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Kittitas County Critical Areas Ordinance - Wetlands

Best Available Science Review and Considerations for Code Update

Introduction

Washington State's Growth Management Act (GMA) (RCW 36.70A.060) requires counties and cities to adopt development regulations that protect the functions and values of critical areas, including wetlands. Kittitas County is undertaking an update of its critical areas ordinance, along with concurrent updates to its shoreline master program. These two efforts overlap and are being closely coordinated. The Washington State Shoreline Management Act (RCW 90.58) requires shoreline master programs to "provide a level of protection to critical areas within the shoreline area that assures no net loss of shoreline ecological functions necessary to sustain shoreline natural resources" (WAC 173-26-221 (2)).

Wetlands are a type of critical area defined in Washington State law as "areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas created to mitigate conversion of wetlands" (RCW 36.70A.030 (21)).

Wetlands provide important biological and social functions. These functions are generally grouped in terms of three broad categories (Adamus et al. 1991):

- Hydrologic functions, which are related to maintaining the water regime (e.g., reducing flooding, supporting stream baseflows, etc);
- Biogeochemical functions, which are related to trapping and transforming chemicals to improve water quality in the watershed (e.g., denitrification, sediment retention, etc.); and
- Food web and habitat functions (e.g., primary production, production export, etc.)

Wetlands also provide goods and services that society values. For these and other reasons, our State has enacted numerous policies and regulations to promote protection and restoration of wetland systems. One of the first major actions in this regard occurred in 1989 when Governor Booth Gardner signed an Executive Order establishing a statewide goal to achieve "no net loss" in acreage and function of Washington's wetlands and to increase the quantity and quality of Washington's wetlands over the long term.

This paper provides an overview of the best available science pertaining to wetlands and wetland management in Kittitas County. The paper reviews the County's existing wetland regulations (provided as Attachment A) and offers considerations for how to incorporate the current scientific understanding of wetlands into their long-term management and protection in Kittitas County.

Documents used to prepare this paper are listed in the "References" section. Several recent publications that have synthesized much of the available scientific information on wetlands in the Pacific Northwest, and translated the science into recommendations for wetland management, are referenced throughout this paper.

Wetlands in Kittitas County

Kittitas County is situated in central Washington on the eastern slopes of the Cascade Mountains between the Cascade Crest and the Columbia River in the Columbia River basin. The County encompasses 2,300 square miles within three major basins or Water Resource Inventory Areas (WRIAs):

- Upper Yakima (WRIA 39),
- Alkali – Squilchuck (WRIA 40), and
- Naches (WRIA 38).

Most of the County's area (78 percent) lies within the Upper Yakima basin, which drains into the Yakima River. The Alkali – Squilchuck basin (17 percent) is in the eastern part of the County and drains into the Columbia River. A small portion (5 percent) in the southwestern part of the County is in the Naches basin and drains into the Little Naches River, which becomes the Naches River joining the Yakima River in Yakima County.

According to the National Wetlands Inventory (NWI) and the National Oceanic and Atmospheric Administration (NOAA), there are approximately 24,119 acres of wetlands in Kittitas County (Figure X - see draft wetland map under separate cover). Both of these data sources used remote sensing methods to determine wetland presence—therefore, the maps are not entirely accurate. The NWI mapping was derived from 1981 aerial photos (1:58,000 scale). The NOAA data was created from 2006 land cover analyses. Additional wetlands are likely present that do not appear on available maps. Some of the areas shown as wetland may not meet the wetland criteria.

Based on GIS mapping and aerial photos, most of the wetlands in Kittitas County fall into two types: (1) riparian forested and shrub wetlands within river floodplains (for example, along the Yakima and Cle Elum Rivers), and (2) depressional or slope emergent wetlands located in agricultural areas (for example, the area north and east of Ellensburg and Kittitas). Few wetlands are mapped in the forested areas of the upper watershed.

Wetland Functions and Values

Wetlands provide important functions and values for humans and other animals. Wetland functions consist of "the physical, biological, chemical, and geologic interactions among different components of the environment that occur within a wetland" (Sheldon et al. 2005). The functions provided by wetlands and their human-assigned values have been identified and evaluated in several studies (Null et al. 2000; Adamus et al. 1987; Mitsch and Gosselink 2000; Hruby et al. 1995; Reppert et al. 1979; Cooke Scientific Services 1995). These include the following:

- Flood water attenuation and flood peak desynchronization;
- Stream base flow maintenance and groundwater support;

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- Water quality improvement;
- Shoreline protection;
- Biological support and fish and wildlife habitat; and
- Recreation, education, and open space.

Wetland functions can be further grouped into three categories: functions that improve water quality, hydrologic functions that change the water regime in a watershed such as flood storage, and functions that provide habitat for plants and animals (Sheldon et al. 2005).

Wetlands improve water quality in surface waters through the removal of sediment and pollutants from stormwater through “biofiltration” (Mitsch and Gosselink 2000; Cooke Scientific Services 1995). The vegetative structure of wetlands slows the flow of water, causing sediments, nutrients (primarily nitrogen and phosphorous), petroleum products, heavy metals, pesticides, and herbicides to settle out of the water column (Sipple 2002). Anaerobic and aerobic processes in wetlands promote denitrification, chemical precipitation, and other chemical and biological reactions that help to remove pollutants from water (Brettar and Hoefle 2002; Mitsch and Gosselink 2000; Sheldon et al. 2005). Nutrients, such as nitrogen and phosphorous, are taken up by vegetation; as vegetation dies, some of these nutrients are stored in wetland sediments, where decomposers further convert nutrients to biological use and contribute to the breakdown of some petroleum products. Some nutrients are exported from wetlands to adjacent water bodies after seasonal die-off of emergent plants. Wetlands can remove chemicals, such as some petroleum products, heavy metals, and some pesticides that are not converted to biological uses and permanently store them in wetland sediments (Gambrel and Trace 1994). Disruption of wetland soils and increased water fluctuations in the wetland may resuspend sediments and export buried pollutants.

Wetlands control stormwater flow by attenuating surface water runoff during and after storms and slowly releasing it to groundwater and/or to adjacent water bodies. Research has shown that this function can reduce and desynchronize peak flood crests and flow rates of floods (Novitzki 1979 and Verry and Boelter 1979 in Mitsch and Gosselink 2000). Wetlands positioned higher in the watershed generally provide greater flood flow attenuation because they help to prevent flooding along a longer area of river or stream reach than those wetlands located lower in the watershed, which only provide more localized flood water attenuation.

Wetlands provide opportunities for wildlife grazing on living plants, and for organisms that depend on detritus and/or organic debris for a food source (Sheldon et al. 2005; Sipple 2002). Wetland habitats generally provide greater structural and plant diversity, more edge habitat where two or more habitat types adjoin, more varied forage, and a more predictable water source that increases wildlife species abundance and diversity compared to upland habitats (Kauffman et al. 2001; O’Connell et al. 2000). Many species of waterfowl, amphibians, insects, fish, and some species of mammals (such as muskrat) depend on wetlands for foraging, breeding, and refuge. Wildlife species richness increases when wetlands are surrounded by natural undisturbed upland habitat (WDFW 1992; Richter and Azous 2001; Azous and Horner 2001; Hruby et al. 1999). Wetlands and surrounding upland buffers provide specialized habitat and linkages for many species of wildlife including special status species (e.g., endangered, threatened, proposed, candidate, sensitive, monitor and species of local importance) (Mitsch and Gosselink 2000; Hruby et al. 1999).

The types and levels of functions performed by wetlands are controlled by several environmental factors and by human activities (Sheldon et al. 2005). The *Washington State Rating System for*

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Eastern Washington (Hruby 2007) uses the physical features of the wetland and the surrounding landscape to evaluate the wetland's potential and opportunity to provide water quality, hydrologic, and habitat functions (Table 1).

Because wetlands and their associated uplands are unique habitats, they provide natural areas for recreational and educational opportunities. Wetlands are economically important as recreation areas. Wetlands are important for scientific research, education, and the preservation of cultural resources.

D R A F T

Table 1. Summary of Wetland Function Indicators in Eastern Washington (Hruby 2007; Sheldon et al. 2005)

Function	Indicators of Function by Wetland Hydrogeomorphic Class			
	Depressional	Riverine	Slope	Lake Fringe
Water Quality:				
Removing Sediment	Lack of a surface outlet from wetland, or a constricted outlet, improves wetland's ability to trap particulates.	Extent of small depressions in the wetland that can trap sediments and pollutants.	Average slope of wetland (lower percent slope allows longer retention time for surface water and increased removal of pollutants).	Width of wetland vegetation affects area available to retain sediments and toxic compounds.
Removing Nutrients/ Phosphorous	Presence of clay, organic, or anoxic soils improves removal of toxics and nutrients.	Persistent vegetation can trap particulates.	Presence of clay, organic, or anoxic soils improves removal of toxics and nutrients.	Extent of herbaceous wetland vegetation (considered most effective at improving water quality in a lake environment).
Removing Nutrients/ Nitrogen		Human activities in the wetland's contributing basin are sources of pollutants that can be reduced by the wetland.		
Removing Metals and Toxic Organic Compounds	Persistent vegetation can trap particulates.		Dense herbaceous vegetation resists surface flows and removes pollutants.	Amount of pollutants discharged into the lake or watershed upstream of the lake on which the wetland is found.
Removing Pathogens	Seasonally ponded areas allow for nitrogen removal. Human activities in the wetland's contributing basin are sources of pollutants that can be reduced by the wetland.		Amount of development, agriculture, or logging present in the areas that might contribute surface water or groundwater to the wetland.	

Function	Indicators of Function by Wetland Hydrogeomorphic Class			
	Depressional	Riverine	Slope	Lake Fringe
<p>Hydrologic:</p> <p>Reducing Peak Flows</p> <p>Reducing Erosion</p> <p>Recharging Groundwater</p>	<p>No outflow or a constricted outlet increases the capacity to store water and reduce flooding.</p> <p>Depth of storage during wet periods.</p> <p>Wetland's position in the landscape relative to human and natural resources that can be damaged by flooding and erosion.</p>	<p>A wetland that is wide relative to the width of the adjacent stream is assumed to provide more storage during a flood event than a narrow wetland.</p> <p>Dense, rigid vegetation can reduce flow velocities and erosion.</p> <p>Wetland's position in the landscape relative to human and natural resources that can be damaged by flooding and erosion.</p>	<p>How much of the wetland is covered with plants that provide a physical barrier to sheetflow coming down the slope (dense, uncut, rigid vegetation).</p> <p>Extent of small depressions that can hold back surface flows.</p> <p>Presence of property or natural resources downgradient that can be impacted by water coming from the slope wetland.</p>	<p>How much of the wetland is covered with plants that provide a physical barrier to waves and protect the shore from erosion.</p> <p>Presence of human or natural features along the shore next to the wetland that will be impacted if the shoreline erodes.</p>

D R A F T

Function	Indicators of Function by Wetland Hydrogeomorphic Class			
	Depressional	Riverine	Slope	Lake Fringe
Wildlife Habitat:	The following indicators are used for all hydrogeomorphic classes of wetlands:			
General Habitat	Vegetation structure (e.g., trees, shrubs, herbs of different heights).			
Habitat for Invertebrates	Presence of aquatic bed vegetation.			
Habitat for Amphibians	Extent of open water areas in spring and fall.			
Habitat for Anadromous Fish	Presence of a stream in or adjacent to wetland.			
Habitat for Resident Fish	Number of plant species present.			
Habitat for Wetland-Associated Birds	Interspersion among different physical structures and types of vegetation.			
Habitat for Wetland-Associated Mammals	Presence of special habitat features including rocks within the area of surface ponding or large downed woody debris in the wetland; cattails or bulrushes as indicators of long periods of ponding; snags; emergent or shrub vegetation in areas permanently ponded; and steep banks of fine material that might be used by aquatic mammals for denning.			
Richness of Native Plants	Condition of wetland buffers.			
Supporting Food Webs	Whether wetland is part of a vegetated corridor that has water for most of the year.			
	Proximity of wetland to streams or lakes.			
	Proximity to WDFW priority habitats.			
	Landscape context (annual rainfall, connections to other wetlands).			
	Presence of carp.			

Functions and Values Provided by Wetland Buffers

Wetland buffers are vegetated upland areas immediately adjacent to wetlands. These areas provide beneficial functions that enhance and protect the functions and values of wetlands described above. The main functions provided by buffers are: (1) water quality improvement, and (2) wildlife habitat. These are discussed below.

