

ESSB 6061 Wetland Pilot Project

**MITIGATION TOOLS FOR
SPECIAL CIRCUMSTANCES:**

**PRESERVATION OF HIGH QUALITY
WETLANDS**

PRESERVATION SUB-COMMITTEE

**WETLAND STRATEGIC PLAN IMPLEMENTATION PROJECT
(WSPI)**

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THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

WETLAND STRATEGIC PLAN IMPLEMENTATION PROJECT

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**MITIGATION TOOLS FOR SPECIAL CIRCUMSTANCES:
PRESERVATION OF HIGH QUALITY WETLANDS**

EXECUTIVE SUMMARY AND RECOMMENDATIONS

Compensatory wetland mitigation is typically required by federal, state, or local regulations to offset wetland impacts caused by development projects. The Wetland Strategic Plan Implementation (WSPI) Preservation Sub-committee believes that, in certain situations, it can be appropriate to preserve an existing, high quality, fully functioning wetland of regional importance as mitigation for project wetland losses, especially when a suitable creation, restoration or enhancement site is not available within the same watershed, and the wetland to be preserved is under imminent threat of destruction. The decision to use preservation as compensatory mitigation should be made on a case-by case basis, after first seeking to avoid and minimize wetland impacts and evaluation of other mitigation options, such as creation or restoration.

Preservation projects in other states have been shown to be cost effective because site construction, monitoring, and maintenance needs are greatly reduced when preserving an existing wetland. Maximum environmental benefits have been achieved by the ability to purchase a larger site for preservation than would normally be possible for a typical constructed mitigation site. Also, with preservation, there is no temporal loss of wetland function while waiting for a constructed site to mature.

Criteria for identifying high quality wetlands that may be candidates for preservation require that the wetland be under imminent threat of being developed or degraded and have as many of the following attributes as possible (listed in random order):

- Category I or II wetland rating (Cat III only in exceptional cases)¹
- High function
- Rare wetland type (e.g. bogs, estuaries)
- Habitat for threatened or endangered species
- Wetland type that is rare in the area
- Located in floodway
- Provides biological and/or hydrological connectivity
- High regional or watershed importance (e.g. listed as priority site in watershed plan)
- High species diversity (plants and/or animals)
- Large size

There are two ways preservation could be used for mitigation. One way is to combine a traditional wetland mitigation practice (creation or restoration) with wetland preservation. The

¹ based on Ecology's Washington State Wetlands Rating System.
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other way is to use preservation alone as the sole compensatory mitigation measure. In the past, preservation has been allowed only when combined with a minimum 1:1 wetland creation or restoration to prevent net loss of wetlands, and a preservation ratio of 10:1. The Preservation Subcommittee recommends new ratios ranging from 5:1 to 2:1 for preservation combined with 1:1 creation or restoration, or 2:1 enhancement (see Table 1 on page 7 of the report for more details). They also recommend case by case flexibility in determining the preservation criteria and ratio for any given project.

There was much discussion within the subcommittee as to if, or when, preservation alone could be an acceptable mitigation option. A primary concern was the apparent net loss of wetland acreage and function that would occur if the impacted wetland was not somehow replaced. However, the group acknowledged that there may be times when preservation of an extremely high quality wetland makes the most ecological sense, even if such circumstances occur only rarely. In order to safeguard stand alone preservation from abuse, certain limitations and conditions were proposed. One limiting factor is the high mitigation ratios proposed for stand alone preservation: 20:1 for preserving Category I wetlands and 30:1 for preserving Category II (see Table 1 on page 7 of the report for more details). The rationale behind these ratios is to discourage the use of stand alone preservation on a casual or routine basis, and also to ensure that there is a substantial quantity of wetland preserved to offset permanent wetland losses due to impacts. Again, flexibility in applying these ratios is intended.

The use of any proposed preservation site would be subject to approval by the permitting agency or agencies having jurisdiction.

To efficiently and effectively locate potential preservation sites within a given watershed, a Geographic Information System (GIS) database should be developed showing the locations of high quality wetlands. The database should include pertinent wetland information, and could be used by all types of organizations for planning and implementation of wetland preservation programs and required compensatory mitigation.

RECOMMENDATIONS

1. This preservation guidance document should be used as a springboard for the development of preservation as mitigation policy.
2. WSDOT and other agencies and organizations should promote the use of wetland preservation as mitigation where and when appropriate, following the criteria set forth in this document.
3. WSDOT and other non-regulatory agencies and organizations should continue pursuit of an agreement with permitting agencies for using wetland preservation as compensatory mitigation. Such an agreement could be in the form of a Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA) and should include agreed-upon criteria for the use of preservation.

MITIGATION TOOLS FOR SPECIAL CIRCUMSTANCES:

PRESERVATION OF HIGH QUALITY WETLANDS

INTRODUCTION

When wetlands are impacted by development, federal, state, and local regulations frequently require mitigation, or compensation, for those impacts. The Washington State Department of Transportation (WSDOT) mitigates for all wetland impacts that result from transportation projects in compliance with the regulations and in order to adhere to the Federal Highway Administration's (FHWA) endorsement of the federal "No Net Loss" wetlands policy.

Compensatory mitigation typically consists of creating, restoring, or enhancing wetlands. However, there are times when other mitigation strategies may be appropriate. On a case by case basis, wetland mitigation may include fish habitat or stream corridor improvements, or projects to protect or improve water quality. The Wetland Strategic Plan Implementation (WSPI) Preservation Sub-committee² believes that, in certain situations, it can be appropriate to preserve an existing, high quality, fully functioning wetland of regional importance as mitigation for project wetland losses, especially when a suitable creation, restoration or enhancement site is not available within the same watershed, and the wetland to be preserved is under imminent threat of destruction. Generally, the impacted wetland should be of lower quality than the preservation wetland.

Preservation should be used only when it is the best mitigation option, as determined on a case by case basis. It is anticipated that preservation will be the best option only rarely, in special circumstances. Preservation is not intended to circumvent the standard mitigation sequence of avoiding and minimizing impacts first, followed by compensating for unavoidable losses. In each situation, the use of preservation would be considered only after creation, restoration, and enhancement opportunities have been evaluated. When used, preservation would be subject to informal monitoring, long term protection, and stewardship requirements as are other types of wetland mitigation.

The purpose of this document is to discuss the issues that surround the concept of wetland preservation as mitigation, to propose guidance and criteria for using preservation as mitigation, and to address questions and concerns associated with preservation. This guidance is intended to apply only to projects whose permits require wetland compensatory mitigation. The WSPI Preservation Sub-committee recommends that this document be used to provide guidance and guidelines only, rather than a strict

² Comprised of WSDOT and non-WSDOT members. The committee gave consideration to wetland preservation as it applies to WSDOT projects and policies. This document was also reviewed by the WSPI Technical Committee. Statements reflect majority opinions except where otherwise noted. Alternate opinions are presented in Appendix A.

policy or set of inflexible requirements. This document is not intended to serve as a policy statement. In the future, a Memorandum of Agreement (MOA) developed between the regulatory agencies would be desirable for elevating the importance of using preservation as compensatory mitigation.

THE WATERSHED PERSPECTIVE

There is growing awareness that watersheds function as ecological units. Actions in one part of a watershed can influence the remaining parts, affecting its ability to function as a self-sustaining ecosystem. Preservation of a high quality wetland in the same watershed where a wetland loss has occurred could prove to be more beneficial to the watershed's overall quality and functioning as a unit than replacement of the wetland exactly as it was. This is especially true when the wetland impacts are small and in low-quality systems.

