unincorporated King County, on the eastern side of Lake Sammamish. This basin has six subbasins with four main stream systems, small lakes and many wetlands and small hillside drainages. The small, often seasonally dry, streams flow in a predominantly westerly direction from lake and wetland headwaters over the rolling plateau. The streams then flow down the steep, erosive western slope of the basin, through ravines, before discharging to Lake Sammamish. The basin currently has mixed development patterns, ranging from low-density residential and pasture uses to high-density residential and commercial land uses. Its aquatic resources are in good to fair condition. However, the quality of the basin's surface waters, the stability of its slopes and stream channels, and the extent to which residents are protected from flooding and environmental degradation, continues to be threatened as the basin urbanizes according to existing land use and zoning plans.

Most of the streams on the plateau are small, seasonally dry and inaccessible to anadromous fish. Salmon and trout habitat has been degraded by pollutants carried in runoff from both urban and rural land uses and damaged by increased flows, instream erosion and human caused alteration of streams and shorelines. Because the fishery resource value of these streams is limited to this degree, the East Lake Sammamish Basin Plan does not recommend extraordinary measures to restore lost fish habitat or to introduce new fish populations to plateau streams. Instead, the plan emphasizes the streams existing or potential functions as stable, natural conveyors of flow. Many of these channels probably never supported even resident trout, but their riparian areas still offer valuable wildlife habitat and aesthetic values to basin residents. Some important fish habitat remains, particularly habitat for a unique remnant species of kokanee in the lower reaches of some streams and Lake Sammamish shoreline habitat for shoreline spawning sockeye. The basin plan does recommend stabilizing and repairing some portion of the stream and shoreline habitat to support adequate habitat for existing populations of salmon and trout.

Historic Aquatic Resource Losses

The Sammamish River Corridor Action Plan (US Army Corps of Engineers and King County. 2002) states, "The Sammamish River corridor has undergone dramatic alterations since settlement began in the 1870s. Alterations include major hydrologic changes (lake lowering and channel deepening); urban, industrial, and agricultural development in the river corridor and surrounding watershed; timber harvest; stocking of non-native fish species; construction of in channel structures such as weirs; channel realignment, and filling of remnant oxbows and floodplain areas. These alterations have eliminated most floodplain and wetland habitat in the corridor and seriously degraded riparian and in-stream habitat for fish and wildlife."

Issaquah Creek Basin Current/Future Conditions Report (King County, 1991) states, "Most notable anthropogenic disturbances are: the filling activity across the Issaquah valley that resulted from the construction of I-90; development of the Cedar Hills Solid waste disposal site; commercial and residential development; increased erosion and sedimentation from all activities; and potential impacts from groundwater extraction on baseflows in North Fork and mainstem Issaquah creeks."

Historic losses in other parts of the service area are likely similar to these documented historic losses.

Threats

According to the *Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan* (King County, et al 2005)("the plan"), this service area together with the remainder of WRIA 8, is home to more than 20% of the state's population. Threats to this service area are related to existing and future development.

Issaquah Creek Basin and Nonpoint Action Plan cites general threats facing the Issaquah Creek basin to be flooding, water pollution and loss of habitat.

In discussing current conditions and limiting factors in the service area, the Salmon conservation Plan states:

> "Development in WRIA 8 for human uses has dramatically altered aquatic habitat conditions and the processes that form and maintain them. The factors that limit salmon habitat are similar for the lakes, rivers, and creeks in the watershed, although the magnitude of impact varies by type of water body and specific watershed area. It is important to understand that the limiting factors interact with one another to worsen the habitat problems seen in the aquatic systems. The factors that limit habitat include:
>
> - Altered hydrology (e.g., low base flows, higher peak flows following storms, and increased 'flashiness', which means more frequent and rapid responses when it rains)
> - Loss of floodplain connectivity (e.g., reduced access to side-channels or off-channel areas due to bank armoring and development close to shorelines)
> - Lack of riparian vegetation (e.g., from clearing and development)
> - Disrupted sediment processes (e.g., too much fine sediment deposited in urban streams, or sources of spawning gravel disconnected from the river channel)
> - Loss of channel and shoreline complexity (e.g., lack of woody debris and pools)
> - Barriers to fish passage (e.g., from road crossings, weirs, and dams)

- Degraded water and sediment quality (e.g., pollutants and high temperatures)"

The Bear Creek Basin Plan, (King County, 1990), provides key findings related to threats facing the system as follows:

- High flow bank erosion is evident in the lower mainstem of Bear Creek, Mackey Creek, portions of Rutherford Creek and several small tributaries of both Bear and Evans Creeks.
- The quantity and quality of instream habitat in the lower portion of the mainstem, in most of Evans Creek (RM 0.0-5.1), and in many of the small tributaries originating from the upper plateau has been degraded or mostly eliminated through channelization, scouring flows which remove much of the instream habitat, and clearing of the riparian corridor and removal of large organic debris by streamside residents.
- The riparian corridor in many reaches of the basin has been reduced or totally cleared to stream edge. The removal of the large riparian vegetation has reduced the amount and type of large organic debris reaching the stream and has increased the solar radiation to the stream. This has resulted in a loss of fish habitat and an increase in summer water temperatures.

Effects from climate change also pose a threat to aquatic resources in the service area, though a full review of scientific studies of specific effects on aquatic resources in the service area has not been conducted. Likely future conditions resulting from climate change will be considered when planning mitigation projects in the service area.

Advance Credits

The MRP is requesting forty five (45) advance credits (15 of each functional type - i.e., 15 hydrology credits, 15 water quality credits, and 15 habitat credits) for the Sammamish Service Area based on predominant pattern of rural and suburban residential land uses in the service area, and the expectation of relatively high permit volumes as development continues in the service area. With the exception of the eastern portions of the Service area which is predominantly in forestry land use and in public ownership, nearly all of the subbasins in the Service area within unincorporated King County have relatively high permit volume, suggesting high development pressure (see Figure 1 in Appendix E).

There are two sites on the Roster with potential to generate significant credit: the Cold Creek Natural Area in the Bear Creek subbasin and the Log Cabin Reach Natural Area in the Issaquah Creek subbasin.

Cold Creek Natural Area

Figures 4 shows project plans for a recent project at the Cold Creek Natural Area that would have generated an estimated 40+ credits according to the tool over an area of roughly 14 acres. **This project is not generating any additional credits and this project will not be used to meet any future mitigation need** (though projects adding to this project may generate credit for future impacts).

Figure 4. Cold Creek Natural Area Plans

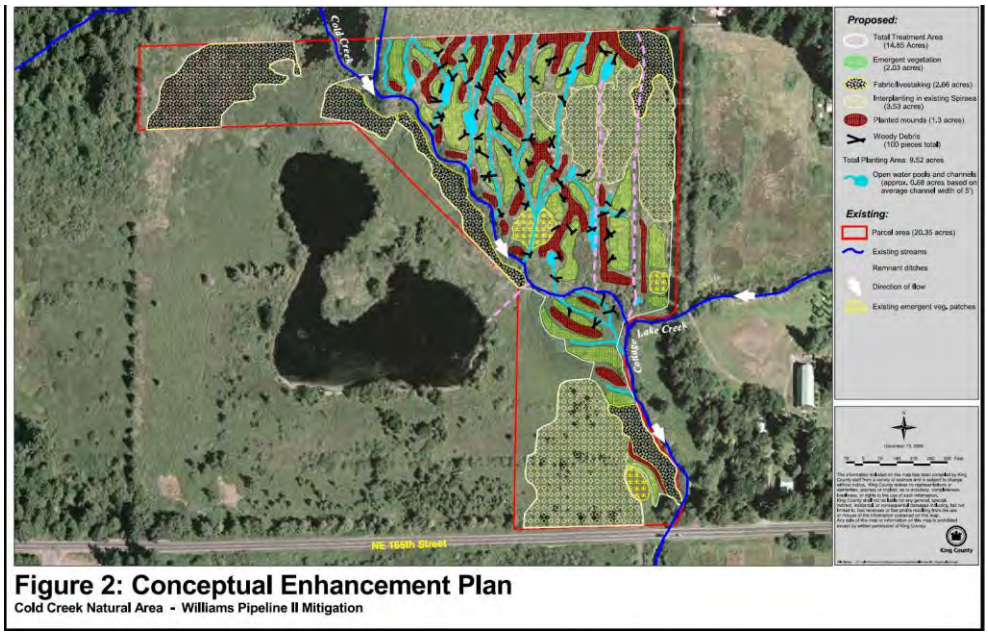


Figure 5. Post-project Conditions at Cold Creek Natural Area

Restoration and enhancement of the wetlands in the Cold Creek Natural Area has been identified as a priority in the Sammamish River Service Area; this site was chosen to provide mitigation for two impacts through the pilot Mitigation Reserves Program. According to King County Parks Division staff, King County-owned parcels in the Cold Creek Natural Area hold potential for additional projects similar in scale to the project shown above (Personal Communication with Tina Miller, May 2010), and therefore opportunity to generate similar amounts of credit at un-restored areas of the site (Figure 6).

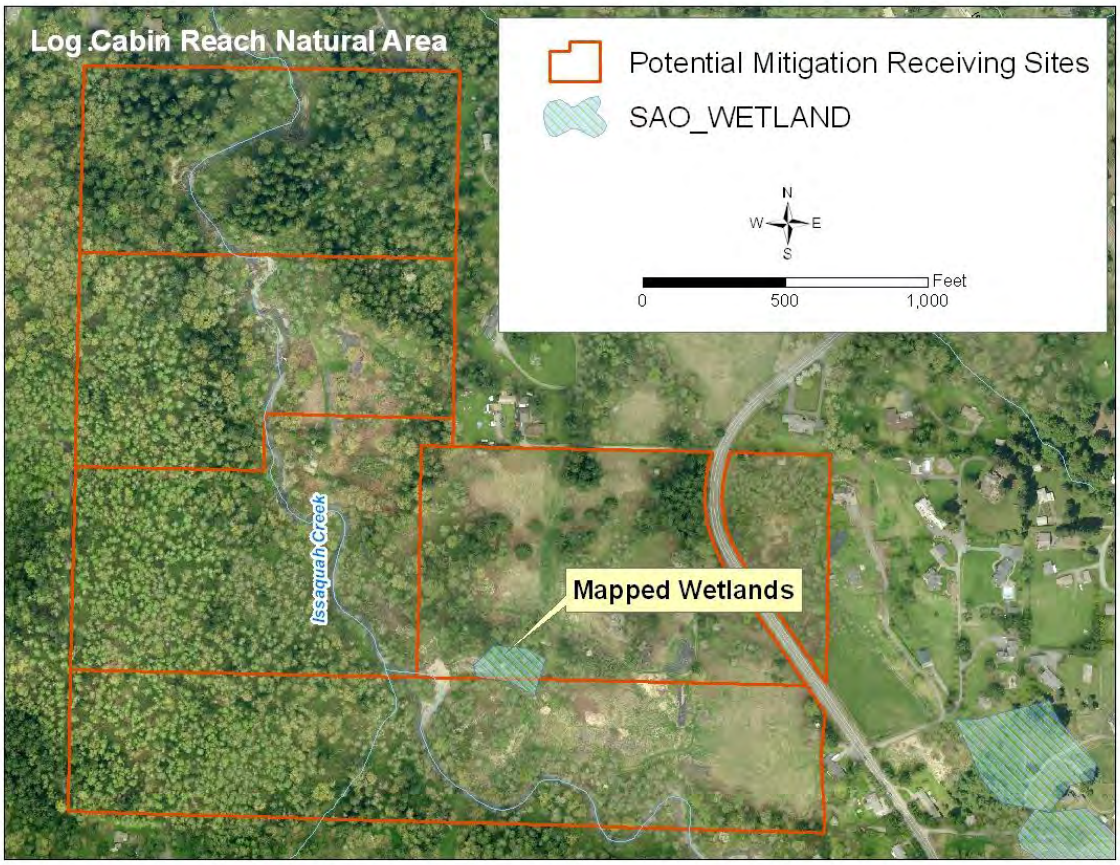
Figure 6. Cold Creek Natural Area Roster Sites

Log Cabin Reach Natural Area

Additional credit in the Sammamish Service Area could be generated at the Log Cabin Reach Natural Area in the Issaquah Creek subbasin. There is opportunity for wetland enhancement at the Natural Area, and also opportunity to improve riparian conditions and to perform stream restoration.

Theoretical examples were not analyzed at this site, but based on site area and existence of wetland onsite and a stream running through the site, it is reasonable to expect some credit could be generated at the site (Figure 7).

Figure 7. Log Cabin Reach Natural Area



King County is also pursuing acquisition of other ecological lands in the Issaquah Creek subbasin, some parcels of which hold promise as potential mitigation receiving sites.

Goals for Mitigation in a Watershed Context

According to the *Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan* (King County, et al 2005)(—the plan"), this service area together with the remainder of WRIA 8, is home to more than 20% of the state's population. Though much of the

Sammamish watershed has been developed, there are still areas of high quality aquatic habitat throughout the service area, much of it associated with the Bear Creek system which contains many of the Roster sites in this service area.

The Sammamish River Corridor Action Plan recommends the protection of all major tributaries to the river, particularly Bear Creek, as sources of cool water for the river and as habitat for other life stages of fish and wildlife using the river.

Protecting and enhancing eligible receiving sites on the MRP Roster in the Sammamish Service Area will be an important component of meeting overarching goals outlined in the Salmon Conservation Plan. These goals include:

- Protect/restore water quality (reduce sediments and high water temperature)
- Protect natural hydrological processes
- Protect/restore riparian habitats
- Reduce bed scour from high stormwater runoff flows
- Reduce confinement of the channel
- Restore sources of LWD and install new LWD

Some of the specific actions included in the plan are listed below. These are based on the conservation strategy in the plan.

These recommendations also hold true for the North Lake Washington sub areas (e.g., Bear Creek, Cottage Lake Creek, Evans Creek).

Although these actions focus on conservation of salmon populations, many of the processes and functions restored through implementing these recommended actions will have other ecological benefits as well, and for this reason, should be considered when making decisions regarding implementation of mitigation in the Sammamish Service area.

The *Issaquah Creek Basin and Nonpoint Action Plan* (King County, 1994) suggests the following priorities for the Issaquah Creek subbasin:

1. Reduce flooding and restore habitat by removing structures from floodplains.
2. Reduce future flooding and prevent damage to water quality and habitat by requiring new developments to retain forest land.
3. Protect riparian and aquatic habitats that remain in good condition, and restore those that have been degraded.
4. Address individual drainage and habitat problems through capital improvement projects.
5. Reduce pollution from all existing and predicted sources through regulation, monitoring, enforcement and education.

In making decisions in a watershed approach in the Sammamish Service area, the CAT will use these aforementioned plans as well as any new watershed plans or characterizations.

Additional Information

Appendix I, Part 2 of this instrument contains a complete list of known analyses, reports and other documents the CAT will have at their disposal when making decisions about mitigation in the Lake Sammamish and Sammamish River Watershed.

5.0 GREEN/DUWAMISH WATERSHED (WRIA 9)

Service Area Overview

The Green-Duwamish Service Area comprises 675 square miles, including all of WRIA 9 except the portion which drains directly to Puget Sound, which is in the Central Puget Sound Service Area. There are 94 potential mitigation receiving sites the service area (Exhibit 6).

Land uses within the service area are widely varied, including pristine forests, productive agricultural lands and densely populated urban areas.

Table 10. Green/Duwamish Service Area Overview

Attribute	Value	Notes
Size*	491 square miles	This is the portion of the watershed within King County
Area in unincorporated KC*	375 square miles	Excludes incorporated areas
Number of subbasins*	65	
Predominant land uses	Forestry, agricultural, rural, suburban, and urban residential, industrial	
Number of parcels on the Roster	94	
Advance Credits requested	60 (20 of each functional type)	

**Source: KC GIS*

Physical Description and Current Aquatic Resources Conditions

The *Salmon Habitat Plan – Making Our Watershed Fit for a King (WRIA 9 Steering Committee 2005)* provides the following descriptions of the Upper, and Lower Green River Basins, as well as the Duwamish River Basin:

—The Upper Green River Subwatershed contains the headwaters of the Green River and represents approximately 45% of the area and stream mileage of the Green/Duwamish Watershed. The river flows generally west and northwest from the Cascades through 30 miles of steep, densely forested valleys. Howard Hanson Dam is located immediately below the confluence of the North Fork Green River with the Green River at river mile

64.5. When filled, the Howard Hanson reservoir inundates 4.5 miles of mainstem and 3.0 miles of tributary habitat.

—The primary land use in the Upper Green is forestry (99%). The upland vegetation is a patchwork of old growth, second growth, and recently logged areas. The Middle Green River Subwatershed extends from Howard Hanson Dam at river mile 64.5 to river mile 32, just downstream of the confluence of Soos Creek with the Green River. Tacoma Public Utilities operates its drinking water diversion dam ("Headworks") at river mile 61. Below the diversion dam, the Green River flows between steep forested valley walls before emerging from the mouth of the Green River Gorge at the upstream end of Flaming Geyser State Park (river mile 45.6). Newaukum Creek flows in from the south at river mile 40.7. The river flows through a broad valley about a mile wide on average to its confluence with Soos Creek at river mile 33.9. Levees and revetments constrain channel migration in significant portions of the reach below Flaming Geyser State Park (Figure 7-2). The major land uses in the Middle Green River are residential (50%), forestry (27%), and agriculture (12%). The Middle Green River Subwatershed includes the cities of Covington, Maple Valley, Black Diamond, Enumclaw, and a portion of Kent, and is bisected by the Urban Growth Area Line.

—Residential, agricultural, and some urban developments along Soos Creek, Newaukum Creek, and other tributaries to the mainstem have reduced and degraded wetland and riparian functions. Similarly, these activities have reduced forest cover and increased impervious surfaces leading to hydrologic disruption to stream flow, channel degradation, increased sedimentation, and decreased water quality. Road construction and protection measures for private property have rechanneled streams, limited their lateral migration, and created barriers to fish passage. The amount and size of large woody debris have also been limited. Non-native plant species encroach on riparian habitat in some areas, degrading the quality of habitat.

—The Lower Green River Subwatershed begins at river mile 32 and extends downstream to river mile 11, the confluence with the old Black River. The subwatershed is characterized by a broad, flat floodplain across which the river meanders. Historically, the White River, the Cedar/Black River, and the Green River all joined in this reach to form a single large river. The White River was diverted by a log jam in 1906 to flow south through the Stuck River to join the Puyallup. This diversion was made permanent in 1911 with the construction of a retaining wall in Auburn. Approximately 80% of the Lower Green River Subwatershed has a levee or revetment on at least one bank in response to periodic flooding. Springbrook Creek, Mill Creek, and Mullen Slough are the major tributaries of the Lower Green River. Residential land uses constitute about half of the subwatershed area with industrial and commercial uses comprising about 27%. Mixed uses, parks, and agriculture comprise the remaining land uses. A portion of the cities of Algona, Auburn, Federal Way, Kent, Renton, SeaTac, and Tukwila are located within the Lower Green River Subwatershed. Urbanization, water diversions, levees, and revetments on the mainstem have gradually lowered the floodplain and resulted in

disconnection of off-channel habitats such as sloughs and adjacent wetlands from the mainstem.

—The Duwamish Estuary Subwatershed begins at river mile 11, which is the historical confluence of the Black River and the Green/White River, and ends at the mouth of the river where it empties into Elliott Bay. The Duwamish Estuary historically contained over 4,000 acres of tidal marshes and intertidal mudflats. Major tributaries to the Duwamish include Hamm Creek and Riverton Creek. The upper portion of the Duwamish (above river mile 5.5) has levees and revetments (originally to protect agricultural lands but which now protect residential/commercial areas), whereas the lower Duwamish industrial area has been dredged and filled to support navigation and water dependent businesses. Approximately 42% of the Duwamish is comprised of industrial land uses and 29% is comprised of residential land uses. Parts of the cities of Tukwila and Seattle are located within this subwatershed (Figure 7-4).