There have been numerous studies about how wide a wetland buffer needs to be in order to provide certain functions. These studies are discussed later under "Review of Kittitas County Wetland Regulations."

Water Quality Improvement

Buffer areas improve water quality by retaining sediments, nutrients, pesticides, pathogens, and other pollutants that may be present in runoff. Reduction of sediment and pollutant discharge to wetlands prevents alterations to plant and animal communities and degradation of water quality in wetlands. Buffers may also help control water temperatures in wetlands by providing shade and blocking wind. In addition to the width of the buffer, the most effective wetland buffers have the following characteristics (Sheldon et al. 2005):

- Stormwater runoff through buffer occurs as low-velocity sheet flow, allowing sediments to settle out.
- Dense buffer vegetation is present to filter sediments from runoff.
- Buffer slope is low (less than 5 percent gradient).
- Large woody debris on the ground helps to slow surface flows.
- The infiltration rate of the soils allows water to move through the soils rather than on the surface.

Wildlife Habitat

Wetland buffers provide important habitat for fish and wetland-dependent wildlife species. Buffers can also serve as movement corridors for wildlife. Buffers separate and screen wetland habitats from human disturbance, lessening the effects of noise, light, and human activity upon sensitive animal species. The characteristics of a wetland buffer that affect its ability to provide wildlife habitat depend on the species and its needs for foraging, breeding, resting, and migration or movement corridors. In terms of providing screening, the effectiveness of the buffer is also related to the type and intensity of human activity and the sensitivity of the species being considered. The buffer width, type of vegetation, habitat structures, and adjacent land uses are all factors that affect wildlife habitat.

Other Human Values

Wetland buffers can increase the opportunities for recreation, education, cultural resource protection, and open space by expanding the area available for these pursuits. Buffers also benefit these open space activities by supporting and maintaining other wetland functions such as fish and wildlife habitat, water quality, and shoreline protection.

Human Effects on Wetland Functions

Human activities can have both positive and negative effects on wetland functions and values. Negative effects can result from forestry, agriculture, construction of utilities, in-water structures, mining, road building, and urban development (Azous and Horner 2001; Mitsch and Gosselink 2000; Castelle et al. 1992a; May et al. 1997; Booth 2000; City of Portland 2001; Sheldon et al. 2005). In contrast with natural disturbances of ecosystems, such as avalanches, floods, or wildfires, human disturbances occur at different scales, locations, and intensities. Ecosystems can have unexpected and negative responses to these types of human disturbances (Sheldon et al. 2005).

Human activities can also benefit wetland functions. Restoration of wetlands can improve degraded wetland functions; for example, through replanting with native vegetation or blocking unused agricultural ditches to restore wetland hydrology.

The types of human disturbances that typically occur in wetlands with negative effects on wetland functions are as follows (Sheldon et al. 2005):

- Changing the physical structure within a wetland (e.g., filling, removing vegetation, tilling soils, compacting soils);
- Changing the amount and velocity of water (either increasing or decreasing);
- Changing the fluctuation of water levels (frequency, duration, amplitude, direction of flow);
- Changing the amount of sediment (increasing or decreasing the amount);
- Increasing the amount of nutrients;
- Increasing the amount of toxic contaminants;
- Changing the temperature;
- Changing the acidity (acidification);
- Increasing the concentration of salt (salinization);
- Fragmentation (decreasing area of habitat and its spatial configuration); and
- Other disturbances (noise, etc.).

Depending on the type of human activity or land use, some or all of these disturbances can occur, with varying levels of impact on wetland functions. The tables in Attachment B, which are excerpted from *Wetlands in Washington State - Volume 1: A Synthesis of the Science* (Sheldon et al. 2005), summarize the scientific literature on land use, disturbances, and effects on wetland functions.

Human Effects on Buffer Functions

Human disturbances to buffers can reduce the effectiveness of wetland buffers over time. Common issues include clearing or trampling of buffer vegetation, compaction of soils, and inundation of sediment (thereby reducing its water and/or nutrient storage capacity) (Sheldon et al. 2005). Other issues can include trash dumping, pet waste, stormwater runoff, and introduction of non-native invasive and noxious plant species from yard waste.

Wetland Functions and Values in Kittitas County

Riverine wetlands in the floodplain of the Yakima River and other streams are highly valuable for flood flow control because they can provide overbank storage for surface water. Depressional wetlands can also contribute to this function by slowing surface runoff during summer thunderstorms (Sheldon et al. 2005).

Many wetlands in Kittitas County contain the characteristics needed for water quality functions. Seasonally ponded wetlands are important in removing excess nitrogen from surface water or groundwater. Additionally, wetlands with an ash layer in the soil are thought to contribute to removal of toxics from surface water (Sheldon et al. 2005). The area around Ellensburg and Kittitas, which has large areas of mapped wetlands, contains soil types with a surface layer of volcanic ash. Riparian wetlands along the Yakima River and other streams have dense vegetation that can slow and filter surface water flows.

Riparian wetland systems in semi-arid areas such as eastern Washington often provide the only structurally complex habitat in regions dominated by open land or land cleared for agriculture (Adamus et al. 1991, Sheldon et al. 2005). Wetlands in Kittitas County provide a variety of habitat types for wildlife. Emergent wetlands in open fields may be used by hawks as foraging areas. Wetlands in the Columbia River basin provide important habitat for breeding, migrating, and wintering wetland bird species such as ducks, shorebirds, and songbirds (Creighton et al. 1997). Forested and scrub-shrub riparian wetlands may be used by songbirds, raptors, and mammals for foraging, cover, and movement corridors. Riparian wetlands also contribute to salmonid habitat by providing off-channel refuge areas and food sources such as insects (WDFW 2009).

Most of the wetlands in the County are located in agricultural, forestry, or rural residential areas. A small percentage of the mapped wetlands are within areas designated for master planned resort or urban uses. All of these activities can have negative impacts on wetland functions if the activities are not properly managed. For example, residential development can increase the intrusion of humans and pets into wetland areas, potentially degrading water quality and disturbing wildlife. Urbanization involving the creation of roads and other impervious surfaces can increase the stormwater volume, velocity and pollutant discharges to wetlands, which can impact hydroperiod and habitat. Altering the hydrologic conditions in a wetland can affect abiotic factors such as salinity, soil oxygen, and nutrient availability, which in turn influence plant species composition and density, primary productivity, organic accumulation, nutrient availability, and the suitability of the habitat for animals including amphibians (Reinelt et al. 1998; EPA 1996). Increases in impervious surfaces can also reduce infiltration, which affects the groundwater recharge functions that some wetlands provide.

Agricultural activities can fill or drain wetlands; increase the input of sediments, nutrients, or toxics to wetlands; and remove native vegetation (Granger et al. 2005). As discussed in the next section, Kittitas County and its citizens have several regulatory and voluntary stewardship tools available to protect wetland functions while allowing for ongoing agricultural use and other types of economic development.

Review of Kittitas County Wetland Regulations

Kittitas County regulates critical areas, including wetlands, through Title 17A of the Kittitas County Code (KCC), which was last updated in 1995 (Attachment A). Wetlands are specifically addressed in KCC 17A.04.010 through 17A.04.050. The County also published the *Kittitas County Critical Areas Interim Policy Document* in 1994.

In adopting revisions to the critical areas code in 1995, the Kittitas County Board of Commissioners raised several important points, including the following:

- Kittitas County has a low per capita income, and the County has an obligation to ensure low-cost economic development and housing.
- Unmaintained wetland buffers can encourage the growth and spread of noxious weeds.
- Voluntary farm conservation programs have already provided substantial benefits to water quality.

The amount of scientific information and agency guidance on wetland management has grown substantially since the County's wetland regulations were last updated. The purpose of this section is to evaluate whether the County's existing wetland regulations incorporate the best available science and are consistent with GMA requirements and current agency guidance. Considerations for changes to the County's wetland regulations are provided where gaps or discrepancies are identified.

A detailed evaluation of every section of KCC Title 17A is beyond the scope of this report. Instead, we focus on the following major issues:

- Designating and delineating regulated wetlands.
- Exemptions and allowed uses.
- Agricultural uses and irrigated wetlands.
- Wetland rating system.
- Wetland buffers.
- Mitigation sequencing.
- Mitigation ratios.
- Monitoring and performance standards for mitigation projects.

Designating and Delineating Regulated Wetlands

Existing Kittitas County Code

Designating Regulated Wetlands

In designating wetlands for regulatory purposes, counties and cities are required to use the definition in RCW 36.70A.030(20). The County's definition of wetlands from KCC 17A.02.310 is different than the GMA definition. Kittitas County Code expands the GMA definition to exclude "areas of agricultural activities that exhibit wetland characteristics due to the introduction or influence of irrigation waters to those fields" and adds further information about why these areas are not included in the definition of regulated wetlands. The County code also adopts the Corps of Engineers' 1990 definition of "normal circumstances" for prior converted farmland (cropland) (Corps Regulatory Guidance Letter 90-07). Under this 1990 definition, croplands that had been modified for agricultural use to the extent that they lacked wetland hydrology and vegetation were not regulated as wetlands under the federal Clean Water Act. The 1990 guidance expired in 1993 and there have since been several other federal agency memoranda and court cases on this subject.

The GMA does not allow flexibility in adopting a modified definition of wetlands (Granger et al. 2005, Bunten et al. 2011). In its guidance for eastern Washington communities for wetland regulatory updates, Ecology states (Bunten et al. 2011):

"Wetlands are subject to a local government's regulatory authority if they meet the criteria in this definition. This includes Prior Converted Croplands (PCCs) and isolated wetlands. These wetlands provide critical functions and habitat and should be regulated. **The GMA does not allow flexibility in adopting a modified definition of wetlands.**

Irrigation practices, such as the Columbia Basin Project, can result in human-created, artificial wetlands. More frequently, however, irrigation practices may augment natural sources of water to a wetland. Wetlands that form along irrigation ditches that were intentionally created in uplands may be exempted from regulation. However, if a wetland is the unintentional by-product of irrigation activities, the wetland should be regulated. If a wetland disappears as the result of a change in irrigation practice, it will not be regulated in the future. However, most wetlands will not disappear completely as a result of local changes in irrigation practices because of natural sources of water or regional irrigation influences."

A more detailed discussion of irrigation-induced wetlands is provided under "Agricultural Uses and Irrigated Wetlands" below.

Wetland Delineation

Kittitas County code (KCC 17A.03.035(6)) does not require a delineation of wetland boundaries for some permit applications. The County waives the requirement for a delineation if (a) staff can estimate the boundaries of critical areas without a delineation by the applicant; or (b) no structures or uses are proposed within any possible critical areas.

Having accurate information about the location and extent of individual wetlands is critical for rating or categorizing them correctly. In addition to defining the wetland edge, a wetland delineation includes collecting data about soils, vegetation, and hydrology in order to document that an area meets the definition of a wetland. The data is also used to complete the wetland rating. The rating/category in turn determines the wetland buffer width. The precise wetland and buffer location is also necessary for projects proposing wetland/buffer impacts in order to calculate the impact area and the mitigation requirement. Applicants should understand that wetlands will be regulated as they are defined in code and designated on the site, not as they are mapped in the NWI or other sources.

Having more specific criteria for when a delineation is required could improve certainty for permit applicants. Requiring a delineation for larger projects or those with proposed wetland/buffer impacts could improve the accuracy of wetland ratings and impact assessments, and help achieve no net loss of wetland and buffer functions.

State laws require that wetlands protected under the GMA and the Shoreline Management Act (RCW 90.58) must be delineated using a manual that is developed by Ecology and adopted into rules (RCW 36.70A.175; RCW 90.58.380). Ecology adopted a wetland delineation manual in 1997 (WAC 173-22-080). Subsequently the U.S. Army Corps of Engineers worked with states, federal agencies, and others to develop supplemental regional criteria to refine the 1987 delineation manual. Two regions fall within the state of Washington: the Arid West (dry lands west of the Continental Divide, from Idaho and eastern Washington south to the U.S. - Mexico border) and the Western Mountains, Valleys, and Coast. The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Corps 2008) applies in the arid portions of eastern Washington and a large part of Kittitas County. The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Corps 2010) applies in many of the mountainous areas along the western portion of Kittitas County. Guidance in the Regional Supplements should be followed to determine which manual to use depending on site conditions.