Many state, federal, and local governmental agencies currently allow preservation in some form or another, but there is often a lack of flexibility to consider case by case situations. Current agency policies regarding preservation are provided in Appendix B. Regulators are encouraged to look at the watershed ecosystem as a whole when considering the use of preservation as a mitigation tool. This may require changes in their policies and regulations in order to be more accommodating of unique circumstances. This document proposes flexible guidelines for consideration in situations where preserving a high quality wetland makes more sense for the overall ecosystem than creating a man-made wetland. Implementation of the preservation concept will require a cooperative effort by all affected agencies.

PRECEDENT

In this country, there are several states that currently use preservation as a sole compensatory measure for unavoidable wetland impacts. Currently, 76 percent of state Departments of Transportation use preservation as at least a partial component of compensatory mitigation and 38 percent use preservation as a stand alone element (WSDOT 1998) (Appendix C). Mitigation banks have been established in Texas and New Jersey that consist of large tracts of preserved wetlands. South Carolina has published guidelines for siting preservation mitigation banks.

The Texas Department of Transportation (TxDOT), in partnership with the Texas Parks and Wildlife Department (TPWD), preserved 4,937 acres of pristine bottomland hardwood forest under imminent threat of destruction by logging, known as the Anderson tract. This site had been previously identified by TPWD as a high priority area in which to preserve rapidly disappearing wetland habitat. The success of the Anderson tract preservation prompted the formation of a second preservation-based mitigation bank to meet the compensatory mitigation needs of TxDOT regional divisions. These banks have preserved large tracts of rare and threatened bottomland hardwood forests that would have otherwise been lost to development.

In another example, the New Jersey Department of Transportation (NJDOT) is currently pursuing preservation as the sole compensatory mitigation for wetlands impacted by road projects. NJDOT and the New Jersey State regulatory agencies have reached consensus on the value of the preservation package and are in the process of documenting their support in a formalized letter of concurrence. Four hundred acres are proposed to be preserved, consisting of 50 percent forested wetlands and 50 percent developable forested uplands. Detrimental wetland impacts, anticipated as a result of proposed development in the upland areas, were averted in this case by the use of preservation as mitigation.

In South Carolina, the Mitigation Bank Review Team (MBRT) has developed working guidelines to ensure that proposed preservation sites meet their expectations. The guidelines center on association with Priority Management Areas, threat of loss or degradation, and benefits to natural resources and/or humans.

More details of these examples are provided in Appendix C. In Texas and New Jersey, the ability to use preservation as sole compensatory mitigation provided opportunities for state resource agencies to form partnerships that enabled them to maximize environmental benefits and tax dollar savings.

WHAT MAKES A "SPECIAL CIRCUMSTANCE" - WHEN IS PRESERVATION APPROPRIATE ?

The intent of this proposal is to promote the use of wetland preservation as mitigation under "special circumstances". Special circumstances would apply in situations when preserving an existing wetland is in the best interest of the state's natural resources, based on a regional watershed approach, and the wetland may not be adequately protected by existing regulations. The WSPI Subcommittee recommends that preservation be used only in cases where an analysis of the wetland functions to be lost, deficits in local or regional resources, and mitigation opportunities shows that preservation would provide greater environmental benefit than traditional mitigation options such as onsite wetland creation. It is recommended that high value wetlands with important local or regional function, which are also under imminent threat, be proposed for preservation as stand alone compensatory mitigation, and proposals for preservation be subject to case by case review.

Imminent Threat

The WSPI Preservation Subcommittee defined imminent threat as:

“Sites with the potential to experience a high rate of undesirable ecological change due to on- or off-site activities. (Potential includes permitted, planned or perceived action).”

For example, sites that may be under imminent threat could include:

- Wetlands within a city or county Urban Growth Area.
- A site that, due to its location, wetland type, or resource value (e.g. forested wetland) can be legally altered, resulting in loss of its value and/or function if not protected.
- A wetland where there is a substantial likelihood of impact by development, causing a detrimental change in its functions and values.

Criteria

Criteria for identifying high quality wetlands have been defined in numerous government, academic, and professional publications. Preservation sites must be under imminent threat of being developed or degraded and should be able to demonstrate high quality by having as many of the following attributes as possible (listed in random order):

- Category I or II wetland rating (Cat III only in exceptional cases)³
- High function
- Rare wetland type (e.g. bogs, estuaries)
- Habitat for threatened or endangered species
- Wetland type that is rare in the area
- Located in floodway
- Provides biological and/or hydrological connectivity
- High regional or watershed importance (e.g. listed as priority site in watershed plan)
- High species diversity (plants and/or animals)
- Large size
- Entire wetland is included within the site

³ based on Ecology's Washington State Wetlands Rating System.

Buffers: Potential preservation sites should include buffer areas adequate to protect the wetland and its functions from encroachment and degradation. This may include interspersed upland habitat to maintain the effectiveness of one or more of the wetland's functions (e.g. wildlife habitat). When the site contains large, diverse buffers that provide exceptional wildlife habitat, a lower wetland preservation ratio will normally be acceptable, and the buffer may be included as part of the mitigation.

Size: In most cases, a wetland would be disqualified from consideration as a preservation site if the site, including buffers, is too small, is highly fragmented, or is dominated by non-native plants or animals (or non-natives are expected to spread and threaten the site's natural diversity). Exceptions to this may be wetlands of high local importance.

The mechanism of preservation is intended to protect mature, fully functioning, high quality wetlands that are likely to be adversely impacted without protection. It can take wetlands decades, or in the case of old-growth forested wetlands and bogs, centuries, to reach maturity and peak function. By contrast, man-made created wetlands take many years to equal the function of an established wetland. Further, there is often uncertainty with the outcome of man-created wetlands. Sometimes, the best ecological choice for compensatory mitigation is to preserve an existing wetland. This can only be determined on a case by case basis, and when the wetland to be preserved possesses the necessary attributes.

HOW PRESERVATION AS MITIGATION WOULD WORK

There are two ways preservation could be used for mitigation. One way is to combine a traditional wetland mitigation practice (creation or restoration) with wetland preservation. Using this strategy, the loss of wetland acreage is mitigated by the wetland creation (at a minimum ratio of 1:1), and preservation makes up the balance of the mitigation requirement. The other way is to use preservation alone as the sole compensatory mitigation for wetland impacts.

The current policies of many regulatory agencies do not allow mitigation credit for preservation alone. At present, WSDOT operates under the guidance of a Memorandum of Understanding (MOU) with the Washington State Department of Ecology (Ecology) that requires a minimum 1:1 replacement of lost wetland acreage, after which preservation may be allowed at a 5:1 (for Category I preservation) to 10:1 (for Category II preservation) ratio to provide additional compensatory mitigation credit. These ratios have made the use of preservation an unattractive option in the mitigation process. Ecology supports wetland preservation and is currently revising this MOU to allow for a more reasonable preservation ratio.

Preservation in Conjunction with Other Mitigation

The subcommittee agreed that preservation of high quality wetlands should be looked at as a more important compensatory mitigation option than it has been in the past, to be used along with creation, restoration, and enhancement. Historically, preservation has not been used because of the 10:1 replacement ratio, i.e. ten acres of an existing wetland would have to be preserved for every one acre of wetland impacted, and because of the requirement that preservation could only be used in conjunction with a minimum of 1:1 wetland creation/restoration or 2:1 enhancement. If the preservation ratio requirements were lowered when used with creation/restoration and enhancement, the use of preservation would increase and more high quality wetlands would be preserved. This would maintain the “no net loss” of acreage due to the creation or enhancement prerequisites, and provide incentive to enlarge an existing wetland system. Table 1 provides guidelines for using preservation with wetland creation measures. An example of using preservation with creation is found in Appendix D.

Preservation as Stand-Alone Mitigation

There was much discussion within the subcommittee as to if, or when, preservation alone could be an acceptable mitigation option. A primary concern was the apparent net loss of wetland acreage and function that would occur if the impacted wetland was not somehow replaced (this issue is discussed in more detail on page 10). However, it was acknowledged within the group that there may be times when preservation of an extremely high quality wetland makes the most ecological sense, even if such circumstances occur only rarely.