—The Duwamish Estuary has been dredged and channelized, and 97% of the estuarine mudflats, marshes, and forested riparian swamps have been filled. The Duwamish Estuary was filled between 1900 and 1940 to create Harbor Island and the East and West Waterways, largely to support industrial and shipping activities. Most of the lower five miles of the Duwamish has little or no native riparian vegetation remaining. Development patterns and land uses have also significantly polluted water and sediments in the remaining channel via stormwater and wastewater effluents and historic industrial contaminants. Development and shoreline modifications in the Duwamish, combined with river diversions upstream, have resulted in a reduction of transition zone habitat, the location where juvenile salmonids make the transition from fresh water to salt water. The almost complete loss of marshes and swamps has significantly reduced the ability of this part of the watershed to support juvenile rearing. Lack of riparian vegetation, extensive infestations of non-native plants, armoring, and piers mean that the shoreline habitat remaining is of poor quality. Taken together, these changes dramatically reduced the quality and quantity of estuarine habitat, which is particularly important to juvenile Chinook salmon."

Historic Aquatic Resource Losses

The Habitat Limiting Factors and Reconnaissance Assessment Report: Green/Duwamish and Central Puget Sound Watersheds (Kerwin, et al. 2000) contains the following information about historic losses:

Over the past 20 years, a significant amount of research has been done in the Pacific Northwest and the Puget Sound area regarding the impacts on streams and wetlands by various land use practices. Human activities such as forestry, agriculture, urbanization and mining can drastically disrupt aquatic ecosystems by altering watershed ecological processes either directly or indirectly. Disruptions can include degradation or destruction of in-stream habitat through clearing of riparian vegetation, channelization and bank armoring, barriers to salmonids by dams or other

water diversions, increased peak runoff rates and volume of surface water runoff, and removal of wood and reduction of wood recruitment. All of these activities in turn impact hydrology, water quality, riparian functions, and other factors of decline. WRIA 9 was one of the first areas of Puget Sound extensively settled by immigrants in the late 18th century. As the Native American populations declined, the settlers began to occupy the vacated lands. The settlers employed various methods and policies to gain economic benefit from the land. The 19th century and the early 20th century brought land clearing for agriculture, commercial forestry, channelization for navigational purposes, diversion of major Green/Duwamish tributaries to reduce flooding, and filling of tidelands for development. Various federal, state, and local policies allowed and even encouraged these activities to occur. During the middle of the 20th century, economic development fostered leveeing and damming to reduce flooding, road building and transportation infrastructure construction, and industrial, commercial, and residential development. Again, federal, state, and local policies encouraged this type of development. During the last 30 years of the 20th century, government agencies and the public began to support environmental protection measures and growth management. The federal government passed environmental legislation to protect undeveloped land, wetlands, shorelines, and endangered species habitat. State and local government began to embrace policies to manage development growth, protect shorelines, protect undeveloped land, protect wetlands, and protect farmlands. The effectiveness of these policies varies due to a variety of constraints including overlapping and conflicting regulatory goals. Today, 97 percent of the Green/Duwamish River estuary has been filled, 70 percent of the area of the former Green/Duwamish River Watershed has been diverted out of the drainage basin, and about 90 percent of the once-extensive floodplain of the Green/Duwamish River is no longer inundated on a regular basis (Fuerstenberg, 1999).

Threats

The Habitat Limiting Factors and Reconnaissance Assessment Report: Green/Duwamish and Central Puget Sound Watersheds (Kerwin, et al. 2000) contains the following information about threats (excerpted from Table LU-1 in the referenced report):

Land Use and Human Activities Potential Result and Impact of Salmon Habitat

- Channelization and confinement of stream channels for urban and rural land uses, potentially leading to:
    - Reduced channel complexity; increased velocities; loss of pools for holding and rearing; loss of spawning gravel habitat; loss of side channels; loss of wood recruitment; loss of connectivity with flood plain and riparian zone
- Loss of riparian vegetation due to urbanization, mining, forestry, agriculture, etc., potentially leading to:

  - Reduced overhanging vegetation and shade cover; increased solar radiation; elevated water temperatures; loss of LWD recruitment; reduced terrestrial insect influx; reduced leaf litter influx; alteration of energy cycle

- Loss of forested areas due to urbanization, mining, forestry, agriculture, etc., potentially leading to:
  - Reduced effective watershed area; altered runoff cycle with altered timing and magnitude of flows; increased erosion; changed channel morphology
- Loss of wetlands due to urbanization, mining, forestry, agriculture, etc., potentially leading to:
  - Altered runoff cycle with altered timing and magnitude of flows; reduced base flows; changed channel morphology and loss of connectivity with floodplain
- Creation of impervious surfaces, potentially leading to:
  - Altered runoff cycle with altered timing and magnitude of flows; changed channel morphology; degraded water quality increased stormwater runoff
- Water allocation, potentially leading to:
  - Altered flow regime, altered instream habitat availability
- Waste water treatment effluent, leading to:
  - Degraded water quality related to sewage effluent; altered water temperatures; reduced dissolved oxygen concentrations; released contaminants
- Industrial effluent, potentially leading to:
  - Degraded water quality; released contaminants and toxins
- Culverts, pipes, ditches, obstructed upstream passage, potentially leading to:
  - reduced downstream movement of wood and gravel; stranded fish in ditches
- Loss of estuarine and nearshore habitats; port development, potentially leading to:
  - Loss of important freshwater to saltwater transition habitats, including cover and food production for smolts; loss of staging and holding habitats for adult salmon; degraded water quality
- Bulkhead and dock construction, potentially leading to:
  - Increased habitat for predators (e.g., bass); altered nearshore currents and gravel movement; loss of eelgrass habitat
- Erosion and sedimentation, potentially leading to:
  - Increased turbidity and inputs of fine sediment during construction and prior to revegetation
- Water related recreational activities, potentially leading to:

  - Increased potential direct contact with ESA-listed salmon; degraded water quality (e.g., fuel spills)

- Fertilizer and pesticide use*, potentially leading to:
  - Degraded water quality and increased toxicity; biological degradation
- Dams*, potentially leading to:
  - Loss of upstream habitat due to obstructed upstream passage; altered timing and magnitude of flows; reduced base flows; changed channel morphology; reduced downstream movement of wood and gravel; and loss of connectivity with floodplain.

*Information taken from ―An Ecosystem Approach to Salmonid Conservation" (Spence et. al., 1996)

Effects from climate change also pose a threat to aquatic resources in the service area, though a full review of scientific studies of specific effects on aquatic resources in the service area has not been conducted. Likely future conditions resulting from climate change will be considered when planning mitigation projects in the service area.

Advance Credits

The MRP is requesting sixty (60) advance credits, 20 of each functional type (i.e., 20 habitat credits, 20 hydrology credits, and 20 water quality credits) for the Green-Duwamish River Service Area based on predominant pattern of rural and suburban residential land uses in the service area, and the expectation of relatively high permit volumes as development continues in the service area. With the exception of the eastern portions of the Service area which is predominantly in forestry land use and in public ownership, nearly all of the subbasins in the service area within unincorporated King County have relatively high permit volume, suggesting high development pressure (see Figure 1 in Appendix E). Furthermore, there are several Roster sites in the Service Area with potential to earn credits, and a number of recent acquisitions which may provide lands suitable for additional mitigation projects.

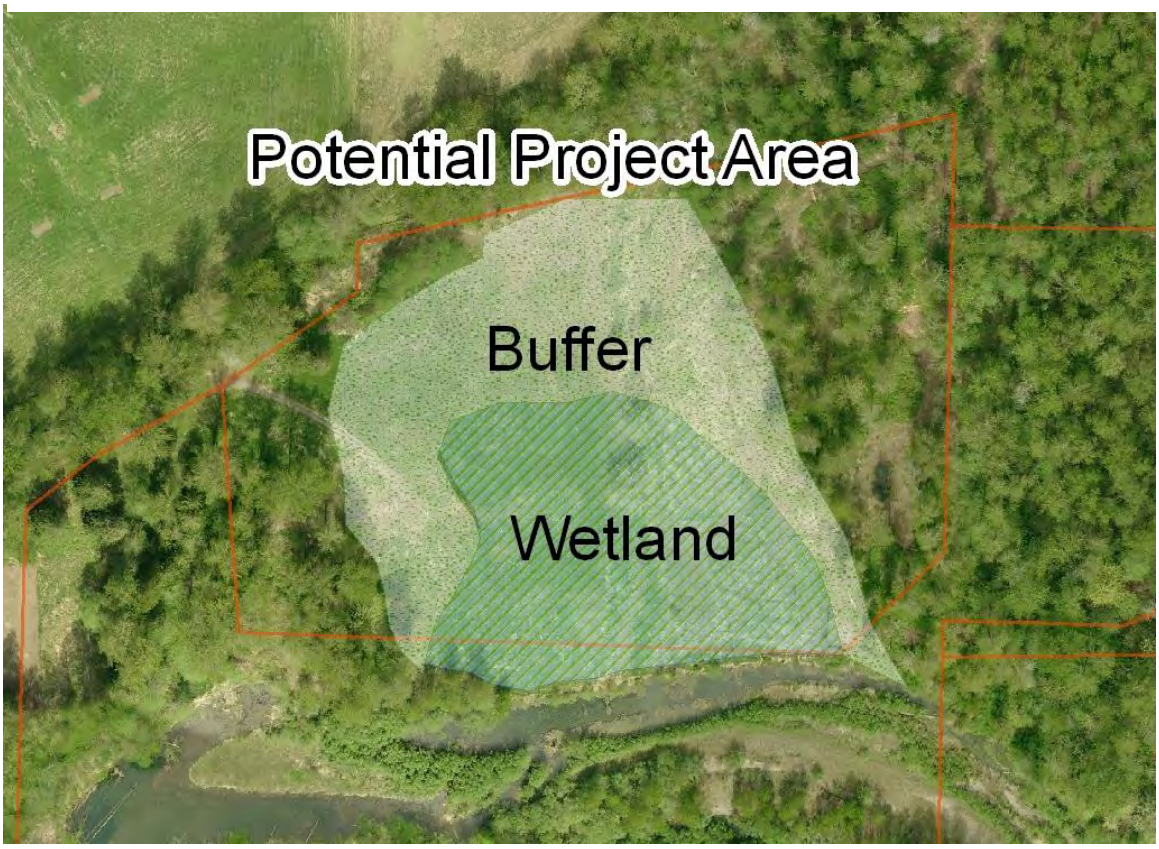
Two of the Roster sites in the Service Area offer potential for projects that would generate significant credit: (1) the former Cook property in the Green River Natural Area and (2) the Big Springs Creek Natural Area.

Green River Natural Area

The photos below show the existing conditions of the project area (Figure 8), as well as very preliminary concepts of where wetland creation might take place (Figure 9). This project would probably also include off-channel habitat creation, though this aspect of the project is not incorporated into the estimated potential credits a project might generate. Acreages of wetland creation and buffer enhancement may also be modified significantly.

Figure 8. Green River Natural Area - Existing Conditions

Figure 9. Green River Natural Area - Conceptual Mitigation Areas

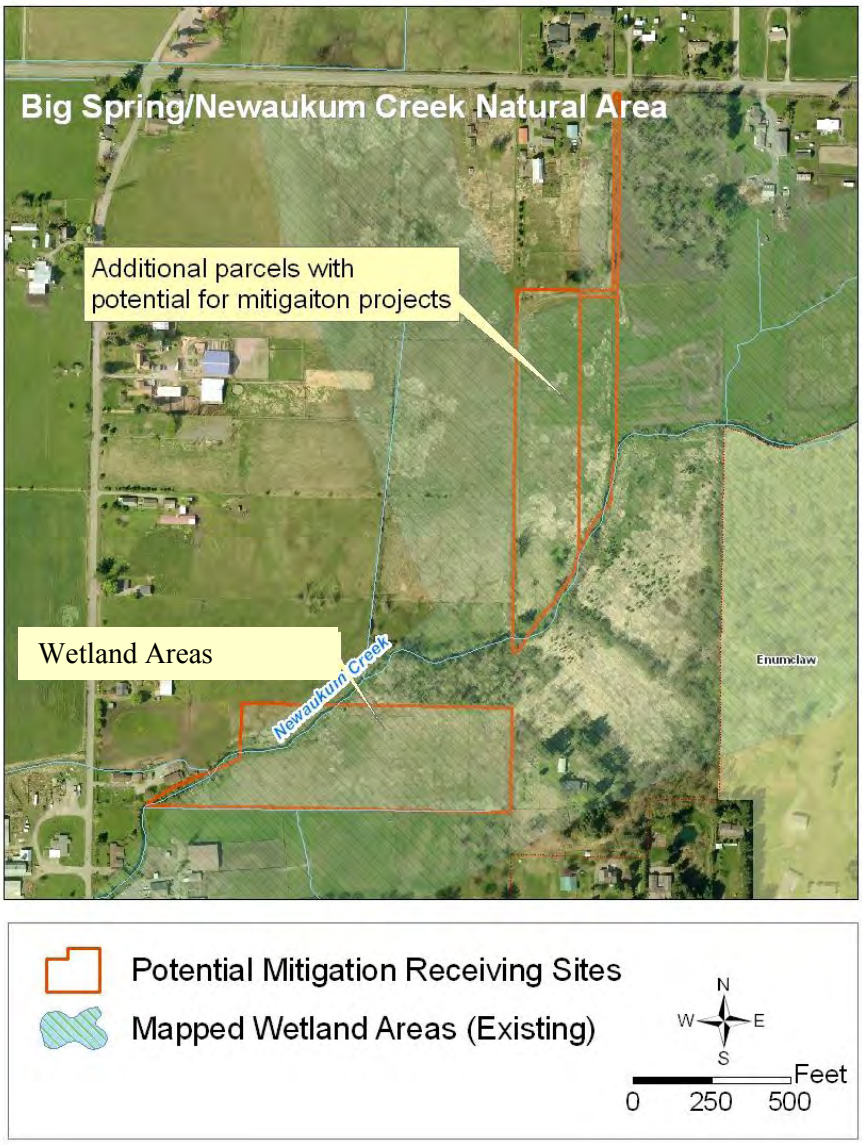


The tool was used to estimate credit that may be generated by wetland restoration involving removal of fill and creation of habitat features and over-bank storage, as well as wetland buffer enhancement in the area shown. Based on an estimate for the project areas shown (maximum of 2.4 acres wetland restoration and 2.7 acres buffer enhancement), it is possible this site could generate as many as 50 wetland credits. The actual acreage of wetland creation at this site may be less than 2.4 acres, but other properties in the vicinity may provide additional mitigation opportunities. Project elements may also likely include off-channel habitat creation, though this element was not considered in estimating potential credits.

Big Spring/Newaukum Creek Natural Area

The Big Spring Natural Area on Newaukum Creek has three parcels on the Roster with potential for mitigation, and nearly all of the sites are existing wetlands (Figure 10).

Figure 10. Big Spring Newaukum Creek Natural Area



Projects at the Green River Natural Area and Big Spring/Newaukum Creek Natural Area would meet watershed needs by increasing flood storage, improving wetland functions and enhancing aquatic areas with associated benefits to threatened salmon in the system.

Goals for Mitigation in a Watershed Context

According to the Narrative *Supporting WRIA 9 Three-Year Implementation Priorities* of the *WRIA 9 Salmon Habitat Plan* (WRIA 9 Steering Committee, 2005) ("the Habitat Plan"), the overarching goal of the plan is to "protect, rehabilitate, and enhance habitat to support viable salmonid populations in response to the Endangered Species Act listing of Chinook salmon and bull trout, using an ecosystem approach. This approach will also benefit other non-listed aquatic species."

The Habitat Plan identifies the following watershed-wide needs:

- Prevent and reduce armoring of stream banks and shorelines;
- Promote low impact development such as porous pavement, bioswales, and clustered development;
- Replace culverts that block fish passage on tributary streams;
- Protect and improve water quality by focusing on "nonpoint" pollution that comes from stormwater runoff from streets, highways, parking lots, roofs, yards, and cleared lands;
- Allow natural river flows in an unconstrained river channel where possible; and
- Maintain adequate stream flows.

The Habitat Plan also has specific recommendations for each of the subbasins within the larger watershed; the watershed-wide and subbasin specific recommendations will be considered carefully in selecting specific mitigation receiving sites from the MRP Roster.

Another resource for guiding mitigation in the Newaukum Creek subbasin will be the *Newaukum Creek Basin Characterization Project Report*, (King County, 2007). This report "characterizes historic and present conditions, identifies ecological alterations and knowledge gaps, and anticipates future changes in the Newaukum Creek basin. The report is intended as a reference document to inform basin management objectives and the planning and implementation of fish and wildlife habitat restoration projects by landowners, private sector organizations, nonprofits, and agencies, within the context of regional plans for habitat restoration as well as salmon recovery."

Though the geographic focus of the characterization is confined to the Newaukum Creek Subbasin, this effort can serve as a model for other characterization and syntheses of information in other subbasins of the Green River Service Area.

Another resource available to guide mitigation decision-making in the Green River Service area will be a report titled, *Last Best Places in the Green River Watershed* (King County 2002). The purpose of this report is to "provide a comprehensive assessment to determine the location of relatively ecologically intact areas of fish and wildlife habitat on private land in the Green River Watershed."

There are numerous other resources available to guide the decision-making process in the Green River Service Area – too many to list here, though a good overview of all resources available with links to many of the documents is available in Appendix I, Part 2.

Additional Information

Appendix I, Part 2 of this instrument contains a complete list of known analyses, reports and other documents the CAT will have at their disposal when making decisions about mitigation in the portion of the Green River Watershed within King County.

6.0 CENTRAL PUGET SOUND SERVICE AREA (WRIA 9)

Service Area Overview

The Central Puget Sound Service Area comprises 91 square miles of WRIA 8 and WRIA 9 that drain directly to Puget Sound, as well as Vashon Island and Maury Island. There are 17 parcels on the roster at 3 distinct sites (Exhibit 7). King County has recently acquired several shoreline properties on Vashon/Maury Island, some of which may be suitable as future Roster sites.

With the exception of Vashon/Maury Islands, much of the land area in this service area relatively high density development relative to other service areas, and nearly all of the high density development is in incorporated cities.

Table 11. Central Puget Sound Service Area Overview

Attribute	Value	Notes
Size*	92 square miles	This is the portion of the watershed within King County
Area in unincorporated KC*	39 square miles	Of this amount, Vashon/ Maury is roughly 37 square miles.
Number of subbasins*	148	Includes more than 100 direct drainages on Vashon and Maury Islands, some w/ only seasonal streams
Predominant land uses	Mainland: urban residential Vashon: rural residential	
Number of parcels on the Roster	17	All on Vashon Island
Advance Credits requested	15 (5 of each functional type)	

** Source: KC GIS*

Physical Description and Current Aquatic Resources Conditions

The following description is from an internal King County report *Greenprint for Ecological Focus Areas on Vashon-Maury Island (King* County, 2008)

> —Vashon-Maury Island is located in central Puget Sound within the boundaries of King County, Washington. Colvos Passage separates the island from Kitsap County to the west, East Passage lies between the island and the King County

mainland to the east, and Dalco Passage separates Pierce County from the island on the south. Puget Sound proper extends to the north. Land area totals approximately 37 square miles (24,000 acres), of which 29.7 square miles are on Vashon Island and 7.0 square miles are on Maury Island.

—The island was physically formed by the advance and retreat of at least four recent glaciations in the Puget Sound area (cumulatively called the Fraser Glaciation). The last of these, appropriately called the Vashon stade (glacial advance), occurred between 13,000 and 15,000 years ago. The general north-south orientation of the island and the Puget Sound trough is a result of these glacial movements. The composition of the island consists completely of materials left by glaciers—no bedrock occurs anywhere on the island. For the most part, Vashon is composed of sand and gravel deposited as the glaciers expanded and declined. Beneath the ice, sands, gravels, and clays were compressed into glacial till or hardpan, the most extensive soil type found on the island. Surficial deposits of glacial outwash are found mostly in the southern portions of the island.