To maintain consistency between the state and federal delineations of wetlands, Ecology repealed WAC 173-22-080 (the state delineation manual) and replaced it with a revision of WAC 173-22-035 that states delineations should be done according to the currently approved federal manual and supplements. The changes became effective March 14, 2011.

Considerations for Code Updates

Based on the analysis above, there are several opportunities to improve the wetland sections of KCC Title 17A and make them more consistent with scientific standards and state law:

- Use the standard GMA definition of regulated wetlands. Excluding ongoing agriculture from regulation should be addressed in the exemptions section of the wetland regulations (see discussion below under "Agricultural Uses and Irrigated Wetlands").
- Clearly specify the types of applications that do and do not require a delineation of wetland boundaries. For example, some jurisdictions do not require a delineation for single-family residential projects on existing legal lots.

- Require the use of the Corps of Engineers Arid West or Western Mountains, Valleys, and Coast regional supplements (and future amendments) for wetland delineations. Delineations should be completed by a qualified wetland biologist.
- Clearly state that the location of wetlands for regulatory purposes will be determined based on a site-specific assessment.

Exemptions and Allowed Uses

Existing Kittitas County Code

Certain natural resource use activities are exempt from County wetland regulations (KCC 17A.03.020) including existing and ongoing irrigation and agriculture, forestry that is regulated by the state Forest Practices Act, activities involving artificially created habitat such as farm ponds and irrigation ditches, and "existing and ongoing natural resource activities." Kittitas County permitted and franchised utility facilities are also exempt. In addition, KCC 17A.04.040 allows alteration of up to two acres of Category IV wetlands without a mitigation requirement.

Exemptions for agricultural uses and irrigated wetlands are discussed in a separate section below because of the large amount of research and guidance available on these topics and their importance in Kittitas County.

The exemption for up to two acres of impact to Category IV wetlands may lead to a net loss of wetland acreage and function over time. Small wetlands can provide important functions. For example, researchers found that wetlands less than one-quarter acre in size in the Teanaway and Lower Swauk River drainages of Kittitas County provided amphibian breeding habitat (Quinn et al. 2001).

There is no size threshold for regulating wetlands under the federal Clean Water Act Section 404 permit process. The federal agencies that administer Section 404 (the Corps and EPA) have a goal of no net loss of wetland functions or values (NRC 2001). The current Kittitas County code is therefore inconsistent with federal wetland regulations.

However, state agencies recognize that local governments need to prioritize their regulatory efforts, and that it may be acceptable to exempt small, low-quality wetlands from regulation under certain conditions. This could be an alternative to exempting wetland impacts below a certain size. For example, the sample critical areas code provided in Ecology's guidance for small eastern Washington communities exempts *isolated* Category III and IV wetlands less than 1,000 square feet that: (a) are not associated with riparian areas or buffer; (b) are not part of a wetland mosaic; (c) do not contain habitat identified as essential for local populations of priority species identified by Washington Department of Fish and Wildlife or species of local importance; (d) are not a vernal pool; (e) are not an alkali wetland; and (f) do not contain aspen stands (Bunten et al. 2011).

As a local example, Grant County Code 24.08.240 provides an exemption from mitigation requirements for impacts to Category II and III wetlands smaller than 2,500 square feet and Category IV wetlands smaller than 5,000 square feet. For Category II and III wetlands, a critical areas assessment must conclude that the wetlands do not provide irreplaceable functions or functions that cannot be replicated, such as alkali wetlands.

Considerations for Code Updates

The following updates would make KCC Title 17A clearer and more consistent with scientific recommendations as well as state and federal laws:

- Clarify or remove the exemption for "existing and ongoing natural resource activities." What types of activities are being referred to? Is this different than the exemptions for agricultural and forestry activities?
- Define what types of "utility facilities" are exempt. Consider limiting the exemption to utilities with low potential impacts, such as installation within improved rights-of-way.
- Reconsider the exemption for impacts to up to two acres of Category IV wetlands regardless of quality. Consider replacing it with an exemption for small wetlands with low levels of function.
- Clarify that landowners who undertake exempt activities must still take reasonable care to protect wetland functions and values.

Agricultural Uses and Irrigated Wetlands

Existing Kittitas County Code

Kittitas County Code recognizes the importance of agriculture and livestock production to the economic stability, livelihood, and well being of citizens (KCC 1.28.060, 070). The County's definition of regulated wetlands (KCC 17A.02.310) excludes wetlands that result from leakage or seepage from irrigation systems. Existing and ongoing agricultural uses are specifically exempt from the County's wetland regulations. The term "existing and ongoing agricultural uses" is not defined in the code. The exemption extends to riparian habitat that has been created by or resulted from irrigation activities and facilities (KCC 17A.03.020).

Wetlands and Irrigation

Volume 2 of Ecology's best available science review (Section 8.3.3.5) provides a detailed discussion of irrigation-induced wetlands (Granger et al. 2005) that is summarized here. In order for a wetland to meet the GMA definition of an "artificial wetland intentionally created from a nonwetland site," it must meet the following criteria:

- For an area to be considered a wetland, it must have indicators of three features: water (wetland hydrology), plants (hydrophytic vegetation), and soils (hydric soils).
- For a wetland to be non-jurisdictional (artificial) it must meet both of the following characteristics: (a) be intentionally created, and (b) be located in a formerly non-wetland or upland site.

Therefore, some wetlands that exist because of irrigation may still be considered subject to state (and federal) regulations. For example, irrigation in a field may raise the groundwater table, or an

irrigation pipe may leak, resulting in an area that was formerly upland now meeting the definition of a wetland (wetland hydrology, hydrophytic vegetation, and hydric soils). Activities such as filling in this wetland would be regulated because the wetland was not intentionally created; it occurred as a "side effect" of irrigation practices. However, changes in irrigation or water conservation practices that dry up the wetland would not be regulated by state law.

Prior Converted Croplands

Prior converted croplands (PCC) are defined in federal law as administered by the U.S. Army Corps of Engineers. They are wetlands that were drained, dredged, filled, leveled, or otherwise manipulated, including the removal of woody vegetation, before December 23, 1985, to enable production of an agricultural commodity, and that: (1) have had an agricultural commodity planted or produced at least once prior to December 23, 1985; (2) do not have standing water (ponding) for more than 14 consecutive days during the growing season; and (3) have not since been abandoned. Even though PCCs have been altered by agricultural use, they can still provide important functions and are regulated at the state level (Granger et al. 2005; Sheldon et al. 2005).

Managing Agricultural Impacts on Wetlands

The scientific literature documents that agricultural activities can degrade wetland functions (see discussion above under "Wetland Functions in Kittitas County"). However, strict application of critical areas regulations may hinder farm operations and may not be effective for agricultural uses. Also, federal programs are available that provide incentives for farmers to voluntarily protect certain critical area functions.

To help resolve this conflict, the State of Washington adopted a new Voluntary Stewardship Program (VSP) for agricultural lands in 2011 (RCW 30.70A.705 - 904). Kittitas County elected to participate in the program in November 2011 (Ordinance 2011-12). The purpose of the VSP is to protect natural resources, including critical areas, while maintaining and enhancing the state's agricultural uses. It encourages voluntary local stewardship efforts as an alternative to critical areas regulation under the GMA. Of the 39 counties in Washington, 28 elected to participate in the program. Those counties that do not participate in the VSP will continue to regulate critical areas on agricultural lands as they do other critical areas.

Kittitas County designated the Upper Yakima and Alkali-Squilchuck watersheds for inclusion in the VSP; the Naches watershed is not included. Counties are not required to implement the VSP until adequate state funding is available. Once this occurs, the County will designate a watershed group to lead stewardship activities in the participating watersheds.

The watershed group will draft a work plan that includes two main components: (1) a stewardship component that protects natural resources in the participating watersheds; and (2) an enhancement component for improving the quality of critical areas. The stewardship component will include goals and monitoring measures that must be met in order for the County to remain eligible to participate in the VSP. The enhancement component will be entirely voluntary and activities will be implemented as funding is available (the program is currently unfunded).

Information that must be considered and included in the work plan is listed in RCW 36.70A.720.1. The work plan must be reviewed and approved by the Washington State Conservation Commission and a technical advisory committee.

Individual agricultural operators also have the option to create an individualized stewardship plan tailored to their operations. Technical assistance for creation of these plans will be provided by conservation districts or other qualified organizations.

The stewardship work plans will be evaluated at three, five, and 10 years, and counties will be required to take additional actions if goals for protecting critical areas are not being met. If the state does not provide adequate funding for the VSP, or if adequate progress is not made in meeting the goals of the work plan, counties are required to either create a new work plan or apply critical areas regulations for agricultural lands consistent with the GMA.

Because the VPS is a new program, little guidance is available for how to address it in local critical area ordinance updates. One example is Skagit County, which elected into the VSP and adopted critical area ordinance updates for agricultural lands in December 2011. The Skagit County code provides that if the land is in agricultural zoning and the activity qualifies as "ongoing agriculture," the activity is exempt from standard buffer requirements. However, the activity must not "harm or degrade" critical areas, and it must comply with protection measures specified in the code. If the activity is on agriculture zoned land but does not qualify as "ongoing agriculture," then the critical areas ordinance applies (Skagit County 2012).

Attachment C provides the revisions to the Skagit County critical areas code. The Skagit County ordinance updates are focused on streams but may provide guidance on how to craft a similar set of provisions for wetlands.

Considerations for Code Updates

The VSP will likely take time to fund and implement. In the interim, the following modifications would help to clarify the approach for protecting wetlands on agricultural lands:

- Add a definition of "existing and ongoing agricultural uses." Recent guidance provided by the state Department of Commerce to Douglas County could be helpful in creating code language that is consistent with state law; see Attachment D.
- Consider adopting revisions to the exemption for ongoing agricultural uses by requiring that these uses do not degrade wetland functions and include best practices to protect wetland areas. This would be more consistent with best available science and would work in tandem with the VSP once it is funded and a work plan is in place.
- The Field Office Technical Guides adopted by the Natural Resources Conservation Service can be referenced or incorporated into the code as they apply to Kittitas County (see attached Department of Commerce letter, Attachment D).

Wetland Rating System

Existing Kittitas County Code

KCC 17A.04.010 classifies wetlands into four categories: Category I (extreme high value), Category II (high value), Category III (average value), and Category IV (less than average value). The code does not specify the methods to be used to assign wetlands to these categories. The County's 1994 *Critical Areas Interim Policy Document* recommended that the County consider

adopting the state's tiered wetland rating system, which has since been replaced by a newer rating system based on wetland functions, as discussed below.

While local governments are not required to rate or classify wetlands, a wetland rating system can help target the appropriate level of protection for particular types of wetlands. The *Washington State Wetland Rating System for Eastern Washington* (Hruby 2007) represents the best available science because it is based on an understanding of wetland functions and what is needed to protect them (Bunten et al. 2011). The Washington State Eastern Washington Wetland Rating System has been adopted by other local jurisdictions such as Grant County, City of Ellensburg, and Douglas County.

While each wetland provides various beneficial functions, not all wetlands perform all functions, nor do they perform all functions equally well (Novitzski et al. 1995). The Washington State Eastern Washington Wetland Rating System was designed to differentiate between wetlands based on their sensitivity to disturbance, their significance, their rarity, our ability to replace them, and the functions they provide. To use the rating system, a qualified biologist assigns scores to a wetland based on indicators of how well it performs water quality, hydrologic, and wildlife habitat functions (see Table 1). The total function score determines the wetland category, from Category I (highest quality wetlands) to Category IV (lowest quality wetlands). In addition, certain unique types of wetlands are considered to be Category I or II. Wetlands in eastern Washington can be categorized using the Ecology rating system according to the following criteria (Hruby 2007):

Category I wetlands represent a unique or rare wetland type; or are more sensitive to disturbance; or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or provide a high level of functions. In eastern Washington, Category I wetlands include alkali wetlands, Washington Natural Heritage Program wetlands, bogs, mature and old-growth forested wetlands with slow-growing trees, and wetlands with aspen stands.

Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions. In eastern Washington, Category II wetlands include forested wetlands in the floodplains of rivers, mature and old-growth forested wetlands with fast-growing trees, and vernal pools.

Category III wetlands have a moderate level of function. They have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands. Isolated vernal pools are considered Category III wetlands in eastern Washington.

Category IV wetlands have the lowest levels of functions and are often heavily disturbed.