In order to safeguard stand alone preservation from abuse, certain limitations and conditions were proposed. One limiting factor is the high mitigation ratios proposed for stand alone preservation (shown in Table 1). The rationale behind these ratios is to discourage the use of stand alone preservation on a casual or routine basis, and also to ensure that there is a substantial quantity of wetland preserved to offset permanent wetland losses due to impacts. Another condition is that proposals to use preservation to satisfy a compensatory mitigation requirement would be subject to approval by the permitting agencies. This would include those projects requiring a Corps of Engineers individual permit and some projects under the nationwide permit program, as well as applicable shoreline or other local permits. Projects that have no permit requirement for mitigation would not need agency approval to preserve wetlands. Other reviewing agencies and stakeholders (non-regulatory) would follow the same process they use currently to voice support or objections to a specifically proposed preservation site. The regulatory approval requirement would prohibit preservation of inappropriate sites or under inappropriate circumstances. The project proponent would be required to justify the selection of the site, explaining how it is subject to imminent threat and meets the criteria, and demonstrate how the preservation would provide adequate compensation for the proposed wetland losses.

Table 1. Proposed Ratios for Wetland Preservation as Mitigation

Impacted Wetland ↓	Wetland to be Preserved			
	Preservation When Used With Wetland Creation		Preservation When Used Alone	
	Category I*	Category II**	Category I	Category II [⊕]
Category I	4:1	5:1	20:1	30:1
Category II	3:1	4:1	10:1	15:1
Category III	2:1	3:1	4:1	7:1
Category IV	2:1	2:1	2:1	4:1

<p>Wetland to be preserved in conjunction with 1:1 creation or restoration, or 2:1 enhancement</p> <p>-----</p> <p>The ratios above represent the total wetland area preserved in relation to the area of wetland impacts for cases where preservation is used in conjunction with creation, restoration, or enhancement. The minimum acreage determined by the ratios should normally be included in one site but may be split over more than one site when that results in the greatest environmental benefit.</p>	<p>The ratios above represent the total wetland area preserved in relation to the area of wetland impacts for cases where preservation alone is used to compensate for wetland impacts. The minimum acreage determined by the ratios should normally be included in one site but may be split over more than one site when that results in the greatest environmental benefit. Wetland buffers are not included in acreage ratios but adequate buffers must be included in all preservation sites.</p>
<p>*For Category I impacts, the following option is also available: Preservation of Category I or II wetland at a ratio of 1:1 may be used along with wetland creation or restoration at 2:1, or enhancement at 3:1.</p> <p>**Category III wetlands could be preserved in those exceptional cases where the net benefit is similar to preservation of a Category II wetland.</p>	<p>⊕ Category III wetlands could be preserved in those exceptional cases where the net benefit is similar to preservation of a Category II wetland.</p> <p>(For more information on the scientific rationale of establishing replacement ratios, refer to Ecology publication #92-8, <i>Wetlands Mitigation Replacement Ratios: Defining Equivalency</i>)</p>

Basic Conditions For Using Preservation

Whether using preservation as mitigation alone or in conjunction with wetland replacement, some basic conditions for use would apply. These include:

1. Following the standard mitigation sequence, requiring avoidance and minimization of impacts before compensatory mitigation is considered.
2. Obtaining permitting agency approval. Proposals to use preservation would be subject to approval by the regulatory agencies when there is a permit or regulatory review requirement.
3. Extent of wetland impacts. The use of preservation should be used for the mitigation of relatively small, unavoidable wetland impacts (5 acres or less).
4. Category IV wetlands should not be used as preservation mitigation, and Category III wetlands should only rarely be preserved as the sole compensatory measure.
5. Case by case flexibility. The proposed ratios and criteria are intended to be flexible and determined after case-by-case evaluation.
6. Only high quality sites or sites of high regional importance that meet the criteria listed on page 4 should be considered for preservation.

Preservation Ratios

Determination of the preservation ratios was a topic of major concern for some subcommittee members. As stated previously in this document, these proposed ratios are presented as guidelines and are intended to be subject to negotiation on a case by case basis. Table 1 shows the proposed compensatory ratios for preservation based on the Washington Department of Ecology Rating System, where Category I is the highest quality wetland and Category IV is the lowest. When developing the proposed ratios, the subcommittee determined that:

1. The ratios should be guidelines subject to exceptions.
2. The ratios should encourage and reinforce avoidance of impacts to Category I wetlands and, to a lesser extent, Category II. Category IV wetlands should not be used for preservation mitigation and Category III wetlands should only rarely be preserved as the sole compensatory measure.

The Request Process

To request the use of preservation as a stand alone mitigation measure from a permitting agency, the following process is recommended.

1. Provide the agencies with the following information:
 - a list of the functions lost due to the wetland impacts
 - information regarding the potential creation, restoration or enhancement sites within the watershed that have been reviewed and why they were rejected
 - the physical and biological features of the proposed preservation site, how it is important to the functioning of the overall watershed, a description of the imminent threat, and why it should be considered for preservation
2. Meet with the regulatory agencies at the site to discuss the proposal.
3. Request concurrence from the permitting agencies for the use of preservation as the sole compensatory measure.
4. Submit a permit application following normal procedures and requirements.

This concept will need to be tried in an actual situation in order to refine the requirements and process. The use of preservation as a stand alone compensatory mitigation measure should be field tested on a few selected projects to see how the process works. At the end of a pre-determined trial period, the process, guidelines and requirements should be reviewed and modified as necessary to make the process workable for all entities involved. The trial project should also include the development of a standardized form to be filled out that contains the relevant information about the impacted wetlands, the potential creation sites and the proposed preservation site. A similar process would be appropriate for proposing preservation combined with other mitigation options.

Finding Preservation Sites

Locating high quality wetland sites that could be candidates for preservation is a challenging task. Local governments may or may not have a wetland inventory, and if they do, it may not be complete or up to date. Watershed or basin plans may identify important wetlands in their reports, but the research needed to find this information is very time consuming.

To efficiently and effectively locate potential preservation sites within a given watershed, a Geographic Information System (GIS) database should be developed showing the locations of high quality wetlands. The list of potential sites could be developed through a coordinated effort by various federal, state, county and local agencies, non-profit

organizations, land trusts, local volunteer groups and private citizens. The database should include the wetland type, size, dominant plant species, and a brief description of why the wetland should be considered for preservation. The database could be used by all types of organizations listed above for planning and implementation of wetland preservation programs and required compensatory mitigation. The information could also be used to prioritize available sites to be preserved based on imminent threat, encroachment by development, importance to the watershed or landscape unit, or fish and wildlife habitat. An example of a map showing wetland locations is provided in Figure 1.

When a privately owned site is determined to be a good candidate for preservation, or more information about the site is needed, the land owner must be respectfully approached regarding access and potential purchase of the land. The intended use of the site should be explained, and any concerns the land owner may have should be fully addressed.

QUESTIONS AND ANSWERS ABOUT WETLAND PRESERVATION

Does Preservation Mean There Will be a Net Loss of Wetland Acreage or Functions?

The term “no net loss” refers to the replacement of acreage and/or function when a wetland is impacted, so that the overall quantity and quality of wetland resources remains constant. The major concern with using preservation as stand alone compensatory mitigation is the potential loss of wetland acreage and functions statewide. The consensus of the WSPI Preservation Subcommittee is that the use of stand alone preservation has merit in certain specific situations. Although the majority of the committee members share this concern about net loss, most felt that preservation of an important existing wetland that is or has the potential of being degraded by development is acceptable under certain specific situations. In those situations, the potential net loss of wetlands resulting from project impacts may be justifiable. In order for this concept to be implemented, the no net loss policies of some regulatory agencies may need to be made more flexible.