—The topography of Vashon-Maury Island exhibits characteristics similar to other Puget Sound islands (the San Juan Islands are the exception) and to the low-lying mainland areas as well. Steep slopes rise from the sea to elevations of 400 feet or higher. At these upper elevations the topography levels off into gently rolling plateaus. Few steep slopes are found on the upland plateaus except where indented by the major rivers or deep ravines. Some of the steepest slopes on Vashon-Maury Island are found between Point Robinson and Piner Point. These are nearly cliff-like in many portions. The maximum elevation on the island is just over 500 feet at Maury Island Marine Park.

—With a population estimated at 10,600 (King County Budget Office, 2007), the island has maintained a rural character despite its close proximity to Seattle. Low-density residential development covers much of the island with zoning of one home per five and ten acres. Higher density residential areas are concentrated in the Vashon Town Center, Vashon Heights, Burton, Dockton, and along parts of the island‘s shoreline. The Town Center contains much of the island‘s commercial development. Beyond this, several smaller rural neighborhood centers contain business and commercial development. Industrial land uses include the Glacier gravel mining operation located on southeastern Maury Island.”

Historic Aquatic Resource Losses

The Puget Sound Partnership Action Agenda (Puget Sound Partnership, 2008) provides the following overview of historic losses in the Puget Sound basin: PSP Action agenda

—In a scant 150 years, the human population of Puget Sound has grown from 50,000 to four million people. During that time, we have been very busy – creating: the second-largest port on the West Coast; global enterprises such as Boeing, Microsoft, and Starbucks; lively ecotourism businesses; world-renowned seafood products; and a timber industry that is still a national and international leader. Some of our industries, such as timber and shellfish production, are directly dependent on the ecosystem. Others rely on Puget Sound for shipping and an attractive quality of life to draw prospective workers and their families. More than 135,000 major businesses in the region employ over 2.2 million people. Puget Sound drives more than $20 billion dollars in economic activity in Washington. Puget Sound remains a desirable place to live and work. But there are ominous signs that the ecosystem has been pushed to its limits: 21 species are listed as threatened or endangered, more than 1,000 rivers and lakes are listed as impaired, and there are —dead zones" in Hood Canal and South Sound. A more detailed summary discussion of threats and drivers affecting ecosystem function in the Puget Sound region can be found in the appendices. In creating our productive society and economy we: eliminated three-quarters of the saltwater marsh habitat through dikes and drainage; lost 90 percent of estuarine and riverine wetlands; and armored one third of the Puget Sound shoreline. We removed 66 percent to 84 percent of the old-growth forest in the basin in the past 50 years. We spilled at least 230,000 gallons of oil and hazardous waste (just since 1985), constructed 10 major dams and thousands of small diversions and stream blockages, re-plumbed the Cedar River system, straightened and diked hundreds of small and large rivers, filled wetlands, and introduced almost 100 invasive marine plant and animal species – sometimes intentionally. From 1991 to 2001, impervious surfaces increased by an additional 10.4 percent, leading to further changes in streamflow runoff and expanding a major pathway for a host of other pollutants to enter our rivers, soil, and food supply."

Though these historic losses are Puget Sound-wide, the MRP Central Puget Sound Service Area (which comprises many of the most densely populated regions of the Puget Sound basin) has experienced many of these losses.

Threats

The *Puget Sound Action Agenda* (Puget Sound Partnership, 2008) contains comprehensive information about current threats to Puget Sound, nearly all of which are also threats to the Central Puget Sound Service Area. The following is a partial list of current threats noted in the Action Agenda:

Marine Habitat Alteration Types

- Overwater structures
- Marinas

- Dredging and dredging disposal
- Breakwaters, groins
- Boat wakes and prop wash
- Aquaculture
- Marine hydropower
- Marine wastewater discharge
- Roads and transportation infrastructure
- Derelict Gear

Shoreline Habitat Alteration Types

- Armoring
- River levees
- Native vegetation removal
- Boat launches and recreation facilities
- Residential, commercial and industrial development
- Mineral/gravel mining
- Roads and transportation infrastructure
- Impervious surfaces

Freshwater Habitat Alteration Types: in-water resources

- Dams, culverts, locks, other flow regulating structures
- Overwater structures
- Marinas
- Dredging and dredging disposal
- Breakwaters, groins
- Boat wakes and prop wash
- Aquaculture
- Marine hydropower
- Vessel discharge
- Roads and transportation infrastructure
- Derelict Gear

Terrestrial Habitat Alteration Types

- Timber harvest
- Agriculture and livestock grazing
- Filling of depressional wetlands
- Impervious surfaces
- Roads and transportation infrastructure
- Mineral/gravel mining
- Residential, commercial and industrial development

Surface Water Resources

- Water withdrawals and diversions; water demand
- projections associated with future domestic, municipal, commercial, and industrial water uses
- Altered hydrology, including loss of wetlands and floodplains
- Alteration of stream flows and channels, including ditching, armoring, levee construction, and dams
- Decreases in groundwater recharge
- Increases in peak stormwater flows
- Decreases in baseflows (sustained low flows)

Not all of these threats can be addressed through compensatory mitigation projects, but the extensive list will be useful as MRP Implementing Groups develop Mitigation Plans in the Central Puget Sound Service Area.

The State of the Nearshore Report (Williams et al. 2001) also includes a review of threats facing central Puget Sound:

> "Within this region, the Central Puget Sound Basin has become the most heavily urbanized area and the impacts of human activities have taken a toll on living natural resources and the habitat that supports them. Nearshore habitat alterations, degradation, and losses have resulted from a number of activities, including filling, dredging, shoreline armoring, overwater structures, waste and wastewater disposal, non-point pollution, vegetation removal, shoreline development, roads, and changes in hydrology. Many of these activities (i.e., sport and commercial fishing, timber harvest, shipping, real estate development) have depended upon natural resource and aesthetic values. Yet none of these activities have been conducted with an adequate understanding or assessment of how they are affecting the very ecosystem that sustains our economic interests and valuable natural resources.
>
> Despite the fact that ecosystems tend to be somewhat resilient, population growth in the Puget Sound region has had a dramatic adverse effect on habitat and species native to this area. In less than 130 years, humans have significantly altered the landscape and have extirpated or reduced species diversity and abundance. The rates of reduction and loss are compounded by the fact that we have reacted slowly and inadequately to habitat and species losses (McMurray and Bailey, 1998). Much of this damage was done unknowingly, or due to the lack of scientific information for proper management and protection measures. However, much of this loss and destruction continues despite warnings from scientists, resource managers, and the environmental community."

Effects from climate change also pose a threat to aquatic resources in the service area, particularly related to predicted sea level rise. A full review of scientific studies of specific effects on aquatic resources in the service area has not been conducted. Likely future conditions resulting from climate change will be considered when planning mitigation projects in the service area.

Advance Credits

King County is requesting fifteen (15) advance credits for the Central Puget Sound Service Area, five (5) of each functional type (i.e., 5 habitat credits, 5 hydrology credits, and 5 water quality credits). Although a relatively large portion of the service area is Vashon/Maury Island (unincorporated King County), permit volume is expected to be relatively low suggesting future mitigation needs may be low (Figure 1).

Furthermore, lack of abundant Roster sites favors a relatively small Advance Credit request. Though there are relatively few current Roster sites in the service area, potential exists to find sites for projects, and this small amount of credit would allow the program to operate.

Goals for Mitigation in a Watershed Context

The Executive Summary of the *State of the Nearshore Ecosystem* report (King County, 2001) outlines broad goals for habitat protection, enhancement and restoration in nearshore environments, including actions to:

- Protect existing undeveloped shoreline areas in WRIAs 8 and 9 from development practices that would be detrimental to the nearshore ecosystem…and…restore ecosystem processes and functions to the benefit of nearshore ecosystem health.
- Protect eelgrass and macroalgae beds from the adverse effects of shoreline modifications such as dredging, filling, overwater structures, armoring, and pollution.
- Protect and enhance marine riparian vegetation.
- Protect forage fish spawning areas and other upper intertidal habitats and species.
- Concentrate restoration and enhancement efforts on areas with shoreline armoring and other development practices that reduce ecological processes and functions that support habitat quality.
- Develop a restoration strategy for the WRIA 8 and 9 nearshore that takes an ecosystem perspective within the landscape and helps to build our knowledge of the nearshore environment.
- Identify critical areas for protection, restoration, and enhancement in WRIAs 8 and 9. Then protect, restore, and enhance them. Considering that the shorelines of Vashon and Maury Islands are the least developed, concentrate protection efforts on them first, but don‘t exclude the mainland.
- Recreate intertidal acreage such as marshes, flats, and other habitats.
- Restore and recover estuarine intertidal flat and marsh habitat. Initial considerations should focus on appropriate salinity regimes and elevations, but should also consider other ecosystem processes in developing a functional design.

These recommendations and recommendations from other planning efforts will be considered carefully in selecting specific mitigation receiving sites from the MRP Roster and when identifying new sites for the Roster.

Additional Information

Appendix I, Part 2 of this instrument contains a complete list of known analyses, reports, and other documents the CAT will have at their disposal when making decisions about mitigation in the drainages to Central Puget Sound.

7.0 WHITE RIVER/PUYALLUP RIVER SERVICE AREA

Service Area Overview

The White River Service Area comprises the 133 square miles of the White River watershed which are in King County. There are 10 parcels in the Service Area that may provide mitigation opportunities. One of these sites, on Boise Creek near the confluence with the White River, has a restoration project underway and may provide opportunities for additional enhancement work through the MRP.

Additional receiving sites in the service area will be sought as needed based on the nature of the impacts and current restoration needs in basins proximate to impact sites.

Table 12. White/Puyallup Service Area Overview

Attribute	Value	Notes
Size*	132 square miles	This is the portion of the watershed within King County
Area in unincorporated KC*	108 square miles	Excludes incorporated areas
Number of subbasins*	22	
Predominant land uses	Forestry, agricultural, rural residential	
Number of parcels on the Roster	10	
Advance Credits requested	15 (5 of each functional type)	Anticipated need is low

** Source: KC GIS*

Physical Description and Current Aquatic Resources Conditions

The *Salmon Habitat Limiting Factors for the Puyallup River Basin (WRIA 10)*,(Kerwin 1999) notes the following about the Puyallup/White Watershed.

> The White River originates from three glaciers on Mount Rainier flowing 68 miles to the confluence with the Puyallup River, draining approximately 494 square miles. Much of the upper White River Basin is managed forest. As of 1999, land uses in the lower White River basin included residential (23%), agricultural (24%), vacant (22%) and urbanized areas containing commercial and industrial lands occupied about 10%.

The King County Website Provides an excellent summary of the physical description of the White River Watershed:

> —Prior to 1906, the White River flowed through King County to join the Green River and ultimately discharged into Elliot Bay. In 1906, a debris jam blocked the channel of the White River and diverted all the floodwaters away from King County down the Stuck River and into the Puyallup River. The debris dam was

replaced by a permanent diversion wall located at the Game Farm Park in Auburn. The White River remains in this location today.

—The White River travels 68 miles and drains 494 square miles before draining into the Puyallup near the city of Sumner. Its headwaters begin where the Emmons and Fryingpan glaciers meet on the side of Mt. Rainier. As the water flows downstream, it is joined by many smaller tributaries, including Silver Creek, Huckleberry Creek and Camp Creek. The White River joins with West fork of the White River just before reaching the Greenwater River at the town of Greenwater, and together they form the boundary between the Pierce and King counties. The river continues downstream until it reaches Mud Mountain Dam.

—Mud Mountain Dam began operation in 1948 by the U.S. Army Corps of Engineers. It is operated to control flooding in the lower Puyallup flood plain. A trap and haul system (external link) is currently being used to transport fish around the dam.

—Downstream of the dam, between Enumclaw and Buckley, Puget Sound Energy operates a diversion dam (completed in 1911). This dam, found upstream of the mouth of Boise Creek, redirects up to 2000 cubic feet per second of the water from the White River through a canal and flume system into Lake Tapps. The water in Lake Tapps flows through the Dieringer Powerhouse and back into White River about 20 miles downstream from the diversion dam. The water remaining in the White River after the diversion, flows through the Muckleshoot Indian Reservation, and the cities of Auburn and Pacific before joining with the Puyallup River in Sumner."

(http://www.kingcounty.gov/environment/watersheds/white-river/facts.aspx)

Historic Aquatic Resource Losses

The *Salmon Habitat Limiting Factors for the Puyallup River Basin* (Kerwin 1999) describes historic losses in the White and Puyallup River watersheds:

—The Puyallup River Basin was one of the earliest areas settled in the Puget Sound area. Arriving Euro-American immigrants prized this basin for its deep-water embayment, large tracts of pristine old growth forests, fertile river valley soils and abundant runs of salmon. Homesteads and settlements began appearing as early as 1850 and the new arrivals initiated a series of actions to modify the landscape to fit their needs.

—The dredging and filing of the estuary, started in the late 1800's, was largely completed by 1930. Two hydroelectric dams that are impassable to salmonids were completed shortly after 1900. An extensive system of levees, dikes and revetments were started in the early 1900's and continue to be maintained today. In 1906 the White River was diverted into the Puyallup River Basin almost

doubling the flows in the lower Puyallup River.

—All of these actions have impacted the biological processes necessary for the natural production of salmonids in the Puyallup River Basin. Commencement Bay, once a highly productive estuarine environment, has lost in excess of 98% of its historical intertidal and subtidal habitat. The remaining habitat is separated and in places contaminated with chemicals that further reduces its value to organisms and their biological processes. The Puyallup, White and Carbon Rivers are all contained within a revetment and levee system for their lower 26, 8 and 5 miles respectively. These channel containment structures have removed the natural sinuosity of the rivers and the spawning and rearing habitats that were once present. The two hydroelectric dams, and later a flood control project on the White River, have blocked salmon from their historical habitat and reduced their geographical distribution. Numerous other impassable barriers exist on smaller tributary stream that further reduce available spawning and rearing habitats. Land use practices have eliminated the opportunities for large and small woody debris recruitment and heavily impacted riparian buffers.

—The Puyallup River basin has been substantially altered from its historic condition. In particular, the lower river bears little resemblance to its historic past. Extensive urban growth, heavy industry, a large modern marine port, an extended revetment and levee system and agriculture have combined to significantly alter the natural landscape."

Threats

The *Salmon Habitat Limiting Factors for the Puyallup River Basin (WRIA 10)*, (Kerwin, 1999) notes, —Both the upper Puyallup and White rivers are predominantly within US Forest Service and private commercial timberlands and they have been afforded a certain amount of protection from the ravages of urbanization and development compared to urban areas in Puget Sound lowlands. However, both the upper Puyallup and upper White River watersheds suffer from present and past timber harvest practices that reduce the ability for riparian areas to provide wood and shade to the river and stream channels and continue to contribute fine sediments from road construction and landslides. All of these continue to adversely impact natural salmonid production."

The *Flood Hazard Management Plan: King County, Washington* (King County 2006) provides the following description of threats facing the White River Service Area:

—The White River between the Greenwater and Puyallup Rivers has a history of major human alterations that have affected the quality and quantity of habitat and associated ecological processes. These major alterations include 1) the 1914 permanent rerouting of the White River south to the Puyallup River, 2) the 1912 construction of the Puget Sound Energy Diversion dam, which diverts flows and blocks fish passage near River Mile 24, 3) the construction and operation of Mud

> Mountain Dam near River Mile 30, and 4) the extensive removal of woody debris and channelization of the lower river in the early to mid-1900s. These alterations have resulted in a river with widely varying conditions and ecological processes. From the upstream end of Mud Mountain Dam Reservoir, at River Mile 35.5, up to the Greenwater River at River Mile 45.8, the White River is largely unconfined by artificial structures and often has braided and complex channels with abundant spawning gravels and woody debris, although the latter is considered undersized (Marks et al. 2004). Much of the riparian area is well-forested with second growth conifers or hardwoods. Exceptions to these conditions exist where State Route 410 lies close to the river, necessitating bank hardening, and at the mouth of the Greenwater and in the lower mile of the Greenwater River, along which bank armoring is present and where there is very little woody debris."

Effects from climate change also pose a threat to aquatic resources in the service area, though a full review of scientific studies of specific effects on aquatic resources in the service area has not been conducted. Likely future conditions resulting from climate change will be considered when planning mitigation projects in the service area.

Advance Credits

King County is requesting fifteen (15) advance credits for the White/Puyallup River Service Area, five (5) of each functional credit type (i.e., 5 habitat credits, 5 hydrology credits, and 5 water quality credits). The portion of the service area lying in unincorporated King County is relatively small and recent permit volume has been relatively low suggesting future mitigation needs may be low (Figure 1).

Though there are relatively few current Roster sites in the service area, potential exists to find sites for projects, and this small amount of credit would allow the program to operate.

Goals for Mitigation in a Watershed Context

A key resource to guide mitigation decisions in a watershed approach will be the report *Ecological Preservation Priorities in the White River Subbasin* (King County, 2009). This document was published solely for internal agency use. The report "describes an assessment and prioritization process that resulted in identifying ecological preservation opportunities in a portion of the unincorporated area of the White River watershed in King County." Though the report primarily focuses identification of ecologically-significant lands for use in formulating acquisition priorities, it provides context for looking at the ecological needs of the White River Basin, with sections in the report describing the geographic and land use settings in the watershed, and well as information about wetlands, vegetation, and fish and wildlife habitats in the basin.

Another available resource is the *Boise Creek Rapid Rural Reconnaissance Report* (King County, 2004). This report characterized the Boise Creek basin and prepared an action plan to "protect the existing natural drainage systems and address existing problems."

The *Salmon Habitat Limiting Factors for the Puyallup River Basin* plan suggests the portion of the White River basin comprising the Service Area may benefit from projects that increase potential for recruitment of large woody debris. This criterion will be considered as future potential mitigation receiving sites are identified.

Additional Information

Appendix I, Part 2 of this instrument contains a complete list of known analyses, reports and other documents the CAT will have at their disposal when making decisions about mitigation in the portion of the White/Puyallup River watershed within King County.

APPENDIX I, PART 2: DOCUMENTS USED IN DETERMINING WATERSHED NEEDS FOR EACH SERVICE AREA

This Appendix lists plans, reports, analyses, websites and other sources of information to be used when making mitigation decisions in a watershed context. Many of the documents listed herein are online, and in these cases, links are provided to allow the user direct access to the document. In some cases only the titles of documents are listed.

This Appendix will be updated and revised as needed to ensure decision-makers have the best available information.

Countywide Documents

2006 Flood Hazard Management Plan

http://www.kingcounty.gov/environment/waterandland/flooding/documents/flood-hazard-management-plan.aspx

King County comprehensive Plan

http://www.kingcounty.gov/property/permits/codes/growth/CompPlan.aspx

King County Shoreline Master Program Update

http://www.kingcounty.gov/environment/waterandland/shorelines/program-update/executive-recommended-shoreline-master-program.aspx

Skykomish Service Area

Snohomish River Basin Salmon Conservation Plan - June 2005. This plan guides actions to protect and restore salmon runs in the Snohomish River Basin and responds to recent listings of Puget Sound Chinook salmon and bull trout as threatened under the federal Endangered Species Act.

Snohomish River Basin Chinook Salmon Near Term Action Agenda - December 2001 This report provides immediate guidance for Chinook salmon habitat recovery actions in the Snohomish River Basin.

Snohomish River Basin Salmonid Habitat Conditions Review - September 2002

Salmonid Habitat Limiting Factors Analysis - December 2002 *

Snoqualmie Service Area

Snoqualmie Watershed Water Quality Synthesis Report - January 2009 This report synthesizes information about water quality in the Snoqualmie River Watershed, located in eastern King County, Washington. The report brings together available water quality information in each of the key tributaries and mainstem areas to help identify priorities for on-the-ground actions.