Considerations for Code Updates

Implementing the *Washington State Wetland Rating System for Eastern Washington* (Hruby 2007) has advantages in terms of wetland protection and management. This rating system provides an objective method to assess the characteristics of a wetland that make it likely to provide certain functions. The wetland rating is based on features that can be observed in the field and using common mapping tools, without requiring long-term studies. Therefore, using this

rating system would improve consistency with best available science and help standardize the way wetlands are managed in Kittitas County based on their functions.

Wetland Buffers

Existing Kittitas County Code

Wetland Buffer Widths

KCC 17A.02.320 defines wetland buffers as: "areas that surround and protect a wetland from adverse impact to the natural functions and values of the designated wetland." The required buffers range from 20 to 200 feet depending on the wetland category and size (KCC 17A.04.020).

The County's wetland buffer ranges are intended to reflect the impact of land uses on wetland functions and values. KCC 17A.04.025 requires the "least restrictive" width of buffer necessary to account for the intensity of the proposed land use; the presence of sensitive species; the potential for erosion; and measures proposed by the applicant to enhance functions and values of the wetland or buffer.

The buffer widths needed to protect certain functions depend on numerous site-specific factors such as the plant community, aspect, slope, soil type, and adjacent land use. Studies have found that the appropriate buffer width for a given wetland is specific to the environmental setting and functions to be achieved by that buffer (Castelle et al. 1992a; Castelle and Johnson 2000; Desbonnet et al. 1994; FEMAT 1993).

Several studies indicate that buffers ranging from 100 to 150 feet wide provide most (on the order of 80 percent) of potential functions in most situations (Castelle et al. 1992a; Desbonnet et al. 1994). In some of these studies, the relationship between buffer width and effectiveness is logarithmic, so that after a certain width an incremental increase in buffer width provides diminishing functional effectiveness. One study indicates that 90 percent of sediment removal can be accomplished within the first 100 feet of a riparian buffer, but an additional 80 feet of buffer is needed to remove just five percent more sediment (Wong and McCuen 1982).

However, studies show that wildlife responses to human disturbance are varied and a buffer of 50 to 150 feet may not provide enough separation or protection (Knutson and Naef 1997; Cooke Scientific Services 1992). Rather, wildlife use of wetland and riparian buffers is highly dependent upon the species in question and site-specific characteristics (i.e., type of wetland, geographic setting, etc.). Buffers of 200 to 600 feet or more from the aquatic resource has been documented in the scientific literature as more appropriate for some wildlife species (i.e., amphibians, elk) with large dispersal requirements (Sheldon et al. 2003; Richter and Azous 2001).

Four primary factors should be considered in determining the appropriate width and character of buffers: the quality, sensitivity, and functions of the aquatic resource; the nature of adjacent land use activity and its potential for impacts on the aquatic resource; the character of the existing buffer area (including soils, slope, vegetation, etc.); and the intended functions of the buffer (Granger et al. 2005). Several authors recommend using a buffer width system that incorporates site-specific factors rather than using fixed buffer widths (McMillan 2000, Todd 2000, Sheldon et al. 2005).

Ecology suggests three alternative approaches for local jurisdictions in eastern Washington to consider using to establish buffer widths (Granger et al. 2005):

- **Buffer Alternative 1.** Width based only on wetland category.
- **Buffer Alternative 2.** Width based on wetland category and the intensity of impacts from proposed changes in land use.
- **Buffer Alternative 3.** Width based on wetland category, intensity of impacts, and wetland functions or special characteristics. This alternative has two options for determining the widths of buffers when they are based on the score for habitat.

Attachment E includes appendices from *Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands* that describe these buffer alternatives in detail, as well as the scientific rationale for Ecology's buffer width recommendations.

Table 2 summarizes the existing Kittitas County buffer widths, those recommended by Ecology, and those from a few neighboring jurisdictions. Kittitas County's existing wetland buffers are similar to those of other local jurisdictions, although Kittitas County allows smaller buffers for Category III and IV wetlands. The Kittitas County buffers are generally smaller than those recommended by Ecology.

Similar to Ecology's buffer width Alternatives 2 and 3, the County's regulations provide for a range of buffer widths according to the wetland category. However, the code does not specify how the buffer width is to be determined within the range of buffers listed for each wetland category. For example, how much or what type of enhancement is required to qualify for the smallest buffer width? What is considered a high-intensity vs. a low-intensity land use?

The County code does not require buffers for some wetlands based on wetland category and size. This includes Category II wetlands less than 2,000 square feet; Category III wetlands less than 10,000 square feet; and Category IV wetlands less than one acre in size. Exempting wetlands from buffer requirements is not supported by scientific information.

Table 2. Ranges of Buffer Widths (feet)

Jurisdiction	Wetland Category			
	I	II	III	IV
Kittitas County	50-200	25-100	20-80	≤25
Douglas County	150	100	75	50
Grant County	100	75	50	25
Yakima County	25-200	25-100	25-75	25-50
City of Ellensburg	150	100	50	25
Ecology - Alt 1. (Width based on wetland category only)	250	200	150	50
Ecology - Alt. 2 (wetland category plus land use intensity)	125-250	100-200	75-150	25-50
Ecology - Alt. 3 (wetland category, land use intensity, functions scores, unique wetland types)	50-250	40-200	40-150	25-50

Uses in Wetland Buffers

Wetland buffer areas are to be retained in their natural condition or may be improved to enhance buffer functions and values. Where buffer disturbance has occurred during construction, revegetation with native vegetation may be required. The Kittitas County noxious weed ordinance must be followed (KCC 17A.04.035). The existing regulations do not specifically allow or prohibit other uses in buffers.

The goal of regulating the types of uses allowed within wetland buffers is to ensure that the buffers serve their purpose of protecting wetland functions over time. Uses that create impervious areas, clear vegetation, or compact soils may compromise the buffer's ability to protect wetland functions, particularly habitat and water quality functions. Examples of low-impact uses that are often allowed in buffers include stormwater treatment facilities (e.g., swales or level spreaders) and pervious walking trails. Standard wetland buffer widths should be based on the assumption that the buffer is well vegetated because the presence of dense, mature vegetation is what helps perform functions such as trapping sediment and providing cover and forage for wildlife. If a buffer is not well vegetated, a wider buffer may be required to ensure the same level of effectiveness (Sheldon et al. 2005).

Although reference is made to keeping buffers in a natural condition, the County's existing regulations do not explicitly state that wetland buffers must be well vegetated. The code says that revegetation "may be" required if buffers are disturbed during construction. The code does not specifically prohibit activities that reduce buffer functions such as impervious surfaces, soil compaction, or vegetation clearing in buffers.

Buffer Width Averaging

Wetland buffer width averaging is allowed in Kittitas County under certain conditions. The applicant has to demonstrate that: (1) averaging is necessary to avoid an extraordinary hardship caused by circumstances peculiar to the property; (2) the wetland contains variations in sensitivity due to physical characteristics; (3) low-impact land uses would be located adjacent to areas where the buffer is reduced; and (4) buffer width averaging will not adversely impact wetland function and values (KCC 17A.04.030).

The Kittitas County provisions for buffer width averaging are generally consistent with best available science and agency guidance. However, County code does not specify a minimum allowable buffer width (either in feet or percent of standard width). This could allow buffers to be reduced well below the widths that have been found in the scientific literature to provide certain functions.

Considerations for Code Updates

The following revisions would help ensure that County buffer requirements protect wetland functions and are more consistent with scientific information about buffer functions. These changes can also provide more certainty for applicants about what buffer widths will be applied to their projects.

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- Consider defining buffer standards for all regulated wetlands regardless of wetland size. Smaller, lower quality wetlands can be exempted from regulation as discussed under "Exemptions and Allowed Uses."
- Activities that reduce buffer functions (e.g., vegetation clearing, impervious surfaces, soil compaction) could be further limited.
- Clarify requirements to ensure buffers are well-vegetated with native vegetation.
- To ensure protection of wetland functions, specify a minimum buffer width (either in feet or percent of standard width) that is allowed for buffer width averaging.
- Formalize the criteria used to determine what buffer width is required for wetlands in each category. For example, define what land uses are considered low vs. high impact and the buffer required for each. Since the presence of threatened or endangered species can be difficult to determine without a detailed wildlife survey, consider using the wetland's habitat score (from the wetland rating system for eastern Washington) as a surrogate, and define what buffer width will be required for wetlands with a habitat score above a specified number of points. See Attachment E for examples.
- Continue to allow smaller buffers for projects that include enhancement measures, but specify the types of measures desired and how much this will affect the buffer width requirement. One option is to allow projects with a "high" land use intensity to be downgraded to "low" intensity if they include specific protection measures. See Attachment E for examples.
- Consider larger minimum buffers for Category III and IV wetlands.

Mitigation Sequencing

Existing Kittitas County Code

Mitigation sequencing is a concept defined in Washington state law (SEPA and the Shoreline Management Act, WAC 197-11-768 and 173-26). It is also part of the permit process under the federal Clean Water Act Section 404. Mitigation sequencing consists of the following steps taken in order:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
6. Monitoring the impact and taking appropriate corrective measures.

Kittitas County wetland regulations do not include a mitigation sequencing requirement. In other words, applicants are not required to document that proposed impacts to wetlands and buffers have been avoided and minimized before unavoidable impacts are allowed. This reduces the incentive for applicants to find ways to avoid impacts, and therefore it is more likely that mitigation will be required. Because many mitigation projects are unsuccessful (as discussed below under "Mitigation Ratios"), there is no guarantee that lost functions will be replaced, especially in the short term.

Recent evaluations of the success of mitigation efforts statewide and throughout the nation have strongly recommended more emphasis on mitigation sequencing to reduce the need for compensatory mitigation (Ecology 2008, ELI and TNC 2009).

Considerations for Code Updates

Adding a mitigation sequencing requirement to the County's wetland regulations would increase the incentive for applicants to avoid wetland and buffer impacts and the need for mitigation. This would reduce the potential for net loss of wetland functions.

Mitigation Ratios

Existing Kittitas County Code

The County's mitigation ratios vary from 1:1 for Category IV wetlands to 3:1 for Category I wetlands (KCC 17A.04.050). The code mentions three types of mitigation ("replacement, enhancement or rehabilitation of wetlands") but does not provide ratios specific to each type of mitigation.

For comparison, Table 3 lists the wetland mitigation ratios for Kittitas County, Ecology/Corps/EPA, and a few neighboring jurisdictions. Kittitas County's current mitigation ratios are lower than those recommended by the Ecology/Corps/EPA guidance, particularly for wetland restoration and enhancement. The Kittitas County ratios are similar to those for other local jurisdictions for Category II and III wetlands, and lower for Category I and IV wetlands.

Table 3. Examples of Wetland Mitigation Ratios (replacement area to impact area)

Jurisdiction	Wetland Category			
	I	II	III	IV
Kittitas County	3:1	2:1	1.5:1	1:1*
Douglas County	6:1	3:1	2:1	1.5:1.65
Grant County**	4:1	2:1	1.5:1	1.25:1
City of Ellensburg**	6:1	3:1	2:1	1.5:1
Ecology/ Corps / EPA***	4:1 creation 16:1 enhancement (based on scores for functions)	3:1 creation 12:1 enhancement	2:1 creation 8:1 enhancement	1.5:1 creation 6:1 enhancement

* For impacts exceeding 2 acres.

** Acreage requirements for enhancement are double those for restoration or creation.

*** Ecology/Corps/EPA ratios listed here are examples and do not include ratios for natural heritage wetlands or combinations of mitigation methods (e.g., enhancement plus creation). See Attachment E for Ecology's complete mitigation ratio recommendations, which are the same as those in the Ecology/Corps/EPA guidance document.

Mitigation ratios are important because of several issues associated with compensatory mitigation projects (Granger et al. 2005; Ecology et al. 2006a, NRC 2001, Ecology 2008):

- There is a risk that the mitigation project will not be entirely successful.
- There will be a temporal loss of wetland functions between the time an impact occurs and the time the functions are reestablished.
- Some types of compensation (especially enhancement and preservation) result in a net loss of wetland acreage and/or function.
- Impacts wetlands with high levels of function should require more mitigation than impacts to low-quality wetlands.
- Additional wetland area may be required to offset losses if out-of-kind compensation is proposed or the replacement wetland is located quite a distance from the impact area.
- A permanent loss of wetlands should require more mitigation than a temporary wetland impact.