The U.S. Fish and Wildlife Service (USFWS) and Washington Department of Fish and Wildlife (WDFW) were not in favor of allowing wetland preservation as a sole form of compensatory mitigation, except in exceptional circumstances, because the impacted wetlands would not be replaced. Other committee members also shared this concern. The state Department of Ecology views no net loss as an overall wetlands policy goal to be achieved through a comprehensive program of regulation and incentive-based stewardship approaches. Although no one was opposed to preserving and protecting wetlands in general, to allow stand alone preservation of an existing wetland as compensation for permanent wetland losses does constitute a net loss of wetland

Figure 1 - Map of potential wetland preservation sites

resources, in the opinion of some. It was additionally recognized that current methods of compensatory mitigation, wetland regulations and policies, and unregulated development pressures also result in a net loss of wetlands. Net loss issues require that the circumstances under which stand alone preservation can be considered be strictly defined.

It should be recognized that, at the federal level, the “no net loss” policy is just that - a national policy, not a regulation. The Memorandum of Agreement between the U.S. Army Corps of Engineers and the Environmental Protection Agency concerning mitigation specifically states that

“The level of mitigation determined to be appropriate and practicable under Section 230.10(d) may lead to individual permit decisions which do not fully meet this goal because mitigation measures necessary to meet this goal are not feasible, not practicable or would accomplish inconsequential reductions in impacts.”

It is possible to have a net loss of acreage but not function, and a goal of the federal wetland permit program is to attain equal or increased wetland function as mitigation for wetland impacts.

It is the opinion of some members of the subcommittee that there is currently a net loss in wetlands acreage statewide due, in part, to federally permitted activities. This is primarily due to the cumulative effect of small impacts that do not require compensatory mitigation, the use of wetland enhancement for mitigation, mitigation sites (or portions thereof) that have failed to develop into functioning wetlands, and required mitigation sites that were simply never built. A literature search conducted by the subcommittee found several studies on the effectiveness of compensatory mitigation as it is currently practiced, including wetland creation, restoration, and enhancement. These studies collectively show that, even with current mitigation requirements, a net loss of wetlands still occurs due to the failure of many mitigation sites (Appendix E). Some mitigation projects are never constructed, and others are found to be out of compliance with the terms of their permits. Preservation of an existing wetland removes the uncertainty of success inherent in a wetland creation or restoration project, and requires no construction to complete. The studies demonstrate that current mitigation practices fall short of meeting no net loss goals. While efforts should continue to improve the results of current mitigation practices, the committee agrees that wetland preservation is a form of compensatory mitigation that has a place in the larger picture of wetland mitigation strategies.

Another major concern of the subcommittee is the immediate loss of wetland functions, such as flood storage and water quality at the impacted wetland site. The loss of these functions cannot be truly mitigated at another location. However, in many cases they can be replicated by water quality measures implemented within the project limits. The use of Best Management Practices (BMPs) such as permanent bio-filtration swales, detention basins, and retention ponds improve water quality and control water quantity fluctuations, as required by the WSDOT Hydraulics Manual. They replace many of the

flood storage and water quality functions (and some of the habitat functions) that were originally performed by the impacted wetland. The extent that water quality measures are utilized is project specific and would need to be reviewed when preservation is proposed.

WSDOT's goal is to achieve no net loss of wetland acreage and functions overall, and this is most likely accomplished by the system of replacement ratios currently required for wetland mitigation. The ratios typically range from 1.5:1 up to 6:1 (acres of mitigation required per acres of impact). Occasional preservation as a sole compensatory mitigation option would probably not result in a net wetland loss within this agency. The limited use of preservation as stand alone mitigation would be offset by the greater than 1:1 replacement ratios regularly implemented, and the WSDOT policy of compensation for all wetland losses at a ratio of not less than 1:1, regardless of regulatory thresholds. WSDOT also measures the success of its mitigation sites through a mitigation monitoring program that tracks the development of mitigation sites, and a mitigation site retrofit program to correct wetland sites that fail to develop as expected.

Is Preservation Cost Effective?

The costs of mitigation in general have not been well documented and appear to vary widely. In a 1997 policy study of WSDOT created wetlands, the costs of constructing wetlands were reported to typically range from 5 to 10 percent of the total highway project costs (WSDOT 1997). This translates to an average cost of \$332,943 per constructed mitigation site, including land acquisition costs when necessary. Excluding the cost of purchasing the land, mobilization, and survey work, construction, monitoring and maintenance costs average \$65,984 per acre (Ibid.). It should be emphasized that the WSDOT study found wide variability in mitigation project costs, and there was no correlation between the amount of money spent and the success of the created wetland.

In the New Jersey preservation example presented earlier in this report, the value for dollars invested is demonstrated. If preservation had not been allowed, NJDOT would have purchased 17 acres of mitigation bank credits instead of the 400 acre preservation site, in order to meet the wetland mitigation ratios determined by the state regulatory agencies. The bank credit cost of \$110,000 per acre of would have driven the mitigation price tag to nearly \$1.87 million dollars for the 17 acres. For the same amount, NJDOT was able to purchase the 400 acre preservation tract. An example of cost comparison between wetland preservation and wetland creation for a hypothetical WSDOT project is presented in Appendix F.

Preservation can be a cost effective mitigation strategy because it eliminates the costs of design, mobilization, construction, and potential remediation associated with wetland creation, restoration, or enhancement. Land acquisition costs would continue to be highly variable, as they are now. Because a preservation site must be of high quality, no additional wetland or site development work would be necessary in most cases. A survey of property boundaries and prominent features might be required in some cases, and exclusion fencing, signage, minimal maintenance, and monitoring may also be required. With preservation, the majority of costs are incurred at one time. With traditional

mitigation strategies, the costs are spread out over several years, from the design phase through several years of monitoring, and are likely to be much higher, especially when inflation in the cost of services is considered.

Does Preservation Benefit the Environment?

Does preservation make good ecological sense, or is it just a mitigation short-cut for developers? A major concern expressed by the subcommittee was that preservation would become the norm for compensating for wetland impacts rather than only in a few select situations. Its use as a routine mitigation strategy is not intended. This guidance addresses this concern by requiring permitting agency concurrence for the use of preservation when mitigation is required.

When preservation is used appropriately, it is beneficial to the environment. It allows for a mature and functioning wetland to retain its place in the watershed. In highly developed areas, the preserved area may be the last remnant of a formerly larger natural system, making the functions the wetland performs critical to the continuing health of the local water resources. Preserving and protecting wetlands high in the watershed serves to protect downstream resources from degradation. When compared with mitigation strategies such as creation, restoration or enhancement, preservation is beneficial because there is no loss of function while the mitigation site matures, and larger mitigation areas are set aside due to the higher preservation mitigation ratios.

There are appropriate and inappropriate times to consider preservation as mitigation. Several examples are provided in Appendix D.

RECOMMENDATIONS

1. This preservation guidance document should be used as a springboard for the development of preservation as mitigation policy.
2. WSDOT and other agencies and organizations should promote the use of wetland preservation as mitigation where and when appropriate, following the criteria set forth in this document.
3. WSDOT and other non-regulatory agencies and organizations should continue pursuit of an agreement with permitting agencies for using wetland preservation as compensatory mitigation. Such an agreement could be in the form of a Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA) and should include agreed-upon criteria for the use of preservation.

CONCLUSION

Preservation has a place in the larger picture of compensatory wetland mitigation. The proposed preservation ratios and criteria are intended to be flexible and based on case

by case evaluation. They are guidelines and should provide a framework for evaluating the majority of cases. There may be some exceptional cases that will not fit within the listed criteria or ratios but are still candidates for preservation. The intent of this document is to encourage preservation of only the highest-quality sites, while allowing the greatest flexibility for preserving sites that are desirable for unpredictable or unusual reasons.