Snoqualmie Watershed Aquatic Habitat Conditions Report: Summary of 1999-2001 Conditions This report summarizes and interprets data collected in the field from 1999-2001 about habitat conditions for multiple species of salmonids and other aquatic biota in aquatic ecosystems of the Snoqualmie Watershed, including the mainstem Snoqualmie River and several of its tributaries.

Snoqualmie Watershed Geology Report: An Overview of the Geology and Geomorphology of the Snoqualmie River Watershed

Historic Habitat Conditions in the Snoqualmie River Valley [Collins and Sheikh, 2002] Archival materials, including maps and field notes from the General Land Office from 1871-1873 and aerial photographs from 1936, were entered into a geographic information system. In combination with a digital elevation model, these materials were used to map the channel, wetland, forest, and oxbow ponds in the Snoqualmie River valley prior to Euro-American settlement, or about 1870. To evaluate subsequent change, conditions were also mapped from 1936 and 2000 aerial photos.

Department of Ecology TMDL Effectiveness Monitoring Report*

Snoqualmie policy and strategy documents

Snoqualmie 2015: Building for Salmon Recovery and Watershed Health - February 2006 This report covers a 10-year vision for safeguarding the Snoqualmie watershed's remaining natural resources and restoring habitat for salmon listed under the Endangered Species Act.

Salmon Conservation in the Snoqualmie Watershed: Snoqualmie Watershed Forum Strategy and Workplan 2001 This document provides background on federal and state drivers for salmon conservation planning, as well as local progress to date on technical assessments, watershed planning, and early action projects.

Best Available Science Issue Paper: Snoqualmie Watershed Near Term Action Agenda Implementation Project - March 2004 An overview of the "best available science" (BAS) for managing critical areas and protecting salmonid habitat in the Snoqualmie River watershed. *Prepared by Adolfson Associates.*

King County Critical Areas Ordinance - Best Available Science

Model Code for Critical Areas - July 2004 This model code for critical areas is designed to be used, and adapted as needed, by the four Snoqualmie Watershed cities (Duvall, Carnation, Snoqualmie and North Bend) to comply with Growth Management Act requirements.

WRIA 7 Salmon Recovery Plan and related documents

Snohomish River Basin Salmon Conservation Plan - June 2005 This plan guides actions to protect and restore salmon runs in the Snohomish River Basin and responds to recent listings of Puget Sound Chinook salmon and bull trout as threatened under the federal Endangered Species Act.

Snohomish River Basin Chinook Salmon Near Term Action Agenda - December 2001 This report provides immediate guidance for Chinook salmon habitat recovery actions in the Snohomish River Basin.

Snohomish River Basin Salmonid Habitat Conditions Review - September 2002

Salmonid Habitat Limiting Factors Analysis - December 2002

Snoqualmie 2015: Building for Salmon Recovery and Watershed Health - February 2006. This report covers a 10-year vision for safeguarding the Snoqualmie watershed's remaining natural resources and restore habitat for salmon listed under the Endangered Species Act.

The Snoqualmie 2015: Building for Salmon Recovery and Watershed Health report outlines an ambitious list of projects to restore salmon habitat and protect the watershed's health.

Private Landowners support Salmon Recovery

The Plan recognized that private landowners have an important role in salmon recovery. For example, 85% of the Snoqualmie River shoreline is in private agricultural uses. The Forum and other partners have worked very closely with farmers to restore salmon habitat while keeping agriculture viable in the Snoqualmie Watershed.

Habitat Projects on Agricultural Lands in the Snoqualmie Watershed - August 2008

Cedar River/Lake Washington Service Area

The following comprehensive list of reports, plans and other technical documents is from the King County Website (http://www.govlink.org/watersheds/8/reports/default.aspx).

Planning Documents and Resources

- Implementation Progress Report (May 2008)
- Chinook Salmon Conservation Plan (August 2005)
- 3-Year Work Plan of Watershed Implementation Priorities (April 2008) (Adobe Acrobat 2.96 MB)
- 3-Year Work Plan Narrative (May 2008) (MS Word File 109 KB)
- Enhancing Implementation of Programmatic Actions to Protect and Restore Habitat in WRIA 8 (May 2008) (Adobe Acrobat 893 KB)
- Near Term Action Agenda (August 2002)
- Habitat Work Schedule Database of Protection and Restoration Projects
- Puget Sound Nearshore Project Priorities: Assessing Consistency between Local and Regional Strategies of the Puget Sound Salmon Recovery Plan (September 2007)(Adobe Acrobat)
- WRIA 8 Key Messages

Studies and Technical Reports

- Salmon Bay Estuary Synthesis Report (January 2010)
- Synthesis of Salmon Research and Monitoring: investigations Conducted in the Western Lake Washington Basin (December 2008)
- Movement and Habitat Use of Juvenile Chinook Salmon and Two Predatory fishes in Lake Washington: 2004-05 Acoustic Tracking Studies (December 2008)
- Movement and Habitat Use of Chinook Salmon Smolts, Northern Pikeminnow, and Smallmouth Bass Near the SR 520 Bridge: 2007 Acoustic Tracking Study (October 2008)
- Inventory and Assessment of Current and Historic Beach Feeding Sources/Erosion and Accretion Areas for the Marine Shorelines of Water Resource Inventory Areas 8 and 9 (December 2005)
- State of the Nearshore Ecosystem Report for WRIAs 8 and 9 (May 2001)
- Seattle Urban Blueprint for Salmon Habitat Protection and Restoration (WRIAs 8 and 9) (December 2003)

Maps and Mapping Tools

- King County Watershed Map Showing Land Use with Clickable Subwatersheds
- King County Natural Resource Maps
- WRIA 8 Fish Distribution Maps
- SalmonScape Interactive Mapping Tool - Washington Department of Fish and Wildlife

Sammamish River/Lake Sammamish Service Area

Issaquah Creek Current & Future Conditions Report The report assesses current & future problems in the planning area's streams, wetlands, and to a lesser extent, lakes. The report also predicts how surface water conditions may change in the planning area as changes in land use occur, particularly if those changes are allowed to take place in the absence of corrective actions.

Issaquah Creek Basin & Nonpoint Action Plan & APPENDIX (Adopted 1995) There are two overall goals for the Issaquah Creek Basin & Nonpoint Action Plan: (1) protect the public health & safety from hazardous conditions related to surface water in the basin, and (2) protect the quality of the exceptional natural resources of Issaquah Creek and its tributaries. The appendix includes hydrologic data and public comments.

Bear Creek Current & Future Conditions Analysis A 150+ page report documenting the technical and professional analysis upon which the Bear Creek Basin Plan is founded. This includes land use, hydrology, geology, stream channel characteristics, stream habitat and water quality analyses.

The Bear Creek Basin Plan

Habitat Inventory and Assessment of Three Sammamish River Tributaries: *North, Swamp, and Little Bear Creeks.* http://green.kingcounty.gov/Lakes/reports/sammamish-river-tribuatries-report.aspx

Sammamish River Corridor Action Plan *A Plan for Protecting, Restoring and Enhancing the Sammamish River and its Major Tributaries*
http://green.kingcounty.gov/WLR/Waterres/StreamsData/reports/sammrivercorridoractionplan.aspx

Green/Duwamish Service Area

The following comprehensive list of reports, plans and other technical documents is from the King County Website (http://www.govlink.org/watersheds/9/reports/default.aspx).

List of Plans, Studies and Maps

This page will link you to the plans, studies and maps related to aquatic ecosystem health and salmon habitat in the Green/Duwamish and Central Puget Sound Watershed (WRIA 9).

Planning Documents and Resources

- Salmon Habitat Plan: "Making Our Watershed Fit for a King" (August 2005)
    - Prioritization of Potential WRIA 9 Habitat Actions: Report to the WRIA 9 Steering Committee by the Science Panel (February 2005)
    - Final Addendum to a Strategy for Prioritizing Potential WRIA 9 Habitat Actions: Report to the WRIA 9 Steering Committee by the Science Panel (July 2005)
    - Implementation Guidance for the WRIA 9 Salmon Habitat Plan (November 2006)
    - Salmon Habitat Plan Amendments 2007 (November 2007)
    - First Annual Progress Report on Implementation of the Salmon Habitat Plan (July 2008)
- Three-Year Habitat Work Schedule (March 2008)
- Lead Entity Habitat Work Schedule (Washington Department of Fish and Wildlife)
- Draft Funding Mechanisms Report (April 2009)
- WRIA 9 Near-Term Action Agenda for Salmon Habitat Conservation (May 2002)
    - 2004-2005 Implementation Progress Report
    - 2003 Implementation Progress Report
    - 2002 Implementation Progress Report
- Puget Sound Nearshore Project Priorities: Assessing Consistency between Local and Regional Strategies of the Puget Sound Salmon Recovery Plan (September 2007)

Studies and Technical Reports

- Strategic Assessment
    - WRIA 9 Strategic Assessment Report - Scientific Foundation for Salmonid Habitat Conservation (November 2005)
    - Marine Shoreline Inventory Report (March 2004)

- Inventory and Assessment of Current and Historic Beach Feeding Sources/Erosion and Accretion Areas for the Marine Shorelines of Water Resource Inventory Areas 8 and 9 (December 2005)
- Prioritization of Marine Shorelines of WRIA 9 for Juvenile Salmonid Habitat Protection and Restoration (May 2006)
- Lower Duwamish Inventory Report (May 2004)
- Lower Green River Baseline Habitat Survey Report (January 2004)
- Green River Baseline Habitat Monitoring - 2001 Data Report (August 2002) (Adobe Acrobat 15.7 MB) - external link
- Upper Green River Historical and Current Habitat Conditions (June 2004)
- Historical Aquatic Habitats in the Green and Duwamish River Valleys and the Elliott Bay Nearshore (September 2005)
- Assessment of Current Water Quantity Conditions in the Green River Basin -- September 2005
  - Figure 1-1 - Location Map
  - Figure 4-1 - Chinook Distribution Map
- Figure 4-2 - Chum, Coho, Pink, and Sockeye Distribution Map
- Green-Duwamish Water Temperature Report for 2001-2003 (June 2004)
- Green-Duwamish Water Quality Report for 2001-2002 (May 2004)
- Juvenile Salmonid Use of Lateral Stream Habitats - Middle Green River 2000 Data Report (July 2001)
- 2005 Juvenile Chinook Duwamish River Studies (May 2006)
- Salmonid Species Composition, Timing, Distribution, and Diet in Nearshore Marine Waters of WRIAs 8 and 9 in 2001-2002 (June 2004)
- WRIA 9 Chinook Salmon Research Framework (July 2004)
- Evaluation and Assessment of Hatchery and Wild Salmon Interactions in WRIA 9 (November 2005)
- Functional Linkages Reports Phase 1 and Phase 2 (December 2003 and November 2005)
- Tiered Conservation Hypotheses (October 2004)

- Ecosystem Services Enhanced by Salmon Habitat Conservation in the Green/Duwamish and Central Puget Sound Watershed (February 2005)
- WRIA 9 Habitat Limiting Factors and Reconnaissance Assessment Report (December 2000)

- State of the Nearshore Ecosystem Report for WRIAs 8 and 9 (May 2001)
- Seattle Urban Blueprint for Salmon Habitat Protection and Restoration (WRIAs 8 and 9) (December 2003)
- Olympic Sculpture Park Restoration: Results from Pre-Construction Biological Monitoring of Shoreline Habitats (April 2006)
- Olympic Sculpture Park Restoration: Results from Year 1 Post-Construction Biological Monitoring of Shoreline Habitats (July 2008)
- Large-Scale Patterns of Large Woody Debris and Upland Vegetation Among Armored and Unarmored Shorelines of Puget Sound (December 2007)
- Newaukum Creek Basin Characterization (July 2007)
- Baseline Monitoring Study of Restoration Effectiveness in the Green River (Mile 32): Processes and Habitats in the Channel and Floodplain (December 2008)

Maps and Mapping Tools

- Clickable Map Showing WRIA 9 Subwatersheds
- Lead Entity Habitat Work Schedule
- WRIA 9 Salmon Habitat Plan, Green/Duwamish Ecosystem Restoration Project, and Flood Control Zone District Projects in the Duwamish, Lower Green, and Middle Green River Subwatersheds (October 2007)
- Maps of projects in WRIA 9 funded by the King Conservation District (KCD)
    - Projects funded by KCD during 1999-2005
    - Projects funded by KCD during 2006-2008
- Maps of Individual Subwatersheds in WRIA 9 Showing Habitat Projects Recommended in the August 2005 Salmon Habitat Plan
    - Upper Green River Subwatershed
    - Middle Green River Subwatershed
    - Lower Green River Subwatershed
    - Duwamish Estuary Subwatershed
    - Marine Nearshore Subwatershed
- WRIA 9 Nearshore Maps Showing Protection and Restoration Priority Areas (2006) - see maps embedded in downloadable files
- Maps of Individual Subwatersheds in WRIA 9 from the May 2002 Near-Term Action Agenda (includes river miles)
    - Upper Green River Subwatershed

  - Middle Green River Subwatershed
  - Lower Green River Subwatershed
  - Duwamish Estuary Subwatershed
  - Nearshore Subwatershed including Elliott Bay
- King County Watershed Map Showing Land Use
- King County Natural Resource Maps
- WRIA 9 Habitat Projects - iMap (high-speed internet access required)
- WRIA 9 Fish Distribution Maps (2000)
- WRIA 9 Nearshore Subwatershed Fish Presence Maps
  - Vashon/Maury Island (June 2001 data)
  - Nearshore Mainland for West Seattle, Burien, Normandy Park, SeaTac, Des Moines, and Federal Way (June 2003 data)
- WRIA 9 Nearshore Maps - various (2001) - scroll down to figures at bottom of page
- SalmonScape Interactive Mapping Tool - Washington Department of Fish and Wildlife

Central Puget Sound Service Area

Puget Sound Action Agenda: *Protecting and Restoring the Puget Sound Ecosystem by 2020.* Puget Sound Partnership. December 1, 2008; Updated May 27, 2009

Puget Sound Nearshore Project Priorities: Assessing Consistency between Local and Regional Strategies of the Puget Sound Salmon Recovery Plan (September 2007)

Vashon-Maury Island Reconnaissance Report

The Vashon-Maury Island Reconnaissance Report provides a comprehensive inventory of the island's surface water needs and is based on reconnaissance performed by consultants working with King County government. The report lists priority drainage and water quality projects, acquisitions, studies and programs that would all be funded over time by surface water management fees dedicated to King County's capital budget.

http://www.kingcounty.gov/environment/watersheds/central-puget-sound/vashon-maury-island/recon-report.aspx

Reconnaissance Assessment of the State of the Nearshore Ecosystem:

Eastern shore of Central Puget Sound, including Vashon and Maury Islands

http://your.kingcounty.gov/dnrp/library/2001/kcr762/PDFELEMENTS/SONR01.pdf

White River/Puyallup River Service Area

East Hylebos Creek 2001 Monitoring Program Report - results of water quality and habitat monitoring from 2001 in East Hylebos Creek.

Salmon Habitat Limiting Factors for the Puyallup River Basin - WRIA 10 Outlines the loss of habitat in this basin -- which includes the White River drainage in south King County -- and appraises costs of preserving good habitat, restoring damaged habitat, and other changes to enable self-sustaining salmon populations.

White River Land Acquisition Evaluation Report

The *White River Land Acquisition Evaluation Report* was prepared in response to a 2001 King County budget appropriation. The purpose of the report is to review the feasibility of King County acquiring property along the White River corridor and to provide specific recommendations for potential acquisitions. The area included in the evaluation extends from the Auburn Game Farm Wilderness Park upstream to the Puget Sound Energy Diversion dam, which is approximately a 16-mile corridor of the White River lying between the Cities of Auburn and Enumclaw. http://www.kingcounty.gov/environment/watersheds/white-river/land-acquisition-report.aspx

Boise Creek Rapid Rural Reconnaissance Report

The Boise Creek Rapid Rural Reconnaissance Report provides a comprehensive inventory of the Boise Creek Basin's surface water needs and is based on reconnaissance performed by consultants working with King County government. The report lists priority drainage, habitat, and water quality projects, acquisitions, studies, and programs to be funded over time by surface water management fees dedicated to King County's capital budget. The document will help guide the surface water-related work King County performs for basin residents.

http://www.kingcounty.gov/environment/watersheds/white-river/boise-creek-recon-report.aspx

APPENDIX J: MRP MITIGATION RECEIVING SITES

The King County MRP will maintain two lists of potential mitigation receiving sites: (1) the "Roster": a list of sites that have been reviewed and do not have any known insurmountable barriers preventing use as a mitigation receiving site, and (2) a list of "candidate receiving sites" which may be appropriate as Roster sites. King County will maintain a separate list of candidate sites. The process by which properties will be added as a candidate receiving site is outside the scope of this instrument.

When considering the location of mitigation receiving sites and mitigation projects, the MRP should take steps to identify all potential receiving sites in the service area that provide benefits in a watershed context – sites in both public and private ownership. Special consideration should be given to lands that are (1) at greater risk of conversion from an undeveloped to developed state (e.g., privately-owned vacant lands with mitigation project potential), (2) areas that are currently developed that could be returned to a natural state, and (3) areas which were formerly wetlands that have been filled. Section 3.0 of this appendix provides additional guidance on prioritizing mitigation receiving sites.

If no sites enrolled on the Roster provide suitable mitigation opportunities for a given impact, candidate receiving sites will provide a pool of potential receiving sites that may offer an opportunity to implement better mitigation. The best possible receiving site will be selected to meet mitigation needs.

1.0 Enrolled Roster Sites (The Roster)

Within each service area, one or more Roster sites have been identified as potential mitigation receiving sites. These sites were chosen based on a number of factors:

- Identification of the site as a priority for ecological enhancement within published basin plans or other watershed planning documents and/or internal analyses related to ecological needs for a given subbasin,
- Development pressure in the same basin as the site as indicated by recent permit volume (see Figure 1 in Appendix E), and
- Availability of the site for use as a mitigation receiving site, considering multiple factors including ownership funding source(s).

A site is "enrolled" on the Roster when **all** of the following three conditions are met:

1. The site is owned in-fee by King County. Or, if owned by another public entity or private landowner, the site is permanently-protected by a conservation easement or other similarly protective covenant or deed restriction or the landowner has agreed in writing to deed restrictions that will protect the property and any mitigation project on the property in perpetuity.

2. The site has been determined to be eligible to receive mitigation (i.e., there are no known restrictions related to funding sources or site location, zoning, deed restrictions, etc. A final review will need to occur prior to project implementation).

3. The site has been determined to have establishment, restoration, enhancement, or preservation potential or conservation values worthy of protecting (either through a formal planning process or based on professional judgment of resource management staff).

Just because a site is enrolled on the Roster doesn't guarantee a mitigation project will occur at the site (although for mitigation through the MRP to occur at a receiving site, the site must be enrolled on the Roster).

1.1 King County Roster Sites

King County Roster sites are properties meeting the criteria above to which King County owns the title in-fee or for which King County is the grantee of a conservation easement. Sites owned in-fee by King County that are not protected by a conservation easement will need to be protected with a conservation easement or other similarly protective covenants prior to implementing mitigation.

Maps and lists of all King County Roster sites within each service area are attached to this instrument as Exhibits 1-8.

The King County Roster sites range in size from less than an acre to several hundreds of acres and are relatively evenly distributed throughout the service areas, with the exception of the White River and Skykomish River Service Areas, which currently have very few Roster sites. These properties were selected from hundreds of county-owned properties based on their potential for ecological lift on the site, low-risk of project failure and potential for the project to benefit ecological processes and functions in a watershed, i.e., to meet ecological needs and address limiting factors identified in watershed analyses and technical plans. These Roster sites have also been screened to ensure the source of funds used to acquire the property (in fee or easement) allows use of the site to generate mitigation credit. Sites with existing conservation easements will not be available to generate credit through preservation as defined in the Federal Rule [33 CFR Part 332.3(h)] (see Appendix K, Section 5.0).