Studies have shown that many compensatory mitigation projects have not been successful, resulting in lost wetland acreage, wetland types, and wetland functions. Common reasons for failure include the following (Granger et al. 2005, Castelle et al. 1992b):

- Poor site selection;
- Poor site design;
- Inappropriate or inadequate goals, objectives, and performance measures;
- Lack of sufficient water;
- Inappropriate water regime;
- Poor implementation and failure to implement the design;
- Inadequate maintenance, infestation by invasive species;
- Failure to protect projects from on-site and off-site impacts such as sediment and pollutant loading;
- Grazing by geese or other animals;
- Destruction by floods, erosion, fires, or other catastrophic events;
- Off-road vehicles; and
- Lack of regulatory follow-up and enforcement.

In a study of wetland mitigation sites in Washington, Ecology found that only 13 percent of the projects were fully successful based on replacement of wetland acreage, wetland functions, and achievement of project goals, objectives, and performance standards. Half of the projects failed or were minimally successful. One-third of the projects were moderately successful. Other findings of the Ecology study include the following (Johnson et al. 2000, 2002; Sheldon et al. 2005):

- Approximately half of the mitigation projects had problems with installation.

- Just over half of the projects achieved the required wetland acreage.
- While most projects had goals, objectives, and performance standards, only around a third of the projects met them.
- Only a third of the mitigation projects were monitored.
- A lack of maintenance was one of the main reasons for poor mitigation success.
- About half of compensatory wetland mitigation projects received some regulatory follow-up in the form of site visits, phone calls, or letters. All of the projects lacking regulatory follow-up were either minimally or not successful, while two-thirds of the projects receiving some kind of follow-up were either fully or moderately successful.

Buffer mitigation projects generally are affected by the same factors as wetland mitigation. Success of plant growth in the buffer depends on water, nutrient and soil requirements for plants, and controlling the invasion of non-native species (Gwin et al. 1999; Magee et al. 1999).

Different types of wetland mitigation projects (e.g., creation, restoration, and enhancement) have varying levels of success in mitigating for lost wetland acreage and functions. The state and federal agencies that regulate wetlands recognize four types of wetland mitigation. The agency order of preference for the types of wetland compensation is as follows (Ecology et al. 2006a):

1. Restoration (re-establishment or rehabilitation). The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland.
2. Creation (establishment). The manipulation of the physical, chemical, or biological characteristics present to develop a wetland on an upland or deepwater site, where a wetland did not previously exist.
3. Enhancement. The manipulation of the physical, chemical, or biological characteristics of a wetland to heighten, intensify or improve specific function(s) or to change the growth stage or composition of the vegetation present.
4. Preservation (protection/maintenance). The removal of a threat to, or preventing the decline of, wetland conditions by an action in or near a wetland. Preservation is an approved method for compensatory mitigation only in limited circumstances.

Restoration is considered more feasible and sustainable than creation of wetlands because a restoration site is by definition a historic or degraded wetland which may already have the appropriate substrate, seed bank, and hydrology. Wetland creation is less likely to succeed than restoration because it begins with an upland site. However, Johnson et al. (2002) found that in Washington State, 60 percent of created wetlands were either fully or moderately successful. Many created wetlands resulted in significant gains in water quality and quantity functions.

The agencies prefer that enhancement is not used alone but is combined with creation or restoration. The use of enhancement alone for a mitigation project raises the following concerns (Ecology et al. 2006a, Johnson et al. 2002):

- Most enhancement actions focus on improving vegetation structure and ignore improving environmental processes that support wetland systems and functions.

- There is a net loss of water quality and quantity functions and only modest gains in habitat functions.
- The use of enhancement as a primary means of compensatory mitigation contributes to a loss of wetland acreage. By definition, enhancement occurs in an existing wetland and so it does not replace lost wetland area.

As shown in Table 3, some jurisdictions require the mitigation ratio for enhancement to be double that for restoration or creation.

Considerations for Code Updates

The following updates to the County's wetland regulations would help improve the effectiveness of mitigation projects and reduce the potential net loss of wetland functions:

- Define specific ratios according to the types of mitigation actions proposed (creation, restoration, and enhancement). Higher ratios for enhancement would be consistent with the approach taken by other agencies and jurisdictions.
- Consider increases in wetland mitigation ratios based on the state and federal interagency guidance (Ecology et al. 2006a, 2006b) and upon the experience of past mitigation projects in Kittitas County.

Mitigation Monitoring and Performance Standards

Existing Kittitas County Code

The County's existing wetland regulations do not include requirements for mitigation monitoring or performance standards. Monitoring is the mechanism by which the County will know whether a mitigation project is being implemented successfully. The monitoring needs to be tied to ecological performance standards that evaluate whether the project is replacing lost wetland functions (ELI and TNC 2009).

Monitoring is also important for knowing whether the mitigation site needs maintenance. Ongoing maintenance could include weeding, irrigation system upkeep, mulching, and removal of litter. One year of maintenance is generally part of most construction contracts. This usually includes replacement of dead or dying plants. However, experience shows that many sites may require maintenance for at least 3 to 5 years (Ecology et al. 2006a).

As discussed earlier under "Mitigation Ratios," a review of mitigation projects in Washington found that many projects were not monitored or maintained, and this was a factor in project failure. To help ensure the success of mitigation projects, the agencies recommend monitoring for at least 5 years. In some cases, longer monitoring periods may be needed, such as for projects establishing scrub-shrub or forested wetlands. Monitoring periods may also be extended if the performance standards are not being met (Ecology et al. 2006b).

Wetland mitigation plans should identify the project's goals, the steps that will be taken to accomplish those goals (objectives), and measurable indicators to determine if the objectives have

been achieved (performance standards). Together, the goals, objectives, and performance standards determine whether the project is successful (Ecology et al. 2006a).

Mitigation plans should also include a contingency plan. Contingency plans outline actions to be taken if monitoring reveals a problem that would prevent the site from attaining its performance standards (Ecology et al. 2006a).

Because the County's existing wetland regulations do not include requirements for mitigation monitoring or performance standards, it is possible that mitigation plans will not reflect scientific studies or what practitioners have learned over the years. Without a requirement for monitoring and maintenance, it will be difficult for the County to know whether permitted mitigation projects are successful. Regulatory agency follow-up is important to ensuring mitigation success as discussed earlier.

Considerations for Code Updates

To improve the success of compensatory mitigation projects and reduce the risk of a net loss of wetland functions, the following updates to County wetland regulations could be considered:

- Add a section to the wetland regulations that requires mitigation projects to have written goals, objectives, performance standards, a monitoring and maintenance plan, and a contingency plan. The project applicant is responsible for site monitoring and maintenance throughout a specified number of years.
- Encourage applicants to use the interagency guidance for developing wetland mitigation plans (Ecology et al. 2006a, 2006b).

Summary of Considerations for Code Updates

There are a number of ways that the Kittitas County wetland regulations (KCC Title 17A) can be strengthened and clarified to provide more specific protection for wetlands and wetland functions based upon best available science. The considerations in this document are based upon the scientific record to date and focus only on this wetland regulatory program. We recognize that the County needs to balance all GMA goals and can look to this and other land management, natural resource use, stormwater, and roads/maintenance programs in total to assess progress toward protecting wetland functions.

Table 4 summarizes considerations for updates to Kittitas County wetland regulations based on a review of the best available science and agency guidance documents as described above.

Table 4. Summary of Considerations for Updates to Kittitas County Wetland Regulations

Topic	Kittitas County Code Sections	Potential Code Changes
Designating and Delineating Regulated Wetlands	17A.02.310: Wetlands (definition)	Use the standard GMA definition of regulated wetlands. Excluding ongoing agriculture from regulation should be addressed in the exemptions section of the wetland regulations (see discussion below under "Agricultural Uses and Irrigated Wetlands").
	17A.03.035: Critical area checklist and required information	Clearly specify the types of applications that do and do not require a delineation of wetland boundaries. For example, some jurisdictions do not require a delineation for single-family residential projects.
	17A.03.035: Critical area checklist and required information	Require the use of the Corps of Engineers Arid West or Western Mountains, Valleys, and Coast regional supplements (and future amendments) for wetland delineations. Delineations should be completed by a qualified wetland biologist.
	17A.03.025: Preliminary identification of critical areas - Maps and reference material	Clearly state that the location of wetlands for regulatory purposes will be determined based on a site-specific assessment.
Exemptions and Allowed Uses	17A.03.020: Exempt land use activities	Clarify or remove the exemption for "existing and ongoing natural resource activities." What types of activities are being referred to? Is this different than the exemptions for agricultural and forestry activities?
	17A.03.020: Exempt land use activities	Define what types of "utility facilities" are exempt. Consider limiting the exemption to utilities with low potential impacts, such as installation within improved rights-of-way.
	17A.04.040: Allowed uses	Reconsider the exemption for impacts to up to two acres of Category IV wetlands regardless of quality. Consider replacing it with an exemption for small wetlands with low levels of function.
	17A.03.020: Exempt land use activities	Clarify that landowners who undertake exempt activities must still take reasonable care to protect wetland functions and values.
Agricultural Uses and Irrigated Wetlands	17A.03.020: Exempt land use activities	Add a definition of "existing and ongoing agricultural uses." Recent guidance provided by the state Department of Commerce to Douglas County could be helpful in creating code language that is consistent with state law; see Attachment D.

Preliminary Draft

Topic	Kittitas County Code Sections	Potential Code Changes
	17A.03.020: Exempt land use activities	Consider adopting revisions to the exemption for ongoing agricultural uses by requiring that these uses do not degrade wetland functions and include best practices to protect wetland areas. This would be more consistent with best available science and would work in tandem with the Voluntary Stewardship Program once it is funded and a work plan is in place.
	17A.03.020: Exempt land use activities	The Field Office Technical Guides adopted by the Natural Resources Conservation Service can be referenced or incorporated into the code as they apply to Kittitas County (see attached Department of Commerce letter, Attachment D).
Wetland Rating System	17A.04.010 Wetlands	Implementing the <i>Washington State Wetland Rating System for Eastern Washington</i> (Hruby 2007) has advantages in terms of wetland protection and management. This rating system provides an objective method to assess the characteristics of a wetland that make it likely to provide certain functions. The wetland rating is based on features that can be observed in the field and using common mapping tools, without requiring long-term studies. Therefore, using this rating system would improve consistency with best available science and help standardize the way wetlands are managed in Kittitas County based on their functions.
Wetland Buffers	17A.04.020: Buffer width requirements.	Consider defining buffer standards for all regulated wetlands regardless of wetland size. Smaller, lower quality wetlands can be exempted from regulation as discussed under "Exemptions and Allowed Uses."
	17A.04.035: Natural condition of wetland buffer	Activities that reduce buffer functions (e.g., vegetation clearing, impervious surfaces, soil compaction) could be further limited.
	17A.04.035: Natural condition of wetland buffer	Clarify requirements to ensure buffers are well-vegetated with native vegetation.
	17A.04.030: Wetland buffer averaging	To ensure protection of wetland functions, specify a minimum buffer width (either in feet or percent of standard width) that is allowed for buffer width averaging.

Topic	Kittitas County Code Sections	Potential Code Changes
	17A.04.020: Buffer width requirements	Formalize the criteria used to determine what buffer width is required for wetlands in each category. For example, define what land uses are considered low vs. high impact and the buffer required for each. Since the presence of threatened or endangered species can be difficult to determine without a detailed wildlife survey, consider using the wetland's habitat score (from the wetland rating system for eastern Washington) as a surrogate, and define what buffer width will be required for wetlands with a habitat score above a specified number of points. See Attachment E for examples.
	17A.04.020: Buffer width requirements	Continue to allow smaller buffers for projects that include enhancement measures, but specify the types of measures desired and how much this will affect the buffer width requirement. One option is to allow projects with a "high" land use intensity to be downgraded to "low" intensity if they include specific protection measures. See Attachment E for examples.
	17A.04.020: Buffer width requirements	Consider larger minimum buffers for Category III and IV wetlands.
Mitigation Sequencing	Not currently included in code	Adding a mitigation sequencing requirement to the County's wetland regulations would increase the incentive for applicants to avoid wetland and buffer impacts and the need for mitigation. This would reduce the potential for net loss of wetland functions.
Mitigation Ratios	17A.04.050 Wetland replacement ratios	Define specific ratios according to the types of mitigation actions proposed (creation, restoration, and enhancement). Higher ratios for enhancement would be consistent with the approach taken by other agencies and jurisdictions.
	17A.04.050 Wetland replacement ratios	Consider increases in wetland mitigation ratios based on the state and federal interagency guidance (Ecology et al. 2006a, 2006b) and upon the experience of past mitigation projects in Kittitas County.
Mitigation Monitoring and Performance Standards	Not currently included in code	Add a section to the wetland regulations that requires mitigation projects to have written goals, objectives, performance standards, a monitoring and maintenance plan, and a contingency plan. The project applicant is responsible for site monitoring and maintenance throughout a specified number of years.
	Not currently included in code	Encourage applicants to use the interagency guidance for developing wetland mitigation plans (Ecology et al. 2006a, 2006b).