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APPENDIX A

ALTERNATE OPINIONS

The concept of preserving existing wetlands for the purpose of receiving compensatory mitigation credit is controversial. Wetland scientists, environmental regulatory agencies, and those who need to provide mitigation each bring to the table a set of needs, desires, concerns, and facts. The committees that produced and reviewed this guidance document were composed of representatives from many organizations (see acknowledgments).

The purpose of this document is to discuss the issues that surround the concept of wetland preservation as mitigation. This document is not intended to serve as a policy statement. Not everyone on the Preservation and Technical Committees agreed with everything in this document. However, the group reached as close a consensus as possible at this time.

Comments regarding the intent and scope of the document and points of departure within the group are identified below.

Credit for Buffers: The importance and value of buffer zones associated with preserved wetlands was recognized by the group. However, there was not agreement as to how much buffer area was most effective at protecting the wetland, with suggested minimums of 50 to 150 feet to a maximum of 500 feet. It was pointed out that scientific data should be used to determine how much buffer is needed, while credit given for buffers is a question of policy. The group decided that, for now, potential credit for buffers should be considered on a case by case basis while taking larger ecosystem needs into account. This issue remains to be fully addressed in a preservation policy document or forum. The subject of buffer credit is also being discussed in detail at the state Department of Ecology wetland banking rulemaking forum.

Enhancement vs. Preservation: Wetland enhancement refers to improvements made to an existing wetland to increase its function and/or value. Enhancement and preservation are related in that both concepts involve mitigation using existing wetland areas, rather than creating new wetlands or restoring former wetlands. A comparison of enhancement and preservation is not included in this guidance document because separate issues associated with enhancement remain to be resolved, making such a comparison beyond the scope of this document. Similarly, wetland creation and restoration mitigation are not entirely free from controversy and are subject to individual agency policy and preference. The merits of wetland creation and restoration are not discussed in this document.

Criteria: The Washington Department of Fish and Wildlife (WDFW) preferred to delete the following specific preservation site criteria:

- located in a floodway,
- provides biological and/or hydrological connectivity
- high regional or watershed importance
- high species diversity
- large size
- entire wetland included within the site

These features could be covered by stating “the area has a wetland or buffer that protects an adjacent wetland with a high level of function.”

Minimum Size: There was much discussion about a minimum size threshold, below which a site would not be eligible for consideration as preservation mitigation. Such a threshold would need to be based on best available science and take into account specific wetland types and the proposed preservation ratios. Because this document is for guidance and does not set preservation policy, no size thresholds have been proposed here. This issue would be most appropriately addressed in a preservation policy document based on best available science, such as a Memorandum of Agreement or Memorandum of Understanding.

Net Benefits: This term, which appears in Table 1 of the document, is not formally defined herein, and the term is used in a general sense.

Special Circumstances: The group agreed that there are times when preservation of high quality wetlands for mitigation is the best ecological choice. However, there were many differing opinions as to how those special circumstances should be defined. This document discusses when preservation is appropriate and inappropriate in general, but definitions of specific special circumstances would be most appropriately addressed in a policy document or forum.

Appendix B

Current Preservation Policies of Government Agencies

FEDERAL (Corps, EPA, USFWS, NMFS)

- a) No net loss policy -- Must first go through avoidance, minimization, creation, enhancement and restoration options before preservation is considered.
- b) Preservation wetland must be proven to be at risk
- c) Preservation wetland must be beneficial to the functioning of the wetland system

Wetland Regulatory Role :

CORPS

The U.S. Army Corps of Engineers manages Clean Water Act Section 404 Permits required for placement of fill, mechanized land clearing and/or grading in wetlands. The Corps has a no-net-loss of wetland acreage policy, however, their goal is to achieve no net loss of function regardless of acreage. The Corps does not have set mitigation ratios. They are required by a 1994 Supreme Court decision (Tigard) to assure that mitigation is commensurate with the functions and values of the wetlands impacted and that mitigation is “roughly proportional” to the loss.

EPA

The U.S. Environmental Protection Agency provides technical oversight to the Corps and co-manages the 404(b)(1) alternatives analysis that requires applicants to prove that wetland fill can not be avoided. EPA’s no-net-loss policy applies to both acreage and function and includes temporal loss (loss that occurs between the time of wetland impact and the completion of successful mitigation). EPA generally discourages the use of preservation as the sole form of compensatory mitigation, however, their policy allows for stand-alone preservation as mitigation in rare circumstances when there appears to be no satisfactory mitigation alternatives and there is a habitat within the watershed that is clearly at risk.

USFWS AND NMFS

The U.S. Fish and Wildlife Service and the National Marine Fisheries Service are responsible for administering the Endangered Species Act and providing Section 7 compliance verification to applicants applying for a federal permit. The U.S. Fish and Wildlife Service allows stand-alone preservation in cases where the wetland to be preserved is at risk and provides an important and necessary function to the watershed. The USFWS has a no-net-loss policy of function and acreage.

STATE (Ecology, WDFW, DNR)

ECOLOGY

Preservation criteria:

- a) No net loss policy – Applicants must first go through avoidance and minimization;
- b) A 1:1 ratio of creation or restoration or a 2:1 ratio for enhancement is required prior to allowing preservation.
- c) In the current Memorandum of Agreement between Ecology and WSDOT, preservation is allowed after the 1:1 replacement of the impact acreage. The ratio for Category I wetland preservation is 5:1 and the ratio for Category II is 10:1.

Wetland Regulatory Role - Ecology implements Section 401 of the Clean Water Act, requiring certification that all federal 404 permits and actions meet the state aquatic protection laws. Impacts to wetlands that do not require a Corps 404 permit may be regulated under the State Water Pollution Control Act (RCW 90.48) that allows protection of beneficial uses of all state waters, including wetlands. This policy is currently undergoing revision. Ecology is the lead state agency for wetland banking rule development under WAC 173-600 (RCW 90.84) and will provide certification of wetland mitigation banks in the future.

Ecology implements its no-net-loss of function policy through incentive-based stewardship programs and regulations. Preservation of at-risk wetlands as the sole means of compensatory mitigation is acceptable on a case-by-case basis.

WDFW (Washington Department of Fish and Wildlife)

Wetland Regulatory Role--responsible for administering the state's hydraulic code (RCW 75.20) which requires a Hydraulic Project Approval (HPA) for any work done in waters of the state. Approvals and denials of HPAs are based on impacts to fish.

WDFW requires construction projects to go through sequencing (avoidance, minimization, compensation) before compensatory mitigation is approved. Mitigation ratios are specified in Department of Wildlife Policy No. 3025, as follows:

“For wetland compensation projects involving a Hydraulic Project Approval (HPA), a minimum of 2:1 compensation to the impacted area shall be required. If 2:1 compensation is infeasible, written justification for the lesser compensation must accompany the draft HPA when it is returned to Olympia for processing. For wetland compensation projects not involving an HPA, a minimum of 2:1 compensation shall be recommended to the permitting agency.”

The preservation of demonstrably at-risk wetlands as the sole means of compensatory mitigation is allowed on a case-by-case basis. The preserved wetland must be of a higher quality than the impacted wetland and be part of a mitigation plan.

DNR (Washington Department of Natural Resources)

- a) Manages Natural Areas Program and all preserved lands under this program.
- b) DNR often acts as the land trust for receiving preservation lands required by permits (applicants do not want responsibility or tax issues of owning and managing lands).

Wetland Regulatory Role--Fill into or construction over state owned aquatic lands requires approval from DNR (including any riverine or estuarine wetland system). DNR is also responsible for managing timber harvest in the state. Applicants must get approval from DNR prior to logging within wetlands over a certain limit (500 board feet). A timber harvest permit is required if the applicant plans to convert the use of the wetland to something other than timber production land after the logging is complete.