Selection of Roster sites occurred in the context of existing or potential natural resource values of the sites and the ability of the sites to improve —habitat limiting factors" identified in WRIA plans, wetland conservation goals and ongoing salmonid recovery efforts. Most of the properties on the Roster were originally acquired by King County because of their significance as ecological and natural resource lands, many of which were subject to pressure from development. Furthermore, many of the sites on the Roster have published Site Management Guidelines completed by KCDNRP resource management staff.

Site Management Guidelines

For many of the Roster sites, there are published "site management guidelines"(SMG). The *Programmatic Plan for Management of King County-owned Ecological Lands* (King County, 2004) states that site management guidelines:

> "will identify the resources and values on the sites and recommend actions to conserve [and] restore…the resources. NRL leads site planning, working with key stakeholders to gather information, make recommendations, and review each set of guidelines."

All available Site Management Guidelines can be accessed online at http://www.kingcounty.gov/environment/waterandland/natural-lands/ecological.aspx.

For MRP Roster sites with published Site Management Guidelines, these guidelines will provide a general overview of the types of projects available at the site and offer valuable background information; they will not, however, limit the ability of the MRP to design and implement mitigation projects that are not suggested in the guidelines. Each mitigation project will undergo a full planning and design process to ensure the project creates adequate functional lift to meet the mitigation need and addresses ecological needs of the service area.

Many of the Site Management Guidelines offer recommendations related to existing or potential future recreational uses. It is important to note that portions of sites used as mitigation receiving sites will have minimal recreational access or none at all. Any trails or other types of recreational "infringements" will be excluded from credit calculations, and will likely have a buffering area that will also be excluded from providing credit. Credit-producing mitigation receiving sites will be preserved solely for providing functional lift. When recreational uses conflict with or intersect a mitigation project, details will be discussed with the IRT on a case-by-case basis during the site review process, and in these cases, Mitigation Plans will provide clear descriptions of how recreational areas and mitigation areas will be managed to ensure the mitigation site continues to provide its intended function in perpetuity.

1.2 Non-King County-Owned Roster Sites

Roster sites in this category are either privately-owned or owned by a tribe or public agency other than King County. Prior to enrollment onto the Roster, non-King County-owned sites will undergo extensive review, including an assessment of mitigation potential at the site, and an assessment of likelihood of long-term success and sustainability of mitigation projects that may be implemented.

Sites in this category must be protected by a conservation easement – either purchased using funds derived from Land Fee, or received as a donation to King County (i.e., King County is the grantee of the conservation easement). As with the King County Roster sites, these sites will have significant "conservation values" worth protecting, whether or not the site is ever used as a mitigation receiving site. These conservation values may include attributes such as wetland features providing habitat, hydrologic, or water quality functions, providing open space

connections or other attributes considered by resource managers to be ecologically important in a watershed context.

There are currently no non-King County-owned Roster sites.

1.3 Roster Site Selection Criteria

Specific site selection criteria have been adopted for the MRP Roster to be consistent with the Federal Rules. In determining ecological suitability of a Roster site as a mitigation receiving site, the MRP will consider the following:

A. Watershed scale characteristics that are important to ecological processes and habitat structure and function, including forest cover, habitat connectivity and diversity, precipitation type/amount, surface storage type/amount (streams and wetlands), areas of recharge and storage, groundwater flow patterns (including discharge areas) and the degree of impairment to these characteristics;

B. Hydrologic conditions, soil characteristics and other physical and chemical characteristics;

C. The size and location of the compensatory mitigation site relative to hydrologic sources (including availability of water rights) and other ecological features;

D. Compatibility with adjacent land uses and watershed management plans;

E. Reasonably foreseeable effects the compensatory mitigation project will have on ecologically important aquatic or terrestrial resources (e.g., shallow sub-tidal habitat, mature forests), cultural sites, or habitat for federally or state listed threatened or endangered species;

F. Sites that can benefit from reversion to previous land uses (i.e., forestry, agriculture);

G. The extent to which the site has potential to contribute to the protection or restoration of watershed processes;

H. The potential of the site to accommodate timely implementation of a restoration or enhancement project that will succeed in the watershed and ecosystem setting;

I. Availability of projects at the site that do not require ~~"h~~highly engineered solutions," **(**e.g., a pump to provide water to a site).

J. Other relevant factors including but not limited to:

    1. Development trends;
    2. Anticipated land use changes;
    3. Habitat status and trends;
    4. The relative locations of the impact and mitigation sites in the stream network;

5. Local or regional goals for the restoration or protection of particular habitat types or functions (e.g., re-establishment of habitat corridors or habitat for species of concern);
6. Water quality goals;
7. Floodplain management goals; and
8. The relative potential for chemical contamination of the aquatic resources.

The current MRP Roster sites were selected pursuant to the above criteria. Selecting an actual site on which to perform a mitigation project considers the aforementioned criteria and further considers the conditions that generated the mitigation need, such as the HGM class of the impact site, landscape position, elevation, ecosystem setting and functional condition. The process of selecting a preferred site on which to fulfill credit sales is initiated by the MRP Manager and described below in Section 2.0.

2.0 Acquiring New Roster Sites

If existing Roster sites do not offer necessary mitigation opportunities, or if King County would like to expand the Roster, the MRP Manager can use available moneys in the Land Fee Accounts (see Basic Agreement Article III.C.1 and Appendix F, Section 7.3) to acquire additional lands. Expenditure of funds from Land Fee Accounts for new Roster sites is subject to IRT review and approval, and such purchase may result in "preservation credits" (see Appendix K, Section 5.0).

3.0 Prioritization Strategy for Selecting and Implementing Compensatory Mitigation Sites from the Roster

To ensure mitigation projects are implemented at the most appropriate Roster site, the MRP will rely on a group of staff experts constituting the Credit Allocation Team (Section 3.1, below). In addition to drawing on their knowledge of King County watershed and natural resource management expertise, the CAT will utilize available methods and information to choose the best site from the Roster in ways described in Section 3.2, below.

3.1 Credit Allocation Team

The mitigation site selection process will be initiated by a Credit Allocation Team (CAT) that will meet as needed based on the volume of credits sales transacted in a given period. The CAT will comprise KC staff with expertise in natural resources management and wetland science. The composition of the CAT may change depending on which service area impacts and potential receiving sites are within. For example, for an impact and mitigation project in the Snoqualmie Service Area, the Snoqualmie "Basin Steward" (a King County staff position) would sit on the CAT, but the Basin Steward from the Green River watershed may not be part of the CAT.

Input of the CAT will be extremely important in determining how to best mitigate for impacts within a particular service area. The CAT will draw upon all available resources in making their

decisions, but in some cases, it is likely that firsthand knowledge and expertise of CAT members will play a more significant role in specific recommendations than published reports and analyses.

The CAT will also be responsible for identifying internal and external stakeholders with an interest in proposed mitigation sites and projects. The CAT will recommend a strategy for stakeholder involvement to the MRP Manger. The MRP Manger will incorporate stakeholder involvement into the credit fulfillment process (see Appendix K, Section 3.0).

Meetings of the CAT will be facilitated by the MRP Manager. Membership of the CAT will consist of the following:

- MRP Manager, WLRD
- Technical Advisor to MRP Manager (Sr. Ecologist from the Scientific and Technical Support Section of WLRD)
- Critical Areas Section Supervisor or appointed representative, DDES
- A basin steward from WLRD
- A land manager from the KC Parks and Recreation Division
- Representatives from pre-qualified implementation groups (see Appendix K, Section 1.0

The MRP Manager is the central point of contact for the MRP and responsible for administering day to day operations of the program. The MRP Manager's technical advisor will support the MRP Manager by reviewing the work products and technical information provided by the implementation groups.

In addition to scientific review provided by the technical advisor, the preferred sites identified by the CAT will be reviewed by a qualified restoration ecologist/engineer to assess site opportunities and feasibility of project implementation.

The MRP Manager shall ensure that notes are taken at all CAT meetings, and that rationale for key decisions is recorded clearly to facilitate IRT review and approval of CAT decisions.

3.2 Choosing the Best Site from the Roster

The site selection process shall occur in a "watershed approach" as described in Appendix H of this instrument. All available resources shall be considered by the CAT in making their determinations, including the plans and analyses listed in Appendix I, Part 2, and any new information resulting from watershed characterizations being completed by Ecology.

Generally, sites with greater potential for ecological lift will be prioritized. For example, sites with opportunities to remove wetland fill or create wetlands (if hydrology and other site conditions will support wetland creation), should be prioritized over sites with only wetland enhancement opportunities.

A key guidance document to be considered when making site selections will be the interagency guidance *Selecting Wetland Mitigation Sites Using a Watershed Approach* (Hruby, et al. 2009),

which provides —specific recommendations on how to apply a watershed approach when selecting sites and in choosing between on-site and off-site mitigation in western Washington." This document, and any subsequent revisions to it, is hereby incorporated into this instrument by reference.

During the site selection process, the MRP Manager shall make available to the CAT information related to the number and nature of impacts for each subbasin that have been mitigated at receiving sites outside the subbasin. This will be necessary to avoid deterioration of ecological functions in a particular subbasin by cumulative effects of —exporting" mitigation for multiple seemingly insignificant impacts (i.e., —death by a thousand cuts").

For functions that are determined through watershed planning and/or watershed characterizations to be of critical importance in a particular subbasin, the best possible Roster sites to mitigate a given impact will be chosen through examination of multiple site selection criteria in the context of a spatial hierarchical approach that balances landscape position, ecosystem setting and geographic proximity with basin and watershed priorities.

As discussed in Appendix H, when functions lost at an impact site are determined to be critically important (i.e., best available science suggests the ecosystem within a particular basin cannot afford to lose the functions, e.g., infiltration for stormwater control) then a mitigation site will be selected from the Roster based on:

1) Proximity of the receiving site to the impact area (i.e., within the same subbasin).
2) Opportunities for lift within the same landscape setting, HGM class, aquatic resource type and/or terrestrial community type, and other factors, such as those used to identify Roster sites (see Section 1.3, above).
3) Readiness of the site to accommodate a project.
4) The need to compensate for deficits in a given functional category as discussed in Appendix G. The sponsor's goal will be to ensure that impacts to critical watershed functions are fully compensated by the time the third mitigation project is implemented or within 10 years of when a credit sale occurs, whichever is shorter. Specific requirements and considerations related to offsetting functional losses with equal or greater functional gains are discussed in Appendix G.

In cases where functions lost at an impact site are not critically important to continuation of the ecological integrity of a basin (e.g., negligible habitat loss at a grazed wet meadow impact) then the selection process will expand outward, not to exceed the service area boundary, until several possible sites are found that meet watershed needs.

In all cases, impact sites and mitigation sites will be —decoupled," meaning that the specific impact projects and mitigation projects will not be linked directly. However, through time, the MRP Database and Credit Ledger will track the type and location of impacts and mitigation projects to ensure no net loss of functions and values in any given service area. Appendix U discusses how the program will track performance with respect to no net loss goals.

Resources that will be consulted to facilitate an effective site selection process include:

- Salmon Conservation Plans
- Endangered Species Recovery Plans
- King County Basin Plans
- King County Flood Hazard Management Plan (King County, 2006)
- Ecoregion Assessments: Willamette Valley, Puget Trough, Georgia Basin (Nature Conservancy, 2004)
- King County Greenprint Maps and other GIS resources
- Staff resources: King County Basin Stewards and WRIA teams
- And additional reports, analyses and other resources listed in Appendix C of this instrument.

The first task that will be included in the scope for an implementing group will be to narrow the list of available Roster sites using the roster site map, MRP database, site selection criteria and above listed resources. When two or three promising sites have emerged, an ecologist will perform limited site reconnaissance to identify a preferred site. The reconnaissance will include rating the aquatic resource using HGM criteria and the Wetland Rating System for Western Washington (2004) as appropriate. The initial site reconnaissance will also include:

- Collection of site specific information that will be used to create a conceptual project plan
- Application of an IRT-approved mitigation assessment tool based on existing conditions
- Coarse assessment of whether existing conditions are conducive to generating the necessary number of credits.

4.0 Mitigation on Privately-Owned Receiving Sites

In cases where a publicly-owned site and a privately-owned site appear to offer similar benefits as a receiving site in meeting watershed needs or addressing a within-basin mitigation need to maintain critical functions, the criteria below shall guide the decision-making process. These special ~~"p~~public-private tiebreaker" criteria will help support the validity of CAT decisions in cases where a private landowner feels as though their site was preferable and should have been used as a receiving site rather than a publicly-owned site.

These criteria may also favor implementation of mitigation on privately owned land. For example, when considering the risk of future land uses with negative ecological effects, private land is likely to be at greater risk than lands already in public ownership.

The criteria listed below are intended as a minimum list of ~~"ti~~e-breaker" criteria, and the CAT will review and amend these criteria as appropriate. Furthermore, the CAT will agree upon a scoring system for the decision-making process.

In cases where there has been a tie-breaker process to choose between public and private potential receiving sites, the criteria used and scoring results of the tiebreaker process shall be presented to the IRT along with the ~~"p~~preferred sites" whether the public or private site was preferred.

Criteria used in choosing between publicly-owned and privately-owned Roster sites shall include, but not be limited to the following:

- Which site best addresses watershed needs?
- Which site provides best opportunity for replacement of functions lost to impact?
- Which site provides best match in watershed position?
- Which site has potential for greatest ecological lift? (E.g., sites and projects with potential to remove wetland fill would be preferable to sites with only wetland enhancement potential.)
- Which site has best connectivity to existing ecologically important areas?
- Which site has best connectivity to potential ecologically important areas?
- Which site has greatest risk of further degradation? (E.g., privately-owned lands may be at higher risk than existing publicly owned lands.)
- Which site has fewer threats to success? (E.g., weed infestations, plant predation, flooding potential, etc.)
- Which site is closest to the impact site (hydro-geographically)?
- Which site has fewest obvious design challenges?
- At which site will mobilization, construction and monitoring be easiest?

Private properties must be enrolled onto the Roster prior to initiating a mitigation project.

For mitigation projects on privately-owned receiving sites, staff from King County DDES and WLRD will share responsibility for the recruitment, enrollment, mitigation project implementation, maintenance and monitoring of projects. Specifically, the roles that each Agency is responsible for are as follows:

- DDES and WLRD will jointly coordinate identification and recruitment of particular private properties with potential to meet mitigation needs onto a list of candidate sites; contact with landowners will primarily be the responsibility of DDES;
- DDES and DNRP, as members of the CAT will determine if and when a privately-owned Roster site should be considered as a receiving site during the site selection process;
- DDES will be responsible for the actual enrollment of private land from a list of candidate sites onto the Roster, which includes negotiating the terms of a conservation easement with the landowner; all restoration work on private property will occur within designated critical areas per the King County CAO, or areas that, through restoration will become critical areas. To ensure mitigation projects continue to provide ecological functions, the terms of the easement will incorporate a requirement for the landowner to

obtain prior approval from King County DDES before the landowner performs any "allowed alterations" as defined in KCC 21A.24.045. This aligns DDES's CAO code enforcement on private property with the long-term monitoring of conservation easements on private property;

- WLRD will review the terms of the easement before it is signed and recorded, and send a copy of the easement to the IRT for review and approval. WLRD – via the MRP Manager – will be responsible for ordering an appraisal that establishes the price of the conservation easement, and compensating the landowner for the conservation easement conveyed to the County;
- WLRD will design mitigation projects to be constructed on private property. DDES will work with landowners and WLRD design staff to ensure project plans will generally follow guidelines established during the preliminary design discussion, and outlined in the Letter of Intent;
- WLRD will be responsible for overseeing implementation groups (see Appendix K, Section 1.0) in the construction of mitigation projects on the private property;
- WLRD will be responsible for short term maintenance and monitoring of the private property (e.g., 7-10 years) provided that the landowner has not altered the site in a manner inconsistent with the terms of the conservation easement; if the landowner has violated the terms of the easement, DDES shall be responsible for ensuring the landowner takes corrective action and DDES shall assume monitoring duties until the situation is corrected;
- DDES will be responsible for longer term monitoring of the private property to be consistent with the CAO (i.e., DDES current ongoing CAO code enforcement) in conjunction with the terms of the MRP conservation easement; and
- Depending on conditions at the site and the specific agreement, the entity responsible for long-term maintenance and monitoring of mitigation projects on private lands may vary. In all cases, a long-term steward must be identified and a long-term management plan must be established. The identified long-term steward and the plan shall be approved by the IRT and documented in the Mitigation Plan.

The practice of allowing mitigation to occur on private lands will be analyzed annually, and if this aspect of the program becomes problematic, the King County CAO policy group can decide to discontinue allowing private lands as mitigation receiving sites.

4.1 Determination of Credits on Private Sites

When calculating ecological lift on privately-owned sites, the estimate of project risk will be increased to the effect of reducing the number of potential credits that can be generated. This accounts for the inherently higher risk associated with a mitigation project implemented on private property than on publicly-owned land. Publicly-owned land is in the "public eye" and can be monitored more frequently, whether by King County staff or the general public. Also, private

property frequently changes hands and new owners have different understandings and expectations than the previous owners. As such, it is appropriate to increase the assessment of risk for projects on private sites. The amount assessed for increased risk will be dependent on the particular circumstances involved and the judgment of the reviewer applying the mitigation assessment tool.

APPENDIX K: CREDIT FULFILLMENT

Credit fulfillment refers to the process by which actual mitigation projects are planned and constructed to offset credits that have been sold. Subsections in this section describe the process for implementing mitigation projects.

1.0 Implementation Groups

The four King County groups currently pre-qualified to implement mitigation projects in accordance with MRP standards (hereinafter ―implementing groups") include: the Ecological Restoration and Engineering Services Unit (ERESU) and the River and Floodplain Management Section (RFMS), both in the Water and Land Resources Division; the Parks Resource Program (PRP) in the KC Parks and Recreation Division; and the Engineering Services Section (ESS) of the Roads Services Division. Each of these programs has proven success in completing state-of-the-art conservation projects and has substantial experience in local, state and federal permitting processes.

Some projects implemented by these groups have been mitigation projects, such as the Cold Creek Natural Area project shown in Figures 3-4 in Appendix I, Section 4.0. This project, which was designed and constructed by the ERESU group, served as mitigation for unavoidable impacts associated with a pipeline replacement project.

The MRP Manager is the ―client" in a consulting services model that will be used to facilitate project implementation. The MRP Manager will outline scope, budget and schedule expectations for the implementation groups, who are the ―consultant" in the model, and will assign work according to their expertise, availability and potential scale or location efficiencies.

When the construction budget for a project is expected to be greater than $90,000, state law requires the construction tasks for these projects be put out to bid for a competitive contracting process. In these cases, private ecological restoration contractors will bid on the projects, and King County staff will oversee construction. It is expected that the requirement to send larger projects to bid will increase the price of projects. This added *"contracting"* expense is incorporated into credit price calculations (see Appendix F, Section 7.0 and Exhibit 11). In the interest of fairness to all applicants, this additional cost will be factored in to the price for all credits sold, regardless of the impact size. This accounts for the fact that at the time a credit is sold, the location and size of the mitigation project may be unknown, and therefore King County would be unable to determine whether additional contracting fees might apply to the project.

2.0 Mitigation Plans

A key document guiding much of the credit fulfillment process will be site specific Mitigation Plans. The requirements for site specific Mitigation Plans are described in detail in the federal rule [33 CFR Part 332.4(c)]. At a minimum, the federal rule specifies that Mitigation Plans shall include the following sections:

1. Objectives.

2. Site selection.
3. Site protection instrument.
4. Baseline information.
5. Determination of credits.
6. Mitigation work plan, including opportunities or need to phase projects.
7. Maintenance plan.
8. Performance standards.
9. Monitoring requirements.
10. Adaptive management plan.
11. Long-term management plan.
12. Financial assurances.
13. Other information, such as
    a. Nearby mitigation or restoration projects and how the mitigation project may compliment them
    b. Adjacent land uses and potential effects of adjacent land uses on mitigation project
    c. Other information as identified by the IRT as necessary for inclusion in the Mitigation Plan

All Mitigation Plans for the MRP will adhere to the requirements for Mitigation Plans outlined in the federal rule, and the IRT will review and approve all Mitigation Plans.