References

Adamus, P.R., Clairan, E.J., Smith, R.D., and Young R.E. 1987. Wetland Evaluation Technique (WET).

Adamus, P.R., E.J. Clairain, Jr., M.E. Morrow, L.P. Rozas, and R.D. Smith. 1991. Wetland Evaluation Technique (WET), Volume I: Literature Review and Evaluation. WRP-DE-2. Vicksburg MS: U.S. Army Corps of Engineers Waterways Experiment Station.

Azous, A.L. and R.R. Horner, editors. 2001. Wetlands and urbanization, implications for the future. Lewis Publishers, New York.

Booth, D.B. 2000. Forest cover, impervious-surface area, and the mitigation of urbanization impacts in King County, Washington. Prepared for King County Water and Land Resources Division. Seattle, Washington.

Brettar, I. and M.G. Hoefle. 2002. Close correlation between the nitrate elimination rate by denitrification and the organic matter content in hardwood forest soils of the upper rhine floodplain (France). *Wetlands*, Vol. 22, pp. 214-224.

Bunten, D., A. McMillan, R. Mraz, and J. Sikes. 2011. Wetlands & CAO Updates: Guidance for Small Cities - Eastern Washington Version. January 2010. Publication No. 10-06-001 (1st Revision July 2011)

Castelle, A.J., and A.W. Johnson. 2000. Riparian vegetation effectiveness. National Council for Air and Stream Improvement Tech. Bull. No. 799.

Castelle, A.J., C. Conolly, M. Emers, E.D. Metz, S. Meyer, and M. Witter. 1992a. Wetland buffers: An annotated bibliography. Publ. 92-11. Prepared by Adolfson Associates Inc. for Shorelands and Coastal Zone Manage. Program, Washington Department of Ecology, Olympia, Washington.

Castelle, A.J., C. Conolly, M. Emers, E.D. Metz, S. Meyer, M. Witter, S. Mauermann, M. Bentley, D. Sheldon, and D. Dole. 1992b. Wetland mitigation replacement ratios: Defining equivalency. Prepared by Adolfson Associates, Inc. for Shorelands and Coastal Zone Management Program, Washington Department of Ecology, Olympia, Washington. Publ. #92-08.

City of Portland. 2001. Streamside science and an inventory of significant riparian and wetland resources. Discussion draft. City of Portland, Oregon Bureau of Planning.

Cooke Scientific Services, Inc. 1992. Wetland Buffers - a field evaluation of buffer effectiveness in Puget Sound. Prepared for Washington Department of Ecology.

Cooke Scientific Services, Inc. 1995. Wetland and buffer functions semi-quantitative assessment methodology.

Cooke Scientific Services, Inc. 2000. Wetland and buffer functions semi-quantitative assessment methodology (SAM), Final working draft user's manual.

Preliminary Draft

- Corps (U.S. Army Corps of Engineers). 1990. Corps Regulatory Guidance Letter 90-07 - Clarification of the Phrase "Normal Circumstances" as it Pertains to Cropped Wetlands.
- Corps (U.S. Army Corps of Engineers). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). September 2008.
- Corps (U.S. Army Corps of Engineers). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region.
- Creighton, J.H. R.D. Sayler, J.E. Tabors and M.J. Monda. 1997. Effects of wetland excavation on avian communities in eastern Washington. *Wetlands* Vol. 17, No. 2, June 1997, pp. 216-227.
- CTED (Washington State Department of Community, Trade and Economic Development). 2003. Critical Areas Assistance Handbook: Protecting Critical Areas Within the Framework of the Washington Growth Management Act. November 2003.
- Desbonnet, A., P. Pogue, V. Lee, and N. Wolff. 1994. Vegetated buffers in the coastal zone. Coastal Resources Center, Rhode Island Sea Grant, University of Rhode Island.
- Ecology (Washington State Department of Ecology). 2008. Making Mitigation Work: The Report of the Mitigation that Works Forum, December 2008. Publication No. 08-06-018.
- Ecology (Washington State Department of Ecology), U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. 2006a. Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1). Washington State Department of Ecology Publication #06-06-011a. Olympia, WA.
- Ecology (Washington State Department of Ecology), U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. 2006b. Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1). Washington State Department of Ecology Publication #06-06-011b. Olympia, WA.
- ELI and TNC (Environmental Law Institute and The Nature Conservancy). 2009. The Next Generation of Mitigation: Linking Current and Future Mitigation Programs with State Wildlife Action Plans and Other State and Regional Plans. August 2009.
- EPA (Environmental Protection Agency). 1996. Protecting Natural Wetlands - A Guide to Stormwater Best Management Practices. EPA-843-B-96-001. Office of Water (4502F) Washington, DC
- Federal Register. 1982. Title 33: Navigation and navigable waters; Chapter II, Regulatory Programs of the Corps of Engineers. Vol 47, No. 138, p. 31810, U.S. Govt. Printing Office, Washington, D.C.
- Federal Register. 1986. 40 CFR Parts 320 through 330: Regulatory Programs of the Corps of Engineers; Final Rule. Vol. 51. No. 219. pp. 41206-41260, U.S. Govt. Printing Office, Washington, D.C.
- FEMAT (Forest Ecosystem Management Assessment Team). 1993. Forest ecosystem management: An ecological, economic and social assessment. Report of the Forest Ecosystem Management Assessment Team, USDA Forest Service et al., Washington, D.C.

Gambrell, R. and P. Trace. 1994. Toxic metal in wetlands: A review. *Journal of Environmental Quality* 23:883-892.

Granger, T., T. Hruby, A. McMillan, D. Peters, J. Rubey, D. Sheldon, S. Stanley, E. Stockdale. April 2005. *Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands*. Washington State Department of Ecology. Publication #05-06-008. Olympia, WA.

Gwin, S.E., M.E. Kentula, P.W. Shaffer and U.S. Environmental Protection Agency. 1999. Evaluating the effects of wetland regulation through hydrogeomorphic classification and landscape profiles. *Wetlands*, Vol. 19, No.3, pp. 477-489.

Hruby, T. 2007. *Washington State Wetland Rating System For Eastern Washington- Revised. Annotated Version March 2007*. Ecology Publication # 04-06-15.

Hruby, T., W.E. Cesanek, and K.E. Miller. 1995. Estimating relative wetland values for regional planning. *Wetlands*, Vol. 15, pp. 93-107.

Hruby, T., T. Granger, K. Brunner, S. Cooke, K. Dublanica, R. Gersib, L. Reinelt, K. Richter, D. Sheldon, E. Teachout, A. Wald, and F. Weinmann. 1999. *Methods for assessing wetland functions. Volume I: Riverine and depressional wetlands in the lowlands of Western Washington*. Washington State Department of Ecology Publication #99-115.

Hruby, T., K. Harper, and S. Stanley. 2010. *Selecting Wetland Mitigation Sites Using a Watershed Approach (Eastern Washington)*. Washington State Department of Ecology Publication #10-06-007.

Johnson, P., D.L. Mock, E.J. Teachout, and A. McMillan. 2000. *Washington State Wetland Mitigation Evaluation Study Phase 1: Compliance*. Publication No. 00-06-016. Olympia, WA: Washington State Department of Ecology.

Johnson, P., D.L. Mock, A. McMillan, L. Driscoll, and T. Hruby. 2002. *Washington State Wetland Mitigation Evaluation Study Phase 2: Evaluating Success*. Publication No. 02-06-009. Olympia, WA: Washington State Department of Ecology.

Kauffman, J.B., M. Mahrt, L.A. Mahrt, and W.D. Edge. 2001. *Wildlife of riparian habitats. Chapter 14 in Johnson, D.H. and T.A. O'Neil. 2001. Wildlife-habitat relationships in Oregon and Washington*. Oregon State University Press. Corvallis, Oregon.

Kentula, M.E. 2002. *Tracking changes in wetlands and urbanization: Sixteen years of experience in Portland, Oregon*. U.S. EPA presentation at Urban Wetlands Sustaining Multiple Functions Conference. May 20-21, 2002. Portland State University, Portland, Oregon.

Kittitas County. 1994. *Kittitas County Critical Areas Interim Policy Document*. Draft July 12, 1994.

Kittitas County Board of County Commissioners. 1995. *Ordinance No. 95-15 Amending Kittitas County Interim Critical Areas Ordinance 94-22*. October 1995.

Kittitas County Board of County Commissioners. 2011. Ordinance No. 2011-012; An Ordinance Electing to Participate in the Voluntary Stewardship Program (RCW 36.70A.705). Adopted November 30, 2011.

Kittitas County Community Development Services. 2012. Voluntary Stewardship Program newsletter; Issue No. 1 - Frequently Asked Questions.

Knutson, K.C. and V.L. Naef. 1997. Management recommendations for Washington's priority habitats: Riparian. Washington Department of Fish and Wildlife, Olympia Washington.

Magee, T.K., T.L. Ernst, M.E. Kentula, and K.A. Dwire. 1999. Floristic comparison of freshwater wetlands in an urbanizing environment. *Wetlands*, Vol. 19, No.3, pp. 517-534.

May, C.W., R.R. Horner, J.R. Karr, B.W. Mar, and E.B. Welsh. 1997. Effects of urbanization on small stream in the Puget Sound lowland ecoregion. *Watershed Protection Techniques*, 2:483-494.

McMillan, A. 2000. The Science of wetland buffers and its implications for the management of wetlands. Masters Thesis, The Evergreen State College and Washington Department of Ecology, Olympia, Washington.

Mitsch, W. J. and J.G. Gosselink. 2000. *Wetlands*. 3rd ed. Van Nostrand Reinhold, New York.

Novitski R.P., D. Smith, and J.D. Fretwell. 1995. Restoration, creation and recovery of wetlands: Wetland functions, values and assessment. United States Geological Survey Water Supply Paper 2425.

NRC (National Research Council). 2001. *Compensating for Wetland Losses under the Clean Water Act*. National Academy Press, Washington DC.

Null, W., G. Skinner, and W. Leonard. 2000. Wetland functions characterization tool for linear projects. Washington State Department of Transportation, Environmental Affairs Office. Olympia, Washington.

O'Connell, M.A., J.G. Hallett, S.D. West, K.A. Kelsey, D.A. Manuwal, and S.F. Pearson. 2000. Effectiveness of riparian management zones in providing habitat for wildlife. Submitted to the LWAG, Timber Fish and Wildlife Program. Cheney, Washington.

Quinn, T., J. Gallie, and D.P. Volson. 2001. Amphibian occurrence in artificial and natural wetlands of the Teanaway and Lower Swauk River drainages of Kittitas County, Washington. *Northwest Science* Vol. 75 No. 1, pp. 84-89.

Reinelt, L., R. Horner and A. Azous. 1998. Impacts of urbanization on palustrine (depressional freshwater) wetlands—research and management in the Puget Sound region in *Urban Ecosystems*, Vol. 2 Number 4.

Reppert, R.T., W. Sigles, E. Stakhiv, L. Messman, and C. Meyers. 1979. Wetlands values: Concepts and methods for wetlands evaluation. Inst. for Water Resources, U.S. Army Corps of Engineers, Fort Belvoir, Virginia. Res. rpt. 79-R1.

Preliminary Draft

Richter, K.O., and A.L. Azous. 2001. Chapter 5 Amphibian distribution, abundance, and habitat use. *in* Azous, A.L. and R.R. Horner, editors. *Wetlands and Urbanization: Implications for the Future*. Lewis Publishers. New York, New York.

Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale. March 2005. *Wetlands in Washington State - Volume 1: A Synthesis of the Science*. Washington State Department of Ecology. Publication #05-06-006. Olympia, WA.

Sipple, S. 2002. Wetland functions and value. Available: <http://www.epa.gov/watertrain/wetlands/>. Accessed: August 3, 2004. U.S. Environmental Protection Agency.

Skagit County. 2012. Ag-CAO 2011 Update & VSP. Available: <http://www.skagitcounty.net/Common/asp/default.asp?d=PlanningandPermit&c=General&P=agcao2011UPDATE.htm>. Accessed April 2012.