DNR is in the process of drafting an agency policy on compensatory mitigation.

LOCAL GOVERNMENT - Requirements are Extremely Variable

Preservation criteria: Policy for preservation is dependent on the local government jurisdiction where the impacts occur.

Wetland Regulatory Role

- a) Shoreline --Local governments administer the Shoreline Management Act, requiring permits for work within the shoreline or on the water.
- b) Growth Management Act (GMA) - Critical Area Ordinances - requirements vary between local governments for mitigation and avoidance. Ordinances may include wetlands, farm plans, streams and rivers, sensitive species, and critical habitats, all of which may address wetland impacts.
- c) Building Permit - if building in a wetland area
- d) Floodplain Development Permit - if filling in a wetland that is within the floodplain
- e) Clearing and Grading - required prior to clearing and grading site, used for erosion and sediment control

**Matrix of Current Resource Agency Positions Toward
Preservation as Compensatory Mitigation**

Agency	Must the Preservation Wetland be At Risk?	Ratio	No-Net-Loss Policy or Regulation	Preservation as Stand Alone Mitigation	Preservation in Conjunction with Restoration, Creation or Enhancement	Comments
USFWS	Yes	Case by case	Policy applies to both acreage and function.	Wetland must provide an important and necessary function to the watershed.		Acreage no-net-loss mandated by U.S. president. Functions no-net-loss is an agency policy
EPA	Yes	Case by case. Requires a minimum of 1:1 acreage and functions replacement.	No-net-loss with regards to acreage and function. Policy includes temporal losses. There is a need to mitigate for the time it takes the functions of the mitigation site to develop and adequately compensate for the impacted area.	Ecologically, preservation must make the most sense. EPA generally discourages preservation as sole compensatory mitigation. Accepted only in rare circumstances where there appears to be no satisfactory mitigation alternatives and there is a habitat within the watershed that is clearly at risk.		Cranberry industry-specific MOA authorizes the use of preservation of at risk wetlands for mitigation. This policy is not expected to be extended outside of the cranberry industry.
CORPS	No	Case by case	Policy of no-net-loss of acreage. No-net-loss of functions, irrespective of acreage is the Corps' goal.	Mitigation must be tied to the amount of a project's impact to the functions of the wetland. Preservation as stand alone mitigation is not a common occurrence.	Preservation is adjunct to complete a mitigation package in combination with enhancement, restoration or creation.	
DNR¹						DNR compensatory mitigation policy is being drafted at this time.
WDFW	Yes	Hydraulic Project Approval (HPA) Ratios-2:1 minimum. Projects with no HPA, 2:1 minimum is recommended ² .	Policy of no-net-loss of acreage and function in response to Washington executive orders 89-10 and 90-04. WDFW has a long term net-gain policy to be achieved through land owner incentives.	Case by case under exceptional circumstances. Wetland must be at risk and of higher quality than the one impacted. In addition, the wetland to be preserved must be a part of a mitigation plan. ³	Supported as a method creating a net-gain of habitat if the preserved habitat is at risk.	Wetland impacts that result in a loss of spawning or rearing area must be replaced as close to the sub-basin or reach as possible. Preservation as sole compensatory mitigation is never acceptable under these circumstances. However, preservation in conjunction with creation, restoration and enhancement is appropriate. Requires mitigation sequencing.
Ecology	Yes	WSDOT ⁴ -5:1 to 10:1 preservation in addition to either 1:1 creation/restoration or 2:1 enhancement. Others are determined case by case.	No-net-loss of functions. No net loss is achieved project by project and through stewardship and land acquisition.	Case by case	Additional priority given to the preservation of buffers around the mitigation site	Must demonstrate effort to avoid and minimize impacts; i.e.sequencing.

¹ DNR compensatory mitigation policy is being drafted at this time.

² WDFW Policy Number 3025, Wetlands.

³ In this context a mitigation plan is a watershed plan, local environmental needs plan or other plan recognized by WDFW that directs a path towards improving the habitat of a watershed.

⁴ From Implementing Agreement between The Washington State Department of Transportation and the Washington State Department of Ecology Concerning Wetlands Protection and Management, July 1, 1993. Ratios currently under revision

Appendix C

Examples of Wetland Preservation Outside Washington State

Findings of the WSDOT 1998 National Survey of State Transportation Departments
Mitigation Programs:

Total List of State DOTs Using Preservation as Mitigation	
1 Alabama	16 Nebraska
2 Alaska	17 New Hampshire
3 Arkansas	18 New Jersey
4 California	19 New Mexico
5 Colorado	20 North Carolina
6 Connecticut	21 Oregon
7 Florida	22 Pennsylvania
8 Georgia	23 Rhode Island
9 Illinois	24 South Carolina
10 Kansas	25 Texas
11 Kentucky	26 Utah
12 Maryland	27 Virginia
13 Michigan	28 Washington
14 Mississippi	29 West Virginia
15 Missouri	

State DOTs Using Preservation as a <u>Single Component</u> in the Mitigation Package	State DOTs Using Preservation as <u>Part</u> of the Mitigation Package
1 Alabama 2 California 3 Colorado 4 Connecticut 5 Kansas 6 Kentucky 7 Georgia 8 Michigan 9 Missouri 10 Nebraska 11 New Jersey 12 New Mexico 13 North Carolina 14 Oregon 15 Pennsylvania 16 Rhode Island 17 Texas 18 Utah 19 West Virginia	Alaska Arkansas Florida Illinois Mississippi Maryland New Hampshire South Carolina Virginia Washington

Texas

TxDOT Preservation Banks:

The Texas Department of Transportation (TXDOT) purchased 2,243 acres of bottomland hardwood forest known as the Anderson tract in 1995 for \$900K, in an effort to preserve the unique environment from deforestation. The purchase fulfilled a promissory note issued to the landholder by the Texas Parks and Wildlife Department (TPWD) which had previously purchased 2,694 acres of the tract. Other financial assistance was provided by the National Fish and Wildlife Foundation, the Parks and Wildlife Foundation of Texas, Inc., and Ducks Unlimited. The partnership resulted in the preservation of threatened habitat totaling 4,937 acres.

TXDOT signed a Memorandum of Agreement (MOA) with state and federal regulatory agencies, which established the 2,243 acre tract as a preservation mitigation bank. The MOA specified management and monitoring responsibilities, mitigation ratios, debit accounting, the geographic boundaries of qualifying road projects, as well as governance

and permit authority. In addition, the imminent threat to the tract by deforestation was documented.

The Anderson tract was immediately turned over to TPWD, increasing the public lands inventory. TPWD agreed to manage and monitor the site in perpetuity, thus relieving TXDOT of further financial obligations. The MOA set mitigation credit ratios based upon the quality of wetlands impacted by TXDOT road projects. Three credit ratios of 7:1, 5:1 and 3:1 were set based upon impacts to “High”, “Medium” and “Low” quality wetlands. One credit is equal to one acre of preservation mitigation bank land. For example, an impact to two acres of low quality wetland would require TXDOT to debit 6 acres from its mitigation bank.

TXDOT Environmental Division staff estimate that the cost of creating a wetland in order to mitigate for road construction impacts averages \$14K/acre, in contrast to the preservation bank's \$425/acre. To date, TXDOT has debited approximately 200 acres of the Anderson tract to mitigate for wetland impacts, at a total cost of \$85K. Most of the impacts were to low quality wetlands. At the 3:1 ratio given above, the 200 preserved acres account for 66.7 acres of wetland impact, which, if mitigated by wetland creation would have cost approximately \$934K. Using the preservation bank wetlands saved approximately \$849K state transportation agency dollars.