Mitigation plans will also clearly delineate the areas of a site where mitigation activities can occur. For example, Mitigation Plans will identify features that would disallow creation of credits such as trail corridors, utility easements, previous mitigation projects without any available additional credit and restoration projects.

3.0 The Credit Fulfillment Process

The fulfillment process will generally follow the following sequence:

A. Receiving site assessment and selection (by the Credit Allocation Team)
    1. **Review mitigation needs based on type and location of impact(s**). Information related to the type and location of the impact will be provided to the MRP Manager by DDES permit review staff. DDES staff will complete an impact site assessment during permit review. This assessment will include basic site information as well as results from application of the tool to determine the number of debits associated with an impact and a complete list and description of

any impacts to aquatic areas or buffers as applicable. This information will be provided to the CAT by DDES permit review staff that will, at the time of the permit review, record relevant information (i.e., the information shown on the "Impact Site Data" list in Appendix G, Section 6.1).

2. **Select a 'preferred' mitigation receiving site** according to process outlined in Appendix J, Section 3.2. There may be one or more preferred sites chosen from the Roster to be presented to the IRT as options for receiving sites. If there are no Roster sites that meet criteria as a suitable receiving site, the CAT may elect to identify a private parcel and enroll the private parcel onto the Roster. In this case, the MRP Manager will contact owners of potential private receiving sites to gauge interest prior to selecting the site as "preferred." If an owner shows interest in granting an easement to King County and accepting a receiving site project on their property, the owner will be asked to enter into an agreement with King County to enroll their property on the Roster. Only after a site is officially on the Roster can the CAT present to the IRT a privately-owned parcel as a preferred site.

3. **Submit preferred site and preliminary concept plans to IRT for review,** including information about other restoration or mitigation activities in the vicinity of the preferred site to ensure the area proposed for mitigation is clearly defined and distinct from other projects and land-uses at the site.

   In cases where the preferred site is privately owned, the MRP Manager shall also submit a copy of an unsigned conservation easement that would protect the land in perpetuity; both King County and the landowner shall agree to abide by the terms outlined in the version of the easement submitted to the IRT.

   The preferred site proposal shall also include a description of the stakeholder involvement strategy identified by the CAT during selection of preferred sites.

   In addition to the site description, the MRP Manager shall also submit a concept plan for each proposed site. At minimum, the concept plans should provide a simple graphic representation of key project elements and a short narrative description.

4. Pending IRT approval to proceed, the design team from the implementation group will develop draft Mitigation Plan and cost estimate, and plans will be reviewed and approved by a qualified restoration ecologist/engineer.

5. Apply the tool to determine the number of credits the mitigation project should generate.

B. Design team staff will begin data collection and validation of assumptions to confirm suitability of preferred mitigation receiving site.

C. A final Mitigation Plan will be completed by a design team staff member in consultation with the MRP Manager. Mitigation Plans will be completed for each site, and upon IRT

approval, will be incorporated into the program instrument in the *Mitigation Plans* section at the end of the instrument.

In addition to the sections of the plans outlined above, Mitigation Plans will also:

1. Identify project goals and objectives, as well as preliminary performance measures and goals.
2. Include plans and specifications, including identification of necessary local, state and federal permits for proposed project.
3. Identify affected stakeholders and provide a plan for stakeholder involvement
4. Propose maintenance and monitoring plan with specific performance standards.
5. Propose adaptive management and contingencies plan.
6. Propose a Long Term Management Plan

D. Develop site protection instrument (e.g., conservation easement or restrictive covenants) and long-term stewardship plan (see Basic Agreement Article IV.H. and Appendix P of this instrument for more information).

Note: for private sites, the IRT will have reviewed a negotiated and near-final conservation easement or restrictive covenant language to be recorded on the title to protect the mitigation area on a private site.

E. Negotiation with and approval by the IRT of monitoring periods and credit release schedules. The credit release schedule determines the points in the project at which credits will be considered "released", i.e., the point at which the sponsor has met the obligation for fulfilling the credit.

F. Modify Program Instrument. The federal rule [33 CFR 332.8(g)] describes the process by which the program instrument is modified to incorporate Mitigation Plans. The rule describes two methods by which a program instrument may be modified: (1) a full review process [332.8(g)(1)] which is similar to the review and approval process for new in-lieu fee instruments, outlined in [332.8(d)]; and (2) a streamlined review process described in [332.8(g)(2)].

G. Final IRT approval of Mitigation Plan and site protection instrument.

H. Implement approved Mitigation Plan

The steps outlined above have been distilled into a one-page Credit Fulfillment Checklist, which is included with this instrument as Exhibit 14. This checklist shall guide KCMRP staff and IRT members through the fulfillment steps. The Checklist shall be jointly reviewed and amended by the IRT and KCMRP to ensure all relevant steps in the fulfillment process are captured in the checklist. This checklist may be amended as necessary to incorporate other necessary or desirable steps identified by the IRT and/or the Sponsor.

4.0 Credit Fulfillment Schedule

For fulfillment of all IRT credits, a compensatory mitigation project plan will be submitted to and approved by the IRT, and the initial physical and biological improvements will be initiated by the end of the third full growing season after the impact that generated the credit sale(s) as required by the federal rule [33 CFR 332.8 (n)(4)]. The submittal of the Mitigation Plans to the IRT will include a credit release schedule.

In some cases, mitigation projects may require baseline data collection in order to reduce risk of project failure. In these instances, the collection of data will generally occur within one year of the impact that generated the credit sale, but actual construction may not occur within three growing seasons. These cases would be limited to those which require multiple years of baseline data collection and would be contingent on Corps, Ecology, IRT, and/or DDES approval as appropriate.

5.0 Preservation as a Mitigation Strategy

Preservation of high value aquatic resources that are ―under threat of destruction or adverse modifications" [33 CFR Part 332.3(h)], i.e., conversion to residential development, commercial development, silvicultural forest practices, or other activity that would significantly alter ecosystem functions and values, may be used as a compensatory mitigation strategy by the MRP. In general, these lands must be determined to be consistent with the preservation criteria in the Federal Rules [33 CFR Part 332.3(h)] and must meet the above referenced site selection criteria for MRP Roster site selection. In cases where preservation is proposed, project planning and implementation funds from the credit sale may be used to secure the property to be preserved, in addition to funds collected through the Land Fee for that credit sale.

To the extent appropriate and practicable, preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities. In such cases, the preservation credit calculation method included in the tool will be used to assess the amount of preservation credit earned by preserving a property.

The ecological value related to quantifying preservation credit derived should include the following considerations:

A. The extent to which proposed management activities within the preserve area promote natural ecological conditions such as exclusion of invasive exotic species.

B. The ecological and hydrological relationship between wetlands, aquatic areas and uplands to be preserved.

C. The scarcity of the habitat provided by the proposed preservation area and the degree to which listed species use the area.

D. The proximity of the area to be preserved to areas of national, state or regional ecological significance, such as national or state parks, Shorelines of Statewide Significance and other regionally significant ecological resources or habitats, such as lands acquired or to be acquired through governmental or non-profit land acquisition programs for

environmental conservation, and whether the areas to be preserved include corridors between these habitats.

E. Specific ecosystem services or processes that are provided by the preservation area and their value.

Many of the sites on the Roster are already owned by King County, and some sites have conservation easements in place. In cases when there is an existing easement over the property, credits cannot be derived through preservation; i.e., sites with existing conservation easements cannot generate credits through preservation as defined in the Federal Rule [33 CFR Part 332.3(h)]. Preservation as a mitigation strategy will be implemented in cases where new Roster sites are acquired to prevent adverse modifications related to likely future development. To the maximum extent possible, preserved sites should also be utilized to achieve credits through ecological restoration or enhancement.

6.0 Credit Release Schedule

For each credit fulfillment project, a credit release schedule will be negotiated with the IRT. Generally, credit release will be requested to conform to the performance measure monitoring schedule outlined in Appendix N.

Sections 33 CFR 332.8(o)(8)(i) and (iii) of the federal rule describe details related to the Credit release schedule for in-lieu fee programs:

—i() *General considerations.* Release of credits must be tied to performance-based milestones (e.g., construction, planting, establishment of specified plant and animal communities). The credit release schedule should reserve a significant share of the total credits for release only after full achievement of ecological performance standards. When determining the credit release schedule, factors to be considered may include, but are not limited to: The method of providing compensatory mitigation credits (e.g., restoration), the likelihood of success, the nature and amount of work needed to generate the credits, and the aquatic resource type(s) and function(s) to be provided by the mitigation bank or in-lieu fee project. The district engineer will determine the credit release schedule, including the share to be released only after full achievement of performance standards, after consulting with the IRT. Once released, credits may only be used to satisfy compensatory mitigation requirements of a DA permit if the use of credits for a specific permit has been approved by the district engineer.

—i(i) For in-lieu fee projects and umbrella mitigation bank sites, the terms of the credit release schedule must be specified in the approved mitigation plan. When an in-lieu fee project or umbrella mitigation bank site is implemented and is achieving the performance-based milestones specified in the credit release schedule, credits are generated in accordance with the credit release schedule for the approved mitigation plan. If the in-lieu fee project or umbrella mitigation bank site does not achieve those

performance-based milestones, the district engineer may modify the credit release schedule, including reducing the number of credits."

Additionally, for the King County MRP, other entities on the IRT (e.g., Ecology) will have the opportunity and obligation to set and modify the credit release schedule. Furthermore, the Corps and Ecology, following consultation with the IRT, will also need to approve the credit release schedule based on documented project performance milestones, and if deemed necessary, a site visit (see 33 CFR 332.8(o)(9)).

The credit release schedule will be negotiated for each Mitigation Plan, though generally these credit release schedules will conform to discrete project milestones identified in the monitoring plans and ecological performance standards established for each project and approved by the IRT. Table 13 provides an example credit release schedule. Actual credit release schedules for each project may differ from the example below depending on site conditions and project variables.

Table 13. Example Credit Release Schedule

Project Milestone	Portion of Credit Released	Cumulative Portion of Fulfillment
Installation	1/6	1/6
Year 1 performance standards achieved	1/6	1/3
Year 3 performance standards achieved	1/6	1/2
Year 7 performance standards achieved	1/6	2/3
Year 10 performance standards achieved and transition to long-term stewardship (IRT sign-off on achievement of performance standards)	1/3	Credit fulfilled

Credit releases for in-lieu fee projects must be approved by the Corps and Ecology. In order for credits to be released, the Sponsor will submit documentation to the Corps and Ecology demonstrating that the appropriate milestones for credit release have been achieved and requesting the release. The Corps and Ecology will provide copies of this documentation to the IRT members for review. IRT members will provide comments on this document. (see 33 CFR 332.8 (o)(9))

The Corps and/or Ecology may determine that a site visit is necessary prior to the release of credits. Such a visit will be compliant with 33 CFR 332.8 (o)(9).

If the in-lieu fee project does not achieve the performance-based milestones, the Corps and Ecology, after consultation with the IRT, may modify the credit release schedule, including reducing the number of credits. (see 33 CFR 332.8(o)(8)(iii)).

If at any step in the credit release schedule, it is determined through monitoring that performance standards are not being met, the IRT and the Sponsor shall identify appropriate adaptive management and contingency measures (Appendix O) and devise a plan for implementation.

APPENDIX L: MITIGATION SITE MAINTENANCE

As necessary, project design staff will coordinate with land managers, noxious weed control program staff, ecologists, engineers, geotechnical staff, custodial agents and maintenance personnel to outline maintenance protocols for the project. Active maintenance practices will generally follow a minimum five (5) to seven (7) year program, or possibly 10 year program that may include repair/replacement of engineered structures, nuisance species control and adaptive management measures, such as grade or hydrology modifications, species substitutions, replanting, replacement of habitat features and temporary fencing. Projects requiring phased installation may specify maintenance and monitoring measures that promote the phased approach.

Due to the variability of projects at mitigation receiving sites, implementation and maintenance plans for each mitigation project will be developed on a case-by-case basis (and reviewed and approved by the IRT). Site maintenance beyond the project performance period will be performed by the property owner or the long-term steward, depending on the specific provisions for long-term stewardship.

Site maintenance plans will be incorporated into the Mitigation Plans for each site, and as such, will be appended to this program instrument upon IRT approval.

APPENDIX M: ECOLOGICAL PERFORMANCE STANDARDS

Performance standards are observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives. Performance standards included in MRP Mitigation Plans submitted to the IRT will relate to the objectives of the compensatory mitigation project, so that the project can be evaluated through time to determine if it is developing into the desired resource type, providing the expected functions and generating the anticipated functional lift.

Ecological performance standards will be based on the best available science that can be measured or assessed in a practicable manner. Performance standards may be based on variables or measures of functional capacity described in the mitigation assessment method, measurements of hydrology or other aquatic resource characteristics and/or comparisons to reference aquatic resources of similar type and landscape position.

Reference sites may be used to develop performance standards for mitigation sites. Performance standards based on measurements of hydrology will take into consideration the hydrologic variability exhibited by reference aquatic resources, especially wetlands. Performance standards will take into account the expected stages of the aquatic resource development process in order to allow early identification of potential problems and appropriate adaptive management.

Specific performance standards for a given mitigation project will depend in large part on the type, scale and scope of the proposed project and will be outlined in detail in the Mitigation Plans developed for each site. These plans must be reviewed and approved by the IRT prior to implementation, so specific performance standards for mitigation project can be negotiated with the IRT. Performance standards for King County MRP mitigation projects will generally include the following components (excerpted from *Monitoring Plant and Animal Populations,* Elzinga et al. 2001):

A. List of *Indicators*. Indicators identify what will be monitored, such as *woody vegetation*, *invasive species* (e.g., reed canary grass - *Phalaris arundinacea*), *wetland area*, or *water regimes*. The indicators to be monitored will vary from site to site, and will be listed in the Monitoring and Maintenance sections of the Mitigation Plans developed for each receiving site. These plans will be incorporated into the program instrument upon approval by the IRT.

B. List of *Attributes*. They identify what aspect of the indicator will be monitored, such as percent *aerial cover* (of vegetation), *density* (of stems of surviving vegetation), *size* (of wetland area), or *percent area* (of a water regime).

C. *Actions*. They identify the ~~"v~~verb" of the attribute, such as *will not exceed* X percent cover (of invasive species), *establish* X acres (of wetland area), *maintain* number (of surviving vegetation), or will have X-X% area (of a water regime).

D. *Quantities/Status*. They identify the amount of change or the desired level the attribute should reach, such as achieving *greater than 50%* total aerial cover of trees and shrubs, establishing *2 acres of wetland*, or *having 25% to 50% area* of a water regime.

E. *Time Frame*. They identify when the quantity/status should be achieved or at what time the effectiveness of management of the site should be evaluated. For example, having X-X% area of a water regime *each year* of monitoring, achieving X acres of wetland *by the end of the monitoring period*, or achieving X% total aerial cover of trees and shrubs *by the end of year 7*. Performance standards should be included for interim years, not just the end of the monitoring period.

F. *Location*. They identify the geographical area where the indicator will be monitored, such as a particular wetland mitigation site or a specific habitat type within a compensatory wetland. For example, *the compensatory mitigation area at Cold Creek Natural Area in Woodinville, Washington* will achieve X acres of emergent wetland by the end of the monitoring period.

In the context of the above performance standard components, most projects will generally also include standards to address the specific goals and objectives identified in the guidelines entitled W*etland Mitigation in Washington State - Part 2, Version 1, p. 47, Chapter 3 "Considerations for Developing a Mitigation Project*", including*:*

G. Water, hydroperiod and hydrology

H. Hydroperiod associated with target functions

I. Area of hydrogeomorpic (HGM) classes/subclasses, Cowardin classes, aquatic area types, or upland community types

J. Species richness and abundance

K. Maximum percent cover of invasive vegetation species

L. Specific target functions or physical characteristics

Finally, to the extent possible, performance standards will be developed to ascertain whether lift is being created in the context of the functions measured by the mitigation assessment method.

APPENDIX N: MONITORING AND REPORTING

Monitoring and reporting requirements from the MRP will meet requirements outlined in the federal rule. Subsection.1.0 describes monitoring and subsection 2.0 describes MRP reporting.

1.0 Monitoring

King County is ―responsible for monitoring the in-lieu fee project sites, in accordance with the approved monitoring requirements for each project, to determine the level of success and identify problems requiring remedial action or adaptive management measures. Monitoring must be conducted in accordance with the requirements in 33 CFR 332.6, and at time intervals appropriate for the particular project type. Monitoring will continue until such time that the district engineer, in consultation with the IRT, has determined that the performance standards for the project have been attained." (33 CFR 332.8(q)(2)).

In general, monitoring periods will span seven to ten years for most projects. Depending on the nature of the mitigation projects, monitoring periods may be shorter or longer. The IRT will review and approve all monitoring plans.

Monitoring periods will comply with the terms of 33 CFR 332.6(b), which states that the ―mitigation plan must provide for a monitoring period that is sufficient to demonstrate that the compensatory mitigation project has met performance standards, but not less than five years. A longer monitoring period must be required for aquatic resources with slow development rates (e.g., forested wetlands, bogs).

Performance monitoring will require qualitative and quantitative assessments of physical, chemical and biological characteristics of the project as appropriate, using appropriate analytical methods. The purpose of monitoring is to determine the level of compliance with established ecological performance standards specified in the approved Mitigation Plan, which are intended to measure whether the requisite ecological lift is being created. The purpose of monitoring is also to identify problems requiring remedial action or adaptive management measures.

Monitored parameters will depend in large part on the type, scale and scope of a proposed project, but will generally include hydrologic conditions, vegetative cover, wildlife usage, soil stability and presence/extent of noxious weeds and nuisance species in accordance with the ecological performance standards for a given site.

Monitoring requirements and specifications will vary from receiving site to receiving site and will be outlined in detail in the Mitigation Plan for each mitigation site; the IRT will have the opportunity to review and approve monitoring requirements during review of the Mitigation Plans.

King County will formulate a monitoring plan for each project, which details and complies with all of the above. Specifically, the monitoring plan will ―address the monitoring requirements for the compensatory mitigation project, including: 1) the parameters to be monitored, 2) the length of the monitoring period, 3) the party responsible for conducting the monitoring, 4) the frequency for submitting monitoring reports to the district engineer, and 5) the party responsible for submitting those monitoring reports to the district engineer." (33 CFR 332.6). The Mitigation

Plan will also include a detailed credit release schedule. The scheduled release of credits will correspond to the timeframe established for monitoring the mitigation sites to ensure ecological performance standards are being met.

The Corps and Ecology may conduct site inspections on a regular basis (e.g., annually) during the monitoring period to evaluate mitigation site performance. (33 CFR 332.6(a)(1)).

Long-term Monitoring

Each Mitigation Plan will have details about the long-term maintenance and Monitoring plan for each mitigation site. Appendix P of this instrument explains in more detail the roles and responsibilities of long-term maintenance and monitoring.

2.0 Reporting

Specific reporting guidelines will be negotiated with the IRT for each mitigation project. Generally, the monitoring reports should follow reporting guidelines set forth in a regulatory guidance letter issued by the Corps on October 10, 2008 which provides "Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources" (See Exhibit 16).

MRP monitoring reports will comply with 33 CFR 332.6(c), which states:

> (1)The district engineer must determine the information to be included in monitoring reports. This information must be sufficient for the district engineer to determine how the compensatory mitigation project is progressing towards meeting its performance standards, and may include plans (such as as-built plans), maps, and photographs to illustrate site conditions. Monitoring reports may also include the results of functional, condition, or other assessments used to provide quantitative or qualitative measures of the functions provided by the compensatory mitigation project site.
>
> (2) The permittee or sponsor is responsible for submitting monitoring reports in accordance with the special conditions of the DA permit or the terms of the instrument. Failure to submit monitoring reports in a timely manner may result in compliance action by the district engineer.
>
> (3) Monitoring reports must be provided by the district engineer to interested federal, tribal, state, and local resource agencies, and the public upon request.