Todd. 2000. Making decisions about riparian buffer width. International conference on riparian ecology and management in multi-land use watersheds, American Water Resources Association Conference Proceedings, August 28-31, 2000, Portland, Oregon. pp. 445-449.

Washington State Conservation Commission. Undated. *Washington State's Voluntary Stewardship program - fact sheet*.

WDFW (Washington State Department of Fish and Wildlife). 1992. *Buffer needs of wetland wildlife. Final Draft, February 12, 1992*. Olympia, Washington.

WDFW (Washington State Department of Fish and Wildlife). 2009. *Land Use Planning for Salmon, Steelhead, and Trout: A Land Use Planner's Guide to Salmon Habitat Protection and Recovery*. October 2009. Aquatic Habitat Guidelines Program.

Wong, S.L. and R.H. McCuen. 1982. *The design of vegetative buffer strips for runoff and sediment control. A technical paper developed as part of a study of stormwater management in coastal areas. Funded by Maryland Coastal Zone Management Program*.

Attachment A. Kittitas County Code Title 17A

DRAFT

- for the proposed zone; and
- f. The proposed amendment will not be materially detrimental to the use of properties in the immediate vicinity of the subject property; and
- g. The proposed changes in use of the subject property shall not adversely impact irrigation water deliveries to other properties; and
- h. The proposed amendment is in full compliance with Chapter 17.13 KCC, Transfer of Development Rights. (Ord. 2010-006, 2010; Ord. 2007-22, 2007; Ord. 96-19 (part), 1996; Ord. 96-1, 1996; Res. 83-10, 1983)

Kittitas County Code

Title 17A | CRITICAL AREAS

Chapters

- 17A.01 Statutory Authorization, Purpose and Objectives
- 17A.02 Definitions
- 17A.03 Administration
- 17A.04 Critical Areas Designation and Development Standards
- 17A.05 Frequently Flooded Areas
- 17A.06 Geologically Hazardous Areas
- 17A.07 Habitat
- 17A.08 Aquifer Recharge Areas
- 17A.55 Repealed

Chapter 17A.01

STATUTORY AUTHORIZATION, PURPOSE AND OBJECTIVES

Sections

- 17A.01.010 Statutory authorization.
- 17A.01.015 Purpose and objectives.
- 17A.01.020 New critical areas.

17A.01.010 Statutory authorization.

The Washington State Legislature requires local governments who plan under RCW 36.70A.040 to designate critical areas and adopt development regulations concerning critical areas. (RCW 36.70A.170 and 36.70A.060.) In adopting these regulations, the county has considered the guidelines established pursuant to RCW 36.70A.050. (Ord. 94-22 (part), 1994).

17A.01.015 Purpose and objectives.

This critical areas chapter is intended to set forth the procedure by which critical areas are designated, and to protect critical areas, pursuant to RCW 36.70A.170 (designation) and RCW 36.70A.060 (development regulations). All regulations established herein may not prohibit uses permitted prior to their adoption and shall remain in effect until Kittitas County adopts permanent development regulations pursuant to RCW 36.70A.120. (RCW 36.70A.060(1)). (Ord. 94-22 (part), 1994).

17A.01.020 New critical areas.

This critical areas chapter is based upon Washington State law and the various maps and regulations referenced herein as of the date of the adoption of the ordinance codified in this chapter. Subsequent amendment of state law, or identification by the state of new information concerning critical areas, or the

listing by the state of new threatened, endangered, or sensitive species will not be deemed by the county to automatically amend this chapter. This chapter is based upon the law, information, public comment, and scientific study as of the date of its adoption. A change in any of these factors may lead to future amendment of this chapter, but only after complying with the normal requirements for amending county ordinances. It is the policy of Kittitas County to insure that any amendments to this chapter will only occur after landowners and county residents have an opportunity for significant participation and consultation. (Ord. 94-22 (part), 1994).

Chapter 17A.02

DEFINITIONS

Sections

- 17A.02.010 Agriculture.
- 17A.02.020 Areas with a critical recharging effect on aquifers used for potable water.
- 17A.02.030 Base flood.
- 17A.02.040 Big game winter range.
- 17A.02.050 Buffer.
- 17A.02.060 Critical areas.
- 17A.02.070 Development.
- 17A.02.080 Erosion hazard areas.
- 17A.02.090 Fish and wildlife habitat conservation areas.
- 17A.02.100 Flood fringe.
- 17A.02.110 Flood protection elevation.
- 17A.02.120 Floodplain.
- 17A.02.130 Floodway.
- 17A.02.140 Frequently flooded area.
- 17A.02.150 Geologically hazardous areas.
- 17A.02.160 Groundwater.
- 17A.02.170 Hazardous materials.
- 17A.02.180 Irrigation.
- 17A.02.190 Irrigation system.
- 17A.02.200 Landslide hazard areas.
- 17A.02.210 Mine hazard areas.
- 17A.02.220 Native vegetation and fauna.
- 17A.02.230 Priority species habitats.
- 17A.02.240 Priority animal species.
- 17A.02.250 Riparian habitat.
- 17A.02.260 Seismic hazard areas.
- 17A.02.270 Species of local importance.
- 17A.02.280 Volcanic hazard area.
- 17A.02.290 Water rights.
- 17A.02.300 Waters/water typing system.
- 17A.02.310 Wetlands.
- 17A.02.320 Wetland buffers.
- 17A.02.330 Wetland replacement ratio.

17A.02.010 Agriculture.

"Agriculture" is the grazing, feeding, and watering of livestock; plowing, seeding, cultivation, and harvesting for the production of crops and pasture; soil and water conservation practices; the creation and maintenance of farm or stock ponds, irrigation ditches, drainage ditches, underground drainage systems, fences and farm roads, the control of noxious weeds, and includes any associated structures, appurtenances, equipment, or activities. (Ord. 94-22 (part), 1994).

17A.02.020 Areas with a critical recharging effect on aquifers used for potable water.

"Areas with a critical recharging effect on aquifers used for potable water" are areas where an aquifer that is a source of drinking water is vulnerable to contamination that would effect the potability of the water. (WAC 365-190-030(2)). (Ord. 94-22 (part), 1994).

17A.02.030 Base flood.

"Base flood" means a flood having a one percent chance of being equaled or exceeded in any given year. (Ord. 94-22 (part), 1994).

17A.02.040 Big game winter range.

"Big game winter range" means wintering areas used by deer, elk, and bighorn sheep. The wintering areas are owned or leased by the Washington Department of Fish and Wildlife. These lands also provide significant habitat for other species and constitute wildlife conservation areas. (Ord. 94-22 (part), 1994).

17A.02.050 Buffer.

"Buffer" means an area which is an integral part of a critical area and which enhances its protection. (Ord. 94-22 (part), 1994).

17A.02.060 Critical areas.

"Critical areas" are: (1) wetlands; (2) areas with a critical recharging effect on aquifers used for potable water; (3) fish and wildlife habitat conservation areas; (4) frequently flooded areas; and (5) geologically hazardous areas. (Ord. 94-22 (part), 1994).

17A.02.070 Development.

"Development" constitutes any activity specified in Section 17A.03.015. (Ord. 94-22 (part), 1994).

17A.02.080 Erosion hazard areas.

"Erosion hazard areas" are those geologically hazardous areas containing soils which may experience or have experienced a severe to very severe surface erosion process. (Ord. 94-22 (part), 1994).

17A.02.090 Fish and wildlife habitat conservation areas.

"Fish and wildlife habitat conservation areas" are:

1. Those lands in Kittitas County owned or leased by the Washington State Department of Fish and Wildlife;
2. Those lands donated to or purchased by Kittitas County for corridors pursuant to RCW 36.70A.160;
3. Wetlands;
4. Big game winter range;
5. Riparian habitat;
6. Habitats for species of local importance. (Ord. 94-22 (part), 1994).

17A.02.100 Flood fringe.

The "flood fringe" is the area between the floodway and the boundary of the one-hundred-year floodplain. The flood fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevation of the one-hundred-year floodplain more than one foot at any point. (Ord. 94-22 (part), 1994).

17A.02.110 Flood protection elevation.

The "flood protection elevation" is considered under the Kittitas County Flood Damage Prevention Ordinance #93-18 to be one foot above the base flood elevation. (Ord. 94-22 (part), 1994).

17A.02.120 Floodplain.

The "floodplain" means those lands or areas which are subject to a one percent or greater chance of flooding in

any given year or within the one-hundred-year floodplain. (Ord. 94-22 (part), 1994).

17A.02.130 Floodway.

The "floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot. (Ord. 94-22 (part), 1994).

17A.02.140 Frequently flooded area.

"Frequently flooded areas" means the one-hundred-year floodplain, which are lands subject to a one percent or greater chance of flooding in any given year, as designated by the Federal Emergency Management Agency Federal Insurance Rate Map for Kittitas County. (Ord. 94-22 (part), 1994).

17A.02.150 Geologically hazardous areas.

"Geologically hazardous areas" are areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events, are not suited to the siting of major commercial, residential, or industrial development consistent with public health or safety concerns without proper engineering consideration and design. The term commercial should not be construed to include natural resource activities. (Ord. 94-22 (part), 1994).

17A.02.160 Groundwater.

"Groundwater" means all water that exists beneath the land surface or beneath the bed of any stream, lake or reservoir, or other body of surface water, whatever may be the geological formation or structure in which such water stands, flows, percolates or otherwise moves, as defined in RCW 90.44.035. (Ord. 94-22 (part), 1994).

17A.02.170 Hazardous materials.

"Hazardous materials" is defined identically to the definition contained in state law at RCW 70.102.010. It means those substances or materials identified as such under regulations adopted pursuant to the Federal Hazardous Materials Transportation Act, the Toxic Substances Control Act, the Resource Recovery and Conservation Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Occupational Safety and Health Act Hazardous Communications Standards, and the State Hazardous Waste Act. (Ord. 94-22 (part), 1994).

17A.02.180 Irrigation.

"Irrigation" is the artificial application of water to land, from either surface or groundwater sources. (Ord. 9422 (part), 1994).

17A.02.190 Irrigation system.

"Irrigation system" means all related water and access rights, structures, and equipment, including but not limited to standpipes, weir boxes, pipelines, ditches, pump houses, power sources, culverts, spur lines, laterals, irrigation sprinklers, and any other artificial conveyance of water for agricultural purposes. Portions of streams utilized for return flows also constitute part of the irrigation system. (Ord. 94-22 (part), 1994).

17A.02.200 Landslide hazard areas.

"Landslide hazard areas" are geologically hazardous areas subject to severe risk of landslide based on a combination of geologic, topographic, and hydrologic factors, including bedrock, soil, slope gradient, slope aspect, geologic structure, groundwater, or other factors. (Ord. 94-22 (part), 1994).

17A.02.210 Mine hazard areas.

"Mine hazard areas" are geologically hazardous areas, directly underlain by, adjacent to, or affected by abandoned mine workings such as adits, tunnels, ducts or air shafts with the potential for creating large underground voids susceptible to collapse. Closed and abandoned mines shall be presumed not hazardous unless specifically identified by the U.S. Department of Mines or other relevant information. (Ord. 94-22 (part), 1994).

17A.02.220 Native vegetation and fauna.

"Native vegetation and fauna" means plant and animal species which are indigenous to the area or location in question. (Ord. 94-22 (part), 1994).

17A.02.230 Priority species habitats.

"Priority species habitats" are fish and wildlife habitat conservation areas that include a seasonal range or habitat element in which a priority species is located, and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term. The Washington State Department of Wildlife has preliminarily identified priority habitats and species on its maps. However, the unique land ownership patterns and terrain of Kittitas County result in the majority of the priority species habitats being located on big game winter range, riparian habitat, and wetlands, all as defined herein. (Ord. 94-22 (part), 1994).

17A.02.240 Priority animal species.

"Priority animal species" are designated by the state of Washington as endangered, threatened, or sensitive, pursuant to Chapter 232-12 WAC as of the date of the adoption of the ordinance codified in this chapter. Priority animal species have a primary association with priority animal species habitat as defined in Section 17A.02.230. (Ord. 94-22 (part), 1994).

17A.02.250 Riparian habitat.

"Riparian habitat" is an area adjacent to rivers, streams or lakes that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. The state of Washington has adopted a classification system for identifying riparian habitat, WAC 222-16-030, Water Typing System, Forest Practices Rules. Riparian habitat for purposes of this chapter is deemed to be Type 1, 2, 3, and portions of Type 4 and 5 waters as provided herein, under the state classification system. (Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.02.260 Seismic hazard areas.