New Jersey

NJDOT Preservation Package:

The New Jersey Department of Transportation (NJDOT) is currently formalizing concurrence on its first preservation mitigation bank. The four hundred acres consist of 50 percent developable uplands and 50 percent wetlands. The preserved upland buffer will protect wetland habitats and assure the continued benefits associated with wetland ecological functions. The bank also will add an additional four hundred acres to the public lands inventory and will provide opportunities for recreation to New Jersey's residents and visitors.

In order to meet the wetland mitigation ratios determined by the state regulatory agencies, NJDOT would have needed to purchase 17 acres of mitigation bank credits as an alternative to the 400 acre preservation site. The mitigation bank credits cost \$110K per acre, which pushed project mitigation costs to nearly \$1 million. NJDOT was able to purchase the threatened 400 acre preservation tract for the same amount.

South Carolina

Joint State/Federal Preservation Bank Administrative Procedures:

Preservation banks found in South Carolina take guidance from the Joint State/Federal Administrative Procedures for the Establishment and Operation of Wetland Mitigation Banks. These procedures follow The Interagency Federal Guidance for the Establishment, Use and Operation of Mitigation Banks (Federal Register, November 28, 1995, Vol. 60, No. 228, pp. 58605-58614). The need for a preservation bank to enhance a State Priority Management Area (PMA) serves as the backbone to the procedures. The PMA is defined as:

" . . . areas of the State identified by State and Federal natural resource agencies as specific target areas for the preservation, restoration and/or enhancement of natural resource values. While a specific list has not been compiled at this time, these areas may be associated with wildlife refuges, heritage trust sites, national estuarine reserves, wildlife habitat focus areas, outstanding resource waters and similar habitat management programs areas. High risk wetlands associated with rapidly growing urban areas may also be included in this category."

Within the procedures, four working guidelines are set forth in order to determine the appropriateness of potential mitigation banks. First, the proposed site must be associated with a Priority Management Area (PMA) and consist primarily of wetlands. Second, the proposed site must enhance the PMA. To this end the site must be adjacent to the PMA in such a way that the adjacency enhances PMA wetland functions. Sites which act as a corridor connecting two PMAs are, likewise, specified as enhancing the PMA. Third, the preservation bank resources must be under demonstrable threat of loss. The loss must be based on evidence of "destructive land use changes or habitat alterations which are consistent with local and regional land use trends." In addition, the loss must not be due to actions under the control of the bank sponsor. Finally, the proposed site must represent a significant benefit to natural resources and/or public use and enjoyment. Significance is determined from the following matrix by a score of 105 or more.

SOUTH CAROLINA MATRIX FOR DETERMINING PROPOSED BANK SITE SIGNIFICANT BENEFIT

RATING FACTORS		POINTS				
		0	5	10	15	20
Forest Age in Years ¹		$2 \leq \text{age} < 5$	$5 \leq \text{age} < 10$	$10 \leq \text{age} < 40$	$40 \leq \text{age} < 80$	$80 \leq \text{age}$
Functional Importance and/or Uniqueness of Resources ²		Low		Medium		High
Existing Impact Conditions ³		Moderate		Minimal		None
Buffers Width in Feet ⁴		$\text{width} < 50$	$50 \leq \text{width} < 75$	$75 \leq \text{width} < 150$	$150 \leq \text{width} < 300$	$300 \leq \text{width}$
Public Use Type Categories A, B, and C ⁵		None		One Type	Two Types	Three Types
Magnitude ⁶	For Streams, Total Length in Miles	$0 < \text{length} < 0.5$	$0.5 \leq \text{length} < 1.0$	$1.0 \leq \text{length} < 2.0$	$2.0 \leq \text{length} < 5.0$	$5.0 \leq \text{length}$
	For All Others, Total Area in Acres	$0 < \text{area} < 50$	$50 \leq \text{area} < 200$	$200 \leq \text{area} < 500$	$500 \leq \text{area} < 1000$	$1000 \leq \text{area}$
Protection Mechanism ⁷				Cons. Easement		Cons. Owner

Cons. = Conservancy Organization

- The forest age factor should be excluded when considering non-forest systems (e.g., emergent, scrub-shrub, and certain pocosins). In these circumstances, a score of 90 may be considered passing for Criteria #3. Forest age will be determined by a specific forestry methodology or by a professional forester.
- The extent to which a proposed site qualifies for a low, medium or high functional importance and/or uniqueness rating will be determined on a case by case basis through consensus of the MBRT using best professional judgement. Factors such as contributions to biodiversity on an ecosystem scale, and high performance levels of functions, which make important contributions to landscape, and/or human values will be considered. Should more specific appropriate criteria for this factor be developed by the MBRT in the future, such criteria would be adopted for use.
- Sites with major impacts will generally not be accepted as suitable preservation bank sites although they may be valuable as restoration sites. The following definitions are extracted from the Mitigation SOP and are subject to change. Major impacts means Mitigation SOP Class 5&6 (long term and more than minor or permanent). Examples given in SOP are: wetlands with major ditching; impounded streams; wetlands that have been extensively cleared; permanent fills; excavations in wetlands; cleared utility line easements in wetlands. Moderate impacts means Mitigation SOP Class 3&4 (short term and more than minor or long term and minor). Examples given in SOP are: existing large temporary access roads; major dewatering (e.g. temporary stream realignment); wetlands with minor ditching; low rise, fish passable weirs; wetlands with minor selective clearing. Minor impacts means Mitigation SOP Class 2 (short term and minor). Examples given in SOP are: existing small temporary access roads; minor dewatering (e.g. temporary coffer dams).

4. Buffers on non-linear systems should consist of upland areas juxtaposed to the wetland system they are buffering and completely encircle it. Table buffer sizes are minimum rather than average widths. Point evaluation for linear systems will be determined by the MBRT on a case by case basis based on site-specific geomorphic and topographic information. Note that the inclusion of buffers does not change the character of the bank from a preservation to an enhancement bank.
5. Public use type categories are defined as follows. Type A means educational value. Type B means scientific research. Type C means public access.
6. The term *stream* as used here means waterbodies 1st - 4th order in size. Stream length refers to properties on both sides of the stream unless the other side is already protected.

Conservancy Easement or Ownership will generally be required for establishment of Mitigation Banks. Deed restrictions are generally an inadequate protection mechanism for establishment of Mitigation Banks and will normally not be allowed. Conservancy Organizations must meet minimum qualification requirements as set forth

Appendix D

Examples of When Preservation is Appropriate and When it is Inappropriate

Examples of when preservation may be appropriate.

Example 1

A linear transportation project proposes to impact several isolated Category III⁴ and IV wetlands for a total of 1 acre of impact. The watershed has a large number of existing wetlands. Potential mitigation sites in the vicinity are few, with most areas already being either natural wetlands or hillsides. There is a 3 acre forested wetland with a perennial stream near the project. The property owner is planning to log the site for the timber value since he can't build a house in the wetland. The available parcel totals approximately 5 acres in size and has high diversity. Few forested wetlands remain intact in this portion of the watershed.

In this situation, it may be best to preserve the forested wetland in lieu of attempting to build a 2 acre mitigation site in a questionable location, that may or may not improve the overall quality and diversity of wetlands within the watershed.

Example 2:

A transportation safety improvement project that includes slope flattening proposes to impact a total of 1 acre of Category IV wetland. The only potential mitigation site for wetland creation is the corner of a 30-acre pasture dominated by reed canary grass. There also exists a 10 acre river front parcel that includes 4 acres of Category II wetlands, with the remainder of the parcel being a well vegetated upland buffer. There have been sightings of bald eagles, osprey, and great blue heron at the site, although no nests have been found. A developer has recently installed infrastructure for a housing development on the adjoining property. The current ordinances would allow encroachment into the buffer area for additional housing units.