APPENDIX O: ADAPTIVE MANAGEMENT AND CONTINGENCIES PLANNING

Each Mitigation Plan (see Appendix K, Section 2.0) will include an *adaptive management plan*, which is defined in the federal rule as a "management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success." (33 CFR 332.4(c)(12) Adaptive management plans included with mitigation plans will necessarily lack specific measures to address underperformance, since the type of underperformance will not be known at the time the Mitigation Plan is developed. Specific corrective measures will be developed if and when underperformance details become clear. Any and all adaptive management measures will be appended to the Mitigation Plan and the IRT will review and comment on any additions or amendments to Mitigation Plans.

Contingency funds, incorporated into the credit fees and held in reserve in a separate account (see Appendix F, Section 3.1), would pay for development and implementation of adaptive management plans.

Section 33 CFR 332.7(c) of the federal rule provides further guidance on adaptive management of mitigation projects:

> "If monitoring or other information indicates that the compensatory mitigation project is not progressing towards meeting its performance standards as anticipated, the responsible party must notify the district engineer as soon as possible. The district engineer will evaluate and pursue measures to address deficiencies in the compensatory mitigation project. The district engineer will consider whether providing ecological benefits comparable to the original objectives of the compensatory mitigation project.
>
> "The district engineer, in consultation with the responsible party (and other federal, tribal, state, and local agencies, as appropriate), will determine the appropriate measures. The measures may include site modifications, design changes, revisions to maintenance requirements, and revised monitoring requirements. The measures must be designed to ensure that the modified compensatory mitigation project provides aquatic resource functions comparable to those described in the mitigation plan objectives.
>
> "Performance standards may be revised in accordance with adaptive management to account for measures taken to address deficiencies in the compensatory mitigation project. Performance standards may also be revised to reflect changes in management strategies and objectives if the new standards provide for ecological benefits that are comparable or superior to the approved compensatory mitigation project. No other revisions to performance standards will be allowed except in the case of natural disasters."

Once approved by the IRT, the revised project elements identified in the adaptive management plan will be implemented, and will be appended to the approved Mitigation Plan and incorporated

into the program instrument; ecological performance standards, monitoring requirements and schedule, and credit release schedule will be amended accordingly to incorporate the terms of the project as revised in the adaptive management plan.

If an adaptive management plan identifies the need for significant modification of a compensatory mitigation project, the responsible party must get approval from the Corps and Ecology. A streamlined review process is available. (see 33 CFR 332.8(g)(2).

If the failure is substantial and would be difficult or impossible to correct on-site (e.g., landscape conditions change such that hydrology is insufficient to support a wetland) King County will, in consultation with the IRT, evaluate whether the project should be abandoned altogether in favor of pursuing alternate contingency measures, such as a new project. A failure of a project (in whole or in part) is considered ―default" in which case provisions in the Basic Agreement Article IV.N. and Appendix S of this instrument would apply.

APPENDIX P: SITE PROTECTION AND LONG-TERM MANAGEMENT

Following the project performance period (i.e., establishment phase), mitigation projects will be managed in accordance with long-term management plans developed for each site; these plans will be a section in the IRT-approved mitigation plan developed for each site (See Appendix K). MRP credit pricing will reflect costs associated with long-term management of mitigation sites to ensure money is available to implement the long-term management plan. In addition to long-term monitoring and management provided by MRP, it should be noted that King County intends to protect ecological and natural resource lands in perpetuity as a consequence of the terms of their acquisition. Further, active land management for ecological and resource values are practiced on these lands pursuant to the Programmatic Plan for Management of King County-owned Ecological Lands (King County, 2004).

However, a property owned in fee by King County is not necessarily legally protected in perpetuity, and fee ownership will not constitute adequate site protection to meet the requirements in the federal rule.

For properties which King County owns in fee that are not already protected by conservation easements or other sufficiently restrictive covenants, these properties must be protected by an easement or other restrictive covenants prior to being used as a mitigation site.

Mitigation Site Protection

The federal rule (33 CFR 332.7) requires permanent site protection to ensure mitigation sites continue to provide ecological functions in perpetuity. The rule provides for flexibility in how sites are protected. All site protection mechanisms must be approved by the Corps and Ecology following consultation with the IRT.

Two King County agencies will have roles in site protection: DDES and DNRP. King County will protect sites by taking the following actions for each mitigation site:

1. Recording restrictive covenants on title for each mitigation site which clearly enumerate allowed and prohibited uses. The Corps and/or other signatory agencies to this MRP instrument will be named as beneficiaries within the covenants;
2. Establishing an open DDES permit for each mitigation site, giving DDES authority (and funding) to monitor and enforce terms of the restrictive covenants; and
3. Completing periodic monitoring and maintenance reports for each site. DNRP will develop these reports according to an IRT-approved schedule for each mitigation site, and distribute copies of these reports to DDES and the IRT.

The remainder of this section provides details about the roles, qualification and authority of DNRP and DDES to perform site protection duties, and provides information about the restrictive covenants to be recorded on title for mitigation receiving sites, as well as DDES ―general inspection" permits which will be established for each mitigation site.

King County Department of Natural Resources and Parks Roles:

- Serve as the long term steward, performing monitoring and maintenance to ensure mitigation sites continue to provide ecological functions according to project performance standards. These activities will be funded through an account established expressly and solely for long-term maintenance and monitoring. This account will be a sub-fund within the MRP fund (See Appendix F: Program Accounts, Section 3.1).
- Produce maintenance and monitoring reports according to an IRT-approved schedule, and provide these reports to DDES and the IRT.
- DNRP will include a section on permanent site protection in the Mitigation Plan for each site, and incorporate – by reference – the restrictive covenants into the Mitigation Plan.

DNRP Qualifications and Authority

- King County Department of Natural Resources and Parks (DNRP) is a local government resource agency (KCC 2.16.045) with tax revenue base and near-certain continuous existence (i.e., permanent entity).
- Most mitigation projects will occur on property King County owns in fee (i.e., transfer of title to King County has already occurred). Most of these lands are classified by DNRP as "ecological lands." DNRP has a strong track record of managing ecological lands according to guidance set forth in the *Ecological Lands Handbook* (King County, 2003). The handbook states, "Ecological Lands will be managed for their ecological value, where *ecological value* is defined as biological diversity and ecosystem integrity. Ecological Lands should be managed in a way that both assures the greatest protection of ecological processes and native species on these lands, and assures the highest possible contribution of these lands to ecological protection at larger scales. In other words, the lands should be managed for their sustainability."
- Many ecological lands have published *Site Management Guidelines*, which "identify the resources and values on the sites and recommend actions to conserve [and] restore…the resources." (*Programmatic Plan for Management of King County-owned Ecological Lands*. King County, 2004).

King County Department of Development and Environmental Services Roles:

- Enforce the terms of restrictive covenants by periodically monitoring sites for compliance and requiring DNRP to take corrective measures as necessary to ensure the site continues to provide ecological functions according to the mitigation and long term management plans for the site.
- Issue and monitor terms of an open permit

These two duties will also be paid for from the long term management fund in the MRP fund (See Appendix G).

DDES Qualifications and Authority:

- The King County Department of Development and Environmental Services (DDES) is a local permitting and enforcement agency (KCC 2.16.055), with responsibility for enforcing the Critical Areas Ordinances (KCC 21A.24).
- DDES meets the test of being an "appropriate third party" as required by the federal rule given the department's authority to enforce actions of other King County departments established in KCC Title 23.
- DDES has a Critical Areas Review workgroup comprising ecologists, biologists and geologists who are responsible for reviewing permit applications, approving or denying permits based on site conditions, determining mitigation requirements and monitoring mitigation project effectiveness.
- DDES has a track record of issuing, monitoring and enforcing permits requiring protection of ecological functions at mitigation sites. There have been cases when such permits have been issued with a 50-year term.
- Mitigation projects implemented by DNRP will require permits (e.g., clearing and grading), and DDES will be the local permitting agency for these projects (KCC 21A.06.280 and 21A.02.090).
- Mitigation projects will occur almost exclusively in critical areas or critical area buffers, and will therefore be covered by CAO regulations. Aside from permitted project actions, King County departments are required to adhere to CAO codes, and DDES is the default enforcement agency for enforcing CAO (KCC 23.02 and KCC 21A.06.280).

Restrictive Covenants

- DNRP will record restrictive covenants on title for all parcels – or portions of parcels – used as mitigation receiving sites. These covenants will include:
    - A statement of intent for the site to remain ecologically intact such that site continues to provide ecological functions provided by the mitigation project;
    - A requirement to notify the Corps, or Ecology and/or other designated state or federal agency at least 60 days prior to transfer of title;
    - Clear listing of compatible uses
    - Clear listing of incompatible uses
    - Other restrictions as required/approved by IRT

Covenant language will vary from site to site depending on site-specific conditions. A template for covenant language is included as Exhibit 15.

DDES Permits

- DDES will provide permits to DNRP (the mitigation project proponent) for individual mitigation projects and will also provide long-term ―general inspection" permits for monitoring mitigation sites with adherence to terms of restrictive covenant on title. DDES will have enforcement authority during the establishment phase through the project-based permit. Authority for monitoring covenants during the long-term management phase will be provided by general inspection permits which will remain active until the Sponsor and IRT agree to close a site pursuant to closure provisions in the Basic Agreement Article IV.V.
- Permit terms for general inspection permits can stipulate that the permit shall remain open as long as the site is owned by King County.
- When DDES permits related to mitigation project activities are ―closed" upon completion of a project, DDES will transition into a long-term enforcement role to ensure DNRP continues to abide by terms of restrictive covenants protecting mitigation sites.
- DNRP will include in each Mitigation Plan a long-term management (LTM) plan. DNRP will submit this section of the plan to DDES.
- DNRP will retain the role of long-term steward to ensure the site continues to provide ecological functions. DNRP staff will also be paid from the Long Term Management account (See Appendix F).
- DDES staff will monitor mitigation sites to ensure DNRP long-term stewardship is in compliance with the terms of the restrictive covenants. DDES staff will be paid from the Long Term Management account (See Appendix F). These monitoring duties will be efficient for DDES to perform given that DDES monitors permit compliance and code compliance throughout King County as a regular course of business.
- DDES will monitor mitigation sites at regular intervals beginning at the end of the performance period identified in the Mitigation Plan (i.e., when all credits from a mitigation project are released, and the site transfers into long-term management phase). DDES will prepare and submit monitoring reports to KCDNRP and the Corps and Ecology for each mitigation site.
- If DDES compliance monitoring identifies conditions at a mitigation site which are not allowed under the terms of the restrictive covenant, DDES will report these infractions to KCDNRP, the Corps and Ecology, and KCDNRP will use funds from the Long-term Management Account to return the site to compliance. If funds available are insufficient, the Corps and Ecology may direct use of financial assurances or other program accounts pursuant to Article III.E of the Basic Agreement and Appendix S, Section 6.0.

Private Lands

In some cases a private landowner may offer use of their property as a mitigation receiving site, in which case the landowner must grant a conservation easement to King County to ensure the site is protected in perpetuity. In these instances, the conservation easement will be the real estate instrument offering permanent site protection. The landowner will be the grantor of the easement, and King County will be the grantee. The terms of the easement shall indicate that DDES is responsible for monitoring and enforcing the terms of the easement. (Funds from the long-term management fund (See Appendix F) will be paid to DDES to perform this monitoring). In cases where a landowner has granted King County a conservation easement and subsequently intentionally or unintentionally fails to abide by the terms of the easement resulting in compromised functions of the applied mitigation, DDES may take any or all of the following actions:

- require the landowner to pay for restoration and/or enhancement necessary to return the site to conditions that meet the original mitigation project performance requirements and the terms of the conservation easement,
- file a civil suit against the landowner for failure to meet the terms of the conservation easement.

Conservation easements should be held by King County, as the King County Department of Natural Resources and Parks (KCDNRP) is responsible for long term management, and DDES is responsible for monitoring and enforcement on the site. Terms of conservation easements will be substantially similar to the template for restrictive covenants included as Exhibit 15 with regard to compatible and incompatible uses, though specific terms of these covenants or conservation easements will vary from site to site. All covenants and/or conservation easements will undergo review and approval by the IRT prior to officially recording the easement.

The site protection mechanisms set forth in this Appendix are guidelines. Depending on specific site conditions and land ownership, the IRT and King County may negotiate alternative site protection measures so long as the alternate measures are consistent with the federal rule and reviewed and approved by the Corps and Ecology following consultation with the IRT.

APPENDIX Q: IMPLEMENTATION OF APPROVED PLANS

Once the IRT has approved a proposed Mitigation Plan and credit release schedule, the assigned implementing group will initiate implementation of the mitigation project (see Appendix K). In some instances, project work may be bid to private contractors, in which case the bidding process would occur in accordance with King County contracting rules and the design team will oversee contract development and perform construction management and oversight. The construction process will include routine inspections, special inspections, pre-construction site review meetings, post-construction meetings and compliance reporting as necessary.

According to RCW 36.32.235, municipalities are required to ―contract on a competitive basis for all public works after bids have been submitted to the county upon specifications thereof.‖ When mitigation is being required for a ―public work‖ project as defined in RCW 39.04.010 with a construction budget greater than $90,000 for two or more crafts, and $45,000 for a single craft, King County will be required to put advertise the contract, and to accept bids from private contractors to perform the construction of the mitigation project.

Regardless of what entity performs the construction of the project, construction will follow construction plans contained in the IRT-approved Mitigation Plans, as well as any modifications as required through adaptive management plans (see Appendix O).

APPENDIX R: FINANCIAL ASSURANCES

The federal rule requires in-lieu fee program sponsors (e.g., King County) to provide financial assurances "sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with its performance standards." [33 CFR 332.4(c)(13)]

When an applicant buys mitigation credits from the MRP to meet a mitigation need for permitted project, full responsibility for fulfilling the mitigation obligation is transferred from the applicant to King County. King County recognizes and fully accepts responsibility for meeting these mitigation obligations. To ensure adequate funding to meet mitigation obligations associated with any given permitted impact, there are several safeguards "built in" to the program to ensure King County has adequate funds, including:

- Credit prices are based on actual project costs and adhere to full-cost accounting requirements in the federal rule (33 CFR 332.8(o)(5).
- A percentage of each credit fee will be shifted to a contingency fund for the service area in which the impact project occurs (see Appendix F, Figure 2 for schematic diagram).
- Inclusion of a land fee in addition to credit fees.
- An interest-accruing, stand-alone mitigation fund which is protected by code from being used for purposes other than mitigation (KCC 21A.24.390 et seq.).
- Allocation of interest from the MRP fund to the contingency accounts and long term management accounts for each Service Area (Appendix F).

Given these assurances incorporated into design of the program, the Corps and Ecology do not require additional financial assurances at this time. However, each Mitigation Plan for mitigation projects will address financial assurances (such as those program elements listed above), and the Corps and Ecology retain the right to reassess the need for additional financial assurances.

1.0 Direction of Funds/ Use of Financial Assurances

If the Corps and Ecology choose to direct program account funds in cases of site default, service area default, or program default, options available to the Corps and Ecology shall include, but not be limited to:

a. Directing King County to spend funds at an alternative site or sites to secure necessary credits;
b. Directing King County to provide funds to a third party to bring a mitigation project into compliance; or
c. Directing King County to secure credits from another third party mitigation provider.

The District Engineer shall direct the use of funds through the issuance of a signed Corrective Action Directive Letter to the Sponsor. The letter will specify what financial and responsive action the Sponsor must take. The letter will also specify a timeframe in which the Sponsor must

complete the actions. The Sponsor's noncompliance with the letter may result in program closure and legal action.

If the Corps and Ecology direct King County to spend funds from the Program Account, King County shall spend funds in the following order until sufficient funds are provided:

1. Funds remaining in any Mitigation Project(s) Accounts associated with mitigation projects found to be in default. (In cases where a mitigation site fails early in its establishment phase, project funds may remain. See Appendix F for description of Mitigation Project Accounts).
2. Financial Assurances (see Basic Agreement Article III.F.). Utilization of Financial Assurances shall be appropriate to the phase of the project. For example, for projects in the establishment phase, the Contingency Account funds should be accessed first, and for projects in the Long-term Management phase, funds from the Long Term Management Account should be accessed first (see Appendix F for descriptions of Accounts).
3. Service Area Land Fees. Use of land fees used to compensate for service area default shall be limited to those land fees associated with Impact Project Mitigation Fees used to implement the Mitigation Project(s) found to be in default and use of Land Fees shall be in accordance with Basic Agreement Article III.D. (See Basic Agreement Article III.C.1. and Appendix F, Section 7.3).

Should these sources of money be insufficient to secure the required number of credits, the MRP is committed seeking funding through the King County appropriation process in order to meet permit requirements that have been assumed by the program.

If the Sponsor has outstanding mitigation obligations at the time of default or closure, which it is unable to fulfill, the Corps and Ecology, in consultation other members of the IRT, may direct the Sponsor to use remaining funds to secure credits from a third party source of mitigation (see Basic Agreement Article III.E.). Examples of sources of third party include another in-lieu fee program, mitigation bank, or another entity such as a governmental or non-profit natural resource management entity willing to undertake the mitigation activities.

Remaining funds should be used, to the maximum extent practicable, to provide compensation for the amount and type of aquatic resource for which the fees were collected. The Corps itself cannot accept directly, retain, or draw upon such funds.

APPENDIX S: NONCOMPLIANCE, FORCE MAJEURE, AND PROGRAM CLOSURE

This section identifies the ways in which the MRP may be in noncompliance under the terms of the program instrument and the corrective measures available to King County, the IRT, and the Corps and/or Ecology if the MRP is found to be in noncompliance.

Noncompliance may occur at individual sites, within a single service area or at the program scale. Corrective measures available to the Corps and Ecology should be commensurate with the category of noncompliance and the scale at which the noncompliance occurs. Such measures will ensure that mitigation fees collected from project applicants ultimately result in sufficient compensatory mitigation to offset the original impacts. Outlined below are the categories of noncompliance, the characteristics of each category of noncompliance, and the corrective measures that are available for each category of noncompliance.

This section also addresses failures or underperformance at sites arising out of force majeure events or other conditions beyond King County's reasonable control.

Finally, this section contains program closure provisions.

1.0 Site Noncompliance

Site noncompliance may occur if the MRP does not adhere to the terms of an IRT-approved Mitigation Plan developed for a mitigation site (see Appendix K, Section 2.0). For example a site may be found to be in noncompliance if King County fails to implement a project element called for in the Mitigation Plan, or if establishment phase monitoring (see Appendix N) reveals that a project is failing to meet performance standards outlined in the Mitigation Plan. There are several potential phases of site noncompliance, each with associated corrective measures available to the MRP and/or the Corps and Ecology in consultation with the IRT. The potential phases of site noncompliance include (1) site performance failure, (2) site delinquency, and (3) site default.

Site noncompliance may apply to sites that are still in the establishment phase (i.e., before all credits from a mitigation site have been released) and to sites that have reached the end of their establishment phase (i.e., sites at which all credits have been released).

1.1 Site Performance Failure

Site performance failure may occur if, for any reason, a mitigation project fails to comply with terms of an approved Mitigation Plan (see Appendix K, Section 2.0), including failure to meet performance standards after a project is constructed. If establishment phase site monitoring reveals a site performance failure, the MRP and the IRT will first attempt to address the failure through adaptive management (see Appendix O). If adaptive management efforts are successful, no further responses to site performance failure will be necessary.

1.2 Site Delinquency

If the adaptive management measures are not undertaken by King County, or if King County fails to adequately implement adaptive management measures, the Corps and Ecology may notify the

MRP of site delinquency by way of a letter sent to the MRP Manager. This letter will identify the areas of site delinquency and request that King County propose corrective measures or a process for determining appropriate corrective measures. The letter shall provide King County with at least 60 days from the date of receipt of the letter to recommend corrective measures to the IRT.