The option of placing a wetland mitigation site in a reed canary grass field is not desirable. The site would require long term maintenance to keep the invasive canary grass from taking over. The costs and overall quality of a mitigation site in this situation are a concern. It may be better to preserve the existing, intact wetland and buffer from further encroachment.

⁴ Wetland categories refer to the Ecology Wetlands Rating System, where Category I wetlands are of the highest quality and Category IV wetlands are of the least quality.

Examples of when preservation would not be appropriate:

Example 1:

A project proposes to impact 1 acre of Category II wetland located adjacent to a stream. There is a 10 acre parcel currently being used for pasture adjacent to the impacted wetland and stream. About a mile away is a parcel that contains approximately 4 acres of Category II wetlands abutting the same stream that could be used for preservation.

In this situation, the use of preservation as the sole compensatory measure would not be acceptable. There is a viable site for wetland creation and enhancement adjacent to the impacted wetland.

Example 2:

A project proposes to impact 1 acre of Category II wetland. There is a site within the same watershed that contains a degraded wetland that could be enhanced, and an adjacent upland area that is suitable for creating 2 additional acres of wetland. Six different, existing Category II wetland sites have also been found that could be preserved. The size of these wetland sites varies from 1/2 acre to 2 acres in size and they are located in two different watersheds. There is no connection between the six sites. Most of the sites have limited buffers and are surrounded by five acre residential tracts.

Sole use of preservation would not be acceptable in this case because the proposed preservation sites are small and disconnected, and because there is a viable site in which to create and enhance an adequate amount of wetlands for the mitigation.

Example of using preservation in conjunction with creation:

Three acres of Category II wetland will be impacted by a project. Compensatory mitigation could consist of creating or restoring 6 acres of Category II wetland along with adequate buffers, requiring about 10 acres in all. A farmer in the project area is willing to sell a maximum of 5 acres of farmland. The project proponent chooses to restore wetlands on 3 acres of agricultural land by removing drainage tiles and ditches. This compensates for 1.5 acres of impact at the required 2:1 ratio, providing half of the required compensation. For the other half, an adjacent 6 acres of Category II forested wetland is purchased and preserved, compensating for the remaining 1.5 acres impact at a 4:1 ratio. The

entire mitigation complex is 15 acres, consisting of mature buffer and established forested wetland adjacent to the newly planted wetland and buffer.

Appendix E

Effectiveness of Mitigation: Recent Studies

Pierce County, Washington

In 1997, Pierce County looked at the effectiveness of mitigation since 1992, when they passed a comprehensive wetland regulation. There were 188 permits issued in that time period that required some kind of mitigation (wetland creation, enhancement, restoration or buffer restoration). Of these, 43 were not included because information in the files was too ambiguous to allow determination of the project status. An additional 42 projects had not yet initiated work. Of the 103 projects evaluated, 17.5 percent (18 projects) had never been installed, and 82.5 percent (85 projects) had been installed. Of the 85 projects installed, only 15 (17.6 percent) were completed (including the 3-5 year monitoring requirement) and accepted by the county. The remaining 70 projects are out of compliance by either having major problems with installation or from not completing their monitoring. Due to the large number of projects that could not be reviewed due to file problems, 32 percent of all projects (60 projects) potentially have not been installed or are not in compliance. Although most of these were not wetland creation projects, it is possible that up to one-third of all creation projects are never constructed, resulting in a net loss of wetlands (Risvold 1997).

Washington State Department of Ecology

In 1990, the Washington State Department of Ecology completed an assessment of wetland mitigation required through SEPA (State Environmental Policy Act) in five local jurisdictions. They examined 20 sites and found that 5 of the 20 had not been completely constructed. Compliance problems were present in more than 50 percent of the projects. Even if constructed and in compliance, these projects only required an average of 84 percent replacement for wetland acreage lost, resulting in a net loss of wetlands. There was also a net loss of wetland types (mainly emergent wetlands) and an increase of open water wetlands. Fifty percent of the projects completed consisted of enhancement of existing wetlands. Thirty eight percent involved wetland preservation, and only twenty seven percent (5 sites) completed wetland creation. In only 10 percent of the projects (2 sites) was mitigation completed prior to the onset of wetland impacts.

U.S. Environmental Protection Agency

(From a study that is now quite old) In 1988, the U.S. Environmental Protection Agency (EPA) looked at Clean Water Act Section 404 permits and the effectiveness of mitigation at preventing net loss of wetlands. They examined 35 projects. These projects resulted in the exchange of 152 acres of naturally-occurring wetlands for the creation of 100 acres of wetlands, a 34 percent loss. Only 26 of the projects had been completed when the review occurred, and only 2 of the constructed sites were completed prior to the loss of the impacted wetland (Rylko and Storm, 1988).

In another study, seventeen wetland compensatory mitigation projects were investigated in Washington state. Vegetative, hydrologic, faunal and ecological aspects of each site were assessed. File review and evaluation of compensatory mitigation plan elements were undertaken. A comparison between presence of compensatory mitigation plan elements and project compliance and ecological functioning was assessed. Of field inspected sites, it was not possible to determine if compliance had been met in 53 percent of projects, 29 percent were deemed to be clearly out of compliance, and 65 percent were judged to not be functioning well. Monitoring had been required in only nine of the 17 projects and had only been conducted in 3 of them (Storm and Stellini, 1994, and Storm, 1996).

Other States

Numerous studies have been completed in several states on the success of mitigation. A good summary of these papers is found in "Fixing Compensatory Mitigation: What will it take?" by Race and Fonseca (1996). In general, other states have experienced the same problems with wetland mitigation that Washington state has:

1. Compliance - many projects are never constructed.
2. Of the projects that are constructed, many (up to 50 percent) are not successful.
3. Mitigation requirements are not resulting in the replacement of impacted wetlands in terms of acreage or functions.
4. Enhancement of existing wetlands accounts for a significant portion of mitigation. In other words, the required mitigation still allows for a net loss of wetlands.

U.S. Fish and Wildlife Service

According to a U.S. Fish and Wildlife news release dated September 17, 1997, "the United States is continuing to lose wetlands but the loss has slowed to a rate 60 percent below that experienced in the 1970s and 1980s." From the 1970s to the 1980s the annual loss amounted to 290,000 acres, as compared to an estimated 458,000 acres lost each decade between the 1950s and 1970s.

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Appendix F

Example: Cost Comparison Between Wetland Creation and Preservation

Example: A Hypothetical Case Based on Actual Project Information

A WSDOT safety project proposes to fill a portion of several small, isolated Category III wetlands, with a total impact of 2 acres. The wetland creation area will need to be at least 4 acres in size, based on the 2:1 replacement ratio required by one of the regulatory agencies. With appropriate buffer requirements added, the wetland mitigation site will need to be a total of at least 6 acres in size.

A 10 acre site is located that has the hydrology necessary to create a wetland. The site has been logged and is highly disturbed. It is decided that the wetland creation area will have to be graded down an average of 2 feet in order to maintain the appropriate hydrology at the site.

After negotiation with the regulatory agencies, it is decided that 50 percent of the wetland area will be planted with native shrubs and herbaceous plants. The remaining area will be allowed to naturalize on it's own. The buffer area (100-foot minimum width) will have to be planted with native trees and shrubs. The wetland creation area and buffers will be seeded with a native seed mix to minimize erosion and sedimentation.

Estimated costs, including the permit process, land acquisition and title, data collection, design, construction, and monitoring for a ten year period is approximately \$4 million dollars.

This is compared to the purchase of a 20-acre site that contains 8 acres of forested wetland and 5 acres of scrub shrub wetlands, with the remainder of the parcel consisting of a vegetated upland buffer. The estimated cost to use this site as mitigation, including the permit process, land acquisition and title, data collection, compensation to the landowner for lost timber value, maintenance and informal monitoring of the site for a ten year period is approximately \$170 thousand dollars.