As soon as practicable after receipt of King County's proposal for corrective measures, the IRT shall advise the Corps and Ecology on whether or not to authorize King County to implement the proposed corrective measures. By way of a second letter to the MRP Manager, the Corps and Ecology shall authorize implementation of the proposed corrective measures or request revisions; the second letter shall include a timeline for implementation or submittal of revisions, as well as provisions for subsequent review and approval of corrective measures, if necessary.

If corrective measures are implemented successfully, no further responses to site delinquency will be necessary.

1.3 Site Default

The Corps and/or Ecology may determine the MRP to be in site default if (1) corrective measures undertaken by King County after notification of site delinquency are unsuccessful, or (2) if King County fails to comply with the terms of the determination and/or implementation of corrective actions specified in the site delinquency letter(s). King County is to be notified of site default by way of a letter from the Corps and/or Ecology. In cases of site default, actions available to the Corps and/or Ecology shall include but are not limited to:

a. Decreasing the amount of available credits generated by a site;
b. Directing King County to utilize financial assurances to correct identified deficiencies (i.e., access contingency funds) (see Basic Agreement Article III.E. and Appendix R);
c. Directing King County to use the in-lieu fee program account funds to secure necessary mitigation credits (see Basic Agreement Article III.D. and Section 4.0, below); or
d. Referring the noncompliance with the terms of this instrument to the Department of Justice.

(Compensatory Mitigation Rule (2008) Preamble p. 19638 and 33 CFR §§ 332.6(c)(2), 332.8(i)(2), 332.8(o)(10).

2.0 Service Area Noncompliance

If King County fails to abide by the terms of this instrument in ways that fundamentally prevent the overall successful operation of the program in a particular service area, the MRP may be found to be in service area noncompliance. Service area noncompliance may have two phases: service area delinquency and service area default.

The MRP may be found to be in service area noncompliance if any of the following occur:

a. Conditions at more than one site deteriorate to an extent where the sites are no longer providing ecological functions according to long-term projections in the sites' Mitigation

Plans. Service Area noncompliance provisions shall apply to sites that are in their Long-Term Management phase; sites that fail during their establishment phase shall be subject to site noncompliance provisions above (Section 1.0). Reasons for deterioration at multiple sites may include, but are not limited to King County's failure to properly manage the sites, or other acts or omissions of King County with regard to obligations contained in this instrument or approved Mitigation Plans applicable to the service area that do not qualify under the *force majeure* provisions (see Section 4.0, below);

b. The MRP is improperly accounting for and reporting debits and credits in a service area;
c. The MRP is improperly accounting for and reporting fees collected and expenditures within a service area; or
d. The MRP has improperly managed fees in a service area resulting in insufficient funds to pay for long-term management activities as required by the IRT-approved Mitigation Plan.

2.1 Service Area Delinquency

Should the IRT find the MRP to be in service area noncompliance, the Corps and Ecology shall notify King County of such noncompliance by way of a letter that informs the County of the service area delinquency. The letter will identify the reasons for service area delinquency and request that King County propose corrective measures or a process for determining appropriate corrective measures. The letter shall provide King County with at least 60 days from the date of receipt of the letter to recommend corrective measures to the IRT.

As soon as practicable after receipt of King County's proposal for corrective measures to correct causes of service area delinquency, the IRT shall advise the Corps and Ecology whether or not to authorize King County to implement the proposed corrective measures. By way of a second letter to King County, the Corps and Ecology shall authorize implementation of the proposed corrective measures or request revisions; the second letter shall include a timeline for implementation or submittal of revisions, as well as provisions for subsequent review and approval of corrective measures, if necessary.

If corrective measures are implemented successfully, no further responses to service area delinquency will be necessary.

2.2 Service Area Default

The Corps and/or Ecology may determine the MRP to be in service area default if (1) corrective measures undertaken by King County after receipt of notification of service area delinquency are unsuccessful, or (2) if King County fails to begin implementation of corrective actions within the timeline specified in the service area delinquency letter.

In cases of service area default, actions available to the Corps and/or Ecology shall include but not be limited to:

a. Suspending credit sales in the service area;
b. Decreasing available credits;

c. Directing King County to utilize financial assurances to correct identified deficiencies (i.e., access contingency funds) (see Basic Agreement Article III.E. and Appendix R);
d. Directing King County to use the in-lieu fee program account funds to secure necessary mitigation credits (see Basic Agreement Article III.D. and Section 4.0, below); or
e. Refer the noncompliance with the terms of this instrument to the Department of Justice.

(Compensatory Mitigation Rule (2008) Preamble p. 19638 and 33 CFR §§ 332.6(c)(2), 332.8(i)(2), 332.8(o)(10). 332.8(n)(5). (See Basic Agreement Article IV.R. and Appendix F).

3.0 Program Noncompliance

Program noncompliance may result from administrative failures relating to account management, failure to monitor and report, etc. Specifically, program noncompliance may result from:

a. Failure to establish and maintain an annual ledger report and individual ledgers for each project in accordance with the provisions in Appendix F, Section 6.0: Fee Ledger, and Appendix G, Sections2.0 and 3.0: Credit/Debit Ledgers and 33 CFR 332.8(q));
b. Failure to report approved credit transactions;
c. Failure to submit monitoring reports in a timely manner;
d. Failure to properly track and manage funds, maintain credit ledgers or provide timely reports; or
e. Failure to otherwise comply with the terms of this instrument.

Should the IRT determine the program to be in noncompliance, there are potentially two phases of such noncompliance: (1) program delinquency and (2) program default.

3.1 Program Delinquency

The MRP can be found delinquent in cases where King County fails to comply with the terms of this instrument in ways both that do not qualify as site noncompliance or service area noncompliance (see Sections 1.0 and 2.0 above) and that fundamentally prevent the overall successful operation of the program. Notification of program delinquency shall be by way of letter from the Corps and/or Ecology to King County identifying the areas of delinquency. The letter will request that King County propose corrective measures or a process for determining appropriate corrective measures. The letter shall provide King County with at least 60 days from the date of receipt of the letter to recommend corrective measures to the IRT.

As soon as practicable after receipt of King County‘s proposal for corrective measures to address program delinquency, the IRT shall advise the Corps and Ecology on whether or not to authorize King County to implement the proposed corrective measures. By way of a second letter to King County, the Corps and Ecology shall authorize implementation of the proposed corrective measures or request revisions; the second letter shall include a timeline for implementation or submittal of revisions, as well as provisions for subsequent review and approval of corrective measures, if necessary.

If corrective measures are implemented successfully, no further responses to program delinquency will be necessary.

3.2 Program Default

If issues leading to program delinquency remain unresolved by the deadline given in the program delinquency letter, the Corps and/or Ecology may determine the MRP to be in program default.

In case of MRP program default, remedies available to the Corps and/or Ecology include:

a. Suspending credit sales in one or more service areas;
b. Decreasing available credits in one or more service areas;
c. Directing King County to utilize Financial Assurances to correct identified deficiencies (i.e., access contingency funds. See Basic Agreement Article III.E. and Appendix R);
d. Directing King County to use the in-lieu fee program account funds to secure necessary mitigation credits (see Basic Agreement Article III.D. and Section 4.0, below);
e. Terminating the program instrument (see Basic Agreement Article IV.O. and section 6.0), or
f. Referring the non-compliance with the terms of this instrument to the Department of Justice.

(Compensatory Mitigation Rule (2008) Preamble p. 19638 and 33 CFR §§ 332.6(c)(2), 332.8(i)(2), 332.8(o)(10).

4.0 Force Majeure

Any delay or failure of King County to comply with the terms of this instrument shall not constitute a noncompliance if and to the extent that such delay or failure is primarily caused by any force majeure or other conditions beyond King County‘s reasonable control and the failure significantly adversely affects King County‘s ability to perform its obligations under this instrument. Additional details about force majeure events are included in Article IV.P. of the Basic Agreement portion of this instrument.

5.0 Closure Provisions

Closure means termination of all MRP operations. If the MRP is closed, the agreed upon terms reflected by certification of this instrument will be terminated, and the MRP will no longer have the right to sell mitigation credits under the terms of this instrument. In the event of closure, the program must either fulfill remaining mitigation obligations, or transfer all remaining mitigation obligations and site management responsibilities to an appropriate third party. This third party must be approved by the IRT.

Closure provisions are described in Article IV.V through IV.Z. of the Basic Agreement.

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APPENDIX T: MRP INTERACTION WITH OTHER JURISDICTIONS

At times it may be preferable to work in partnership with another jurisdiction to implement the best mitigation; the ability to implement mitigation according to a watershed approach, irrespective of political boundaries, is likely to be a key component of the MRP in the future. However, due to the complexities of coordinating policies, code authority, and ecological management goals among multiple jurisdictions, establishing procedures and processes for agreements with other local municipalities will occur after the MRP is certified by the IRT. Following initial program certification, the MRP will propose a set of guidelines and standards for working across jurisdictional lines, and will amend this instrument accordingly in consultation with the IRT. Specific arrangements for operation of the MRP across jurisdictional lines will need to be enumerated in Intergovernmental Agreements (IGAs) between King County and other jurisdictions. These IGAs will be negotiated by King County and the other municipality on a case-by-case basis, and made available to the IRT for review, comment and approval (if required). Prior to initiating the process of developing an IGA, King County and the local jurisdiction will estimate the time and cost associated with developing the IGA. The funding to cover costs associated with developing the IGA will be determined on a case-by-case basis. King County must obtain approval from the IRT prior to spending any funds from the MRP program account for the development of an IGA.

Furthermore, it may be necessary to adjust the base credit price to cover costs for additional administrative duties that may result from working with another jurisdiction (e.g., the need to develop IGAs and meet the specific terms within the IGA).

There will be three basic scenarios for mitigation involving other jurisdictions:

1. The impacts occur in unincorporated King County and are mitigated in another jurisdiction;
2. The impacts occur in another jurisdiction (incorporated city or another county), and the impacts are mitigated in unincorporated KC; and
3. A jurisdiction chooses to use the KC MRP in cases where the impact and mitigation site are both within another jurisdiction.

The choice (or need) to mitigate an impact across jurisdictional lines will be approached on a case-by-case basis to determine feasibility and suitability, and all such agreements between King County and the other jurisdiction will be subject to approval by the IRT and other regulating agencies.

Basic considerations and policy guidance are outlined below for each scenario.

Impacts in King County, mitigation in another jurisdiction

Process for mitigating an impact within King County in another jurisdiction:

1. Review available sites enrolled on KC Roster, as well candidate receiving sites in unincorporated King County;
2. If a suitable option exists in King County, pursue that option;
3. If sites within another jurisdiction appear to be preferable according to watershed needs and site selection criteria outlined in Appendix J, Section 1.3 of this instrument, initiate discussions with the other jurisdiction and the IRT;
4. If the other jurisdiction is amenable to receiving a mitigation project, then the following steps (at minimum) should be taken :
    a. Review jurisdictional code, to ensure there are no limitations on receiving mitigation;
    b. Work with staff from the local municipality to identify potential sites meeting at least one (and preferably both) of the following criteria:
        i. Determination that the site is of ecological importance in a watershed context;
        ii. The site is in close proximity, provides similar functions as the impact site;
    c. Examine deed and land-use restrictions to ensure potential receiving site(s) can be used for mitigation purposes; and
    d. Identify options for permanent protection (conservation easement or similar legally-enforceable deed restriction).
5. If suitable sites are available, seek approval from DDES, the IRT and federal/state regulating agencies;
6. After receiving permission from the IRT to proceed, approach the project as with any other mitigation project.

Other considerations:

- Mitigation in other jurisdictions should be reserved for projects with enough money to make inter-jurisdictional negotiations worthwhile; however, large impacts with substantial mitigation fees shall be mitigated in King County.
- There should be a 1-year time limit to identify and approve mitigation projects within a local municipality; this is necessary to ensure there is enough time remaining to fulfill mitigation within three years if the mitigation in the local municipality falls through.
- An Inter-local Agreement, contract, Memorandum of Understanding, etc. will be necessary for each project (or for multiple impacts in a given time period).
- The impact(s) in other jurisdictions will need to be quantified using the King County mitigation assessment method.
- Details of project planning and implementation worked out on a case-by-case basis.

- The terms of the contract shall clearly state which party is responsible for meeting mitigation obligations (including maintenance and monitoring).

Impacts in another jurisdiction, mitigation in King County

- The other jurisdiction and/or the proponent for the project creating the impact should initiate the process with King County.
- Code of the jurisdiction where the impact occurs must allow off-site compensatory mitigation for environmental impacts, in-lieu-fee mitigation, and for mitigation to occur outside the jurisdiction.
- The impact should be quantified using the IRT-approved mitigation assessment method, or there must be adequate information about the impact to apply the method retroactively to determine mitigation needs.

Impacts and Mitigation within another jurisdiction

In these cases, the other jurisdictions would essentially be contracting with the MRP to offer an in-lieu-fee mitigation —service". King County will approach situations in which the MRP will become a mitigation service for another jurisdiction case-by-case. This arrangement may be developed on a case-by-case, or single project basis or could be an ongoing agreement according to an established contract or other agreement. Agreements for King County to handle all aspects of in-lieu-fee mitigation shall be limited to local governments within King County or other local, state or federal agencies with projects within King County, and not available to other county governments or local jurisdictions in other counties.

Other considerations:

- Any individual project or longstanding agreement shall be approved in writing by:
    - The other jurisdiction,
    - King County DDES, and
    - The IRT and other regulatory agencies with authority.
- Roles and responsibilities shall be clearly stated in the terms of the contract, and should be approved by regulating agencies.
- In this scenario, it is likely that the local municipality in question would be granted a seat on the IRT per the federal rule (33 CFR 332.8(b)).
- The terms of the governing Inter Local Agreement or contract shall clearly state which party is responsible for meeting mitigation obligations (including maintenance and monitoring).

- Site protection will be required – either a conservation easement or similarly protective covenants ensuring permanent protection of the proposed project in its mitigated condition.

Outreach and Education to other jurisdictions

Following program certification, the MRP Manager will present details of the program, and specifically the notion of cross-jurisdictional mitigation, to local governments and Tribes in King County.

Methods of disseminating information will include, but not be limited to:

- Direct communication with staff and officials at local governments, tribes and other county governments,
- A web page,
- News releases, and/or
- Presentations at WRIA Forums.

APPENDIX U: TRACKING PROGRAM PERFORMANCE

Tracking performance of mitigation projects is a requirement of the federal rule and as such, guidelines for performance standards and project-scale monitoring plans are outlined in detail in Appendices M and N, respectively.

Tracking performance of the Mitigation Reserves Program (in addition to tracking performance of mitigation sites) will also be important to inform adaptive management of the program in order to enable implementation of the best possible mitigation.

There are four simple questions related to tracking program performance:

(1) Are mitigation fees (i.e., credit fees) collected from applicants covering operating costs of the MRP?

(2) Is the program meeting regulatory requirements outlined in the federal rule in a timely and efficient manner? (e.g., is implementation of mitigation projects routinely occurring within three years from the time of impact?)

(3) How is the program affecting permit processing times relative to historical norms?

(4) In a given geographic area (e.g., service area or subbasin) is the overall ecological function enhanced or degraded considering the balance of allowed impacts and resulting mitigation projects implemented by the MRP?

To answer these questions, indicators for tracking program performance will relate to fiscal self-sustainability, regulatory "performance" of the program and to success of the program in maintaining or improving ecological conditions (i.e., aquatic resource functions and values) in service areas where impacts have been allowed and mitigation projects have been implemented to compensate for the impacts.

Specific types of data will include, but not be limited to:

- Cost to permit applicants per credit versus cost to the MRP to fulfill credits;
- Contingency funds in the MRP account versus contingency funds spent on projects;
- Predicted monitoring costs versus actual costs;
- Timeframe for implementation of mitigation projects (from time of actual impact);
- Number and type of regulatory infractions/corrective actions;
- Volume of Impacts (e.g., debits, acreage, plants, lineal feet, etc.);
- Volume of Mitigation (e.g., credits, acreage, plants, lineal feet, etc.);
- Predicted credits (e.g., from Mitigation Plans) versus actual credits determined at monitoring plan milestones;
- Percentage of in-kind mitigation (e.g., same HGM class) versus percentage of out-of-kind mitigation; and

- Location of mitigation projects (e.g., average distance from impact, percentage of mitigation occurring in same subbasin as impacts).

The MRP Manager will track these data through the course of the program and analyze and report results on a biennial basis in a *Mitigation Reserves Program Performance Report,* which will be submitted to the IRT. This report shall examine the overall effectiveness of the MRP and if necessary, suggest revisions to improve the program. However, King County and the IRT shall retain the right to make IRT-approved program revisions or amendments to the instrument at any time, and these changes need not coincide with an *MRP Performance Report.* This report will also be shared with DDES to enable a more comprehensive review of all mitigation activities (i.e., in-lieu fee mitigation through MRP *and* permittee-responsible mitigation).

APPENDIX V: PROGRAM AND SCIENTIFIC GUIDANCE

Program guidance

Policy guidance for the MRP regarding the enhancement, restoration protection and management of aquatic resources includes.

- Washington Department of Ecology (WSDOE), US Army Corps of Engineers Seattle District and Environmental Protection Agency Region 10. March 2006. Guidance on Wetland Mitigation in Washington State. Part 1. Agency Policies and Guidance. Report Pub. No. 06-06-011A.
- Washington State Water Pollution Control Act (Chapter 90.48 RCW)
- Washington State Hydraulic Code - Construction Projects in State Waters (Chapter 77.55 RCW)
- Washington State Shoreline Management Act (Chapter 90.58 RCW, Chapter 173-20 WAC); Washington State Aquatic Resources Mitigation Act (Chapter 90.74 RCW); Washington State Aquatic Lands (Chapters 79.105 - 79.140 RCW).
- State of Washington Wetlands Mitigation Banking Statute (Chapter 90.84 RCW)
- Washington State's Draft Rule on Wetland Mitigation Banking (Chapter 173-700 WAC)
- Washington State Salmon Recovery Act (Chapter 77.85 RCW)
- Washington State Environmental Policy Act (Chapter 43.21C RCW and Chapter 197-11 WAC)
- Growth Management Act (Chapter 36.70A RCW) and Critical Areas Regulations Best Available Sciences Compliance (Chapter 365-195 WAC)
- Washington State Forest Practices Act (Chapter 76.09 RCW)
- Washington State Alternative Mitigation Policy, developed by Washington State Department of Ecology
- Clean Water Act (33 USC 1251 et seq.)
- Regulatory Program of the U.S. Army Corps of Engineers (33 CFR 320-332)
- U. S. Army Corps of Engineers Regulatory Guidance Letter No. 02-2
- Guidelines for the Specification of Disposal Sites for Dredged and Fill Material (40 CFR 230)
- Memorandum of Agreement Between the Environmental protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines (February 6, 1990)
- Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks (60 FR 58605-58614, November 28, 1995)

- Council on Environmental Quality Procedures for Implementing the National Environmental Policy Act (40 CFR 1500-1508)
- Executive Order No. 11990 (Protection of Wetlands)
- Executive Order No. 11988 (Floodplains Management)
- Endangered Species Act (16 USC 1531 et seq.)
- Fish and Wildlife Coordination Act (16 USC 661 et seq.)
- Fish and Wildlife Service Mitigation Policy (46 FR 7644-7663, 1981)
- Magnuson-Stevens Act (16 USC 1801 et seq.)
- National Environmental Policy Act (42 USC 4321 et seq.)
- National Historic Preservation Act (16 USC 470)

Scientific and Technical Basis

In general, the scientific, technical, procedural and policy underpinnings of the MRP are based on successful mitigation banking models and best practices for wetland protection. In addition to the collective experience of its highly qualified staff, many resources were used in the development of the MRP.

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APPENDIX W: MITIGATION PLANS

As mitigation plans are developed under this program, each plan will be appended to this instrument in this appendix.