"Seismic hazard areas" are geologically hazardous areas subject to risk of earthquake damage. (Ord. 94-22 (part), 1994).

17A.02.270 Species of local importance.

"Species of local importance" are fish and wildlife species that are of local concern because of their population status or their sensitivity to habitat manipulation. (Ord. 94-22 (part), 1994).

17A.02.280 Volcanic hazard area.

"Volcanic hazard areas" are geologically hazardous areas that are subject to inundation by pyroclastic flows, lava flows, inundation by debris flows, mudflows, lahars, or related flooding resulting from volcanic activity. (Ord. 94-22 (part), 1994).

17A.02.290 Water rights.

"Water rights" are those rights defined in state law, including RCW 90.03.010 and 90.44.035, as well as those rights subject to adjudication and determined pursuant to the water basin adjudication generally described as *State of Washington v. Acquavella*.

In defining water rights for purposes of this critical areas ordinance, no water rights as determined under state law, including the *Acquavella* litigation, are available for fish or wildlife habitat, and may not be considered for purposes of application of this critical areas ordinance.

Water rights and waters covered by the stipulation entered in the *Acquavella* adjudication, as to all sub-basins in Kittitas County, dealing with water rights as confirmed for Nondiversionary stock and wildlife watering shall not be considered for purposes of application of this critical areas ordinance. The stipulation referred to is incorporated by reference, and set forth as follows for clarity.

1. Waters in natural watercourses in the subbasin shall be retained when naturally available, in an amount not to exceed 0.25 cubic foot per second (cfs), for stock water uses in such watercourses as they flow across or are adjacent to lands, which are now used as pasture or range for livestock. Retention of such water shall be deemed senior (or first) in priority, regardless of other rights confirmed in this cause. Regulation of these watercourses by the plaintiff shall be consistent with such retention requirements.
2. Water in natural watercourses in the subbasin shall be retained when naturally available, in an amount not to exceed 0.25 cubic foot per second (cfs), for wildlife watering uses in such watercourses as they flow across or are adjacent to lands, which are now used as pasture or range for wildlife. Retention of such water shall be deemed senior (or first) in priority.
3. Waters in naturally occurring ponds and springs (with no surface connection to a stream) in the subbasin shall be retained for stock water uses, when such ponds and springs are located on or adjacent to lands which are now used as pasture or range for livestock. Said uses embody entitlement to a level in the water bodies sufficient to provide water for animals drinking directly therefrom while ranging on riparian lands, and with the same priority as provided in paragraph 1. Regulation of the ponds and springs by the plaintiff shall be consistent with such retention requirements.
4. Waters in naturally occurring ponds and springs (with no surface connection to a stream) in the subbasin shall be retained for wildlife watering uses, when such ponds and springs are located on or adjacent to lands which are now used as pasture or range for wildlife. Said uses embody entitlement to a level in the water bodies sufficient to provide water for wildlife drinking directly therefrom while ranging on riparian lands, and with the same priority as provided in paragraph 2. Regulation of the ponds and springs by the plaintiff shall be consistent with such retention requirements.
5. Nothing in this stipulation mandates that any lands, associated with water rights or water retention as provided herein shall be reserved for wildlife purposes.

(Ord. 94-22 (part), 1994).

17A.02.300 Waters/water typing system.

"Waters" includes all surface waters not otherwise owned pursuant to water rights established under state law, as defined in Section 17A.02.290. A "water typing system" is a classification system for certain streams, lakes and ponds. The state of Washington for its purposes has adopted a five-tier typing system in WAC 222-16-030. For purposes of this chapter, Kittitas County adopts five classification types. Types 1, 2, 3, 4 and 5 waters are adopted and are classified according to the following system for the purposes of this chapter:

"Type 1 waters" means all waters, within their ordinary high water mark (OHWM), as inventoried as "shorelines of the state" under Chapter 90.58 RCW, but not including those waters' associated wetlands as defined in Chapter 90.58 RCW.

"Type 2 waters" means segments of natural waters not classified as Type 1 and have a high fish, wildlife, or human use.

"Type 3 waters" means segments of natural waters which are not classified as Type 1 or 2 and have a moderate to slight fish, wildlife, or human use.

"Type 4 waters" are segments of natural waters within Kittitas County which are not classified as Type 1, 2 or 3 and have a channel width of two feet or more between the ordinary high water marks.*

"Type 5 waters" are segments of natural waters within Kittitas County which are not classified as Types 1, 2, 3 or 4 waters and have a channel width of two feet between the ordinary high water marks, including streams with or without well-defined channels.*

*Type 4 and 5 waters are not truly waters, but are waterways which are intermittent in nature and may be dry beds at any time of the year.

(Ord. 96-14 (part), 1996; Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.02.310 Wetlands.

"Wetland" or "wetlands" means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, agricultural fields or areas of agricultural activities that exhibit wetland characteristics due to the introduction or influence of irrigation waters to those fields, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities. The introduction or influence of irrigation waters to agricultural fields or areas of agricultural activities which cause those areas to exhibit wetland characteristics, even though the areas were nonwetland sites prior to the introduction or influence of irrigation waters, is defined in this section. However, wetlands may include those artificial wetlands intentionally created from nonwetland areas created to mitigate conversion of wetlands, if permitted by the county.

This definition is taken from the statutory definition at RCW 36.70A.030(17). This statutory definition of wetlands specifically exempts a number of intentionally created wetlands, including but not limited to those related to irrigation systems. Due to the inherent design of most irrigation systems, such systems are reasonably and foreseeably expected to result in some leakage or seepage. Such seepage or leakage is a normal result of utilization of irrigation systems and is deemed for purposes of this chapter to be an artificial wetland intentionally created from a nonwetland site, and therefore such areas do not constitute wetlands.

Furthermore, the phrase "normal circumstances" in this definition shall be defined as set forth by the United States Army Corps of Engineers in its Regulatory Guidance Letter 90-7 dated September 26, 1990, which is incorporated herein by reference. The letter deals with prior converted farmland, which may have been cropped prior to December 23, 1985. (Ord. 9515 (part), 1995; Ord. 94-22 (part), 1994).

17A.02.320 Wetland buffers.

"Wetland buffers" or "wetland buffer zones" are areas that surround and protect a wetland from adverse impact to the natural functions and values of the designated wetland. (Ord. 94-22 (part), 1994).

17A.02.330 Wetland replacement ratio.

Wetland replacement ratio refers to the act of providing on-site compensation or mitigation for disturbed wetlands as a result of development. The replacement ratio is the amount of new wetland areas required for those disturbed wetlands. The term is used in Section 17A.04.050 in regards to restoration or creation of wetlands equivalent to or greater than those altered in order to compensate for wetland loss. (Ord. 94-22 (part), 1994).

Chapter 17A.03

ADMINISTRATION

Sections

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17A.03.015 Land use activities to which this chapter applies.

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- 17A.03.080 Noncompliance.
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- 17A.03.090 Severability.

17A.03.010 Lands to which this chapter applies.

Lands to which this chapter applies. This chapter applies to lands within unincorporated Kittitas County, including both Washington State-owned lands and privately owned lands. Application of this chapter to specific parcels shall be based upon the general guidance of the Kittitas County critical areas policy document, coupled with the more specific provisions of this critical areas development ordinance, pursuant to the requirements of Chapter 36.70A RCW. (Ord. 94-22 (part), 1994).

17A.03.015 Land use activities to which this chapter applies.

Land use activities to which this chapter applies.

1. The following land use activities shall be subject to and coordinated with the requirements of this chapter:
 - a. Any activity which is not exempt from a threshold determination under the State Environmental Policy Act, as subject to the threshold exemptions established by the county SEPA ordinance;
 - b. Any activity which requires approval through a public hearing process under county ordinance;
 - c. Rezones;
 - d. Long plats;
 - e. Short plats;
 - f. Shoreline substantial development permits;
 - g. Shoreline conditional uses;
 - h. Shoreline variances;
 - i. Zoning conditional use permits;
 - j. Replats;
 - k. Conversion of forest land to nonforest land uses;
 1. Filling and draining of Class 1 - 4 wetlands, except as otherwise provided herein;
 - m. New residential building permits on all lots twenty acres or less shall comply with buffer requirements and restrictions in Chapters 17A.05 and 17A.08;
 - n. All building permits must comply with Section 17A.05.10, which requires compliance with the county's flood prevention ordinance;
 - o. Building permits.
2. Critical area protection which is imposed as a result of any of these listed activities will not be required until existing and ongoing activities cease to exist. Any construction related to the permit, including project related movement of dirt, will trigger protection of critical areas. (Ord. 96-14 (part), 1996; Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.03.020 Exempt land use activities.

Exempt land use activities. The following land use activities are exempt:

1. Land use activities regulated administratively, except as provided in Section 17A.03.015(a) "land use activities to which this chapter applies", including but not limited to septic tank installation, public or private water conservation projects, and any land use activity which does not require either public hearing approval or is categorically exempt under the State Environmental Policy Act.
2. Existing and ongoing agricultural and irrigation activities, including such activities on land or portions of land subject to the nonexempt activities in Section 17A.03.015(a).

3. Activities involving artificially created habitat, including but not limited to grass-lined swales, irrigation systems and drainage ditches, farm ponds, detention facilities such as ponds, and landscape features, including any adjacent riparian habitat created or resulting from these activities, except for wetlands or habitat areas created as mitigation.
4. Forest practices conducted in accordance with the provisions of Chapter 76.09 RCW and forest practice regulations Title 222 WAC, and which are exempt from Kittitas County jurisdiction.
5. Reconstruction as a result of destruction by a natural disaster or disintegration over time, maintenance, or remodeling of structures, provided that such reconstruction, maintenance, or remodeling does not involve an expansion of the structure's footprint when located within a critical area. Any such activity shall nevertheless comply with the county's flood damage prevention ordinance, No. 93-18.
6. Construction, maintenance, repair, or replacement of Kittitas County permitted or franchised utility facilities.
7. Educational activities, scientific research, and outdoor recreational activities, including hunting and fishing.
8. Emergencies that threaten the public health, safety and welfare, including private or public property.
9. Existing and ongoing natural resource activities.
10. Fencing shall not be required for critical areas protection. (Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.03.025 Preliminary identification of critical areas - Maps and reference material.

Preliminary identification of critical areas - Maps and reference material. Critical areas may be depicted generally on the Federal Emergency Management Agency's (FEMA) FIRM and floodway maps; National Wetlands Inventory maps; The Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1987 revised edition); Washington State Tier Wetlands Rating System as it pertains to Category I - IV wetlands; Washington State Department of Natural Resources geologic hazard areas maps; Washington State Department of Natural Resources mine hazard area maps base; U.S. Bureau of Land Management mine hazard area maps; Washington State Department of Fish and Wildlife priority habitats and species maps; Washington State Department of Natural Resources water type maps; U.S.G.S landslide activity and slope maps; U.S. Soil Survey's National Soils Survey Interpretations Handbook; snow avalanche hazard area maps in the Snoqualmie Pass Sub-Area Comprehensive Plan; Uniform Building Code seismic risk zone maps.

The dates of all of the foregoing maps shall precede the date of adoption of the ordinance codified in this chapter. Revised maps as issued by various governmental authorities after the date of adopting this chapter shall not be utilized as a preliminary source of information until such time as utilization of such maps are authorized by amendments to this chapter. This chapter is designed to protect county critical areas based upon the best available information at this time, which information has been subject to considerable review and comment from the general public as well as from scientific and technical sources. Utilization of revised maps must be subject to that same critique prior to adoption by the county.

These maps are used as a general guide to the location and extent of critical areas. Any presumption created by these maps may be rebutted by a preponderance of the evidence. These maps are also intended to alert the development community, county residents, as well as current and prospective landowners of the possibility of site development constraints which may limit or alter development plans. This chapter does not apply if critical areas do not exist on a given parcel. (Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.03.030 Conflict between critical areas ordinance and critical areas policy document.

Conflict between critical areas ordinance and critical areas policy document. The Kittitas county critical areas policy document, incorporated by reference, is to be used as a general guideline in administering this chapter. Any inconsistencies between this chapter and the policy document shall be resolved in favor of this chapter. This chapter was adopted After the policy document was developed, and benefited from substantial additional technical and public comment. (Ord. 94-22 (part), 1994).

17A.03.035 Critical area checklist and required information.

Critical area checklist and required information. An applicant is required to submit a checklist of critical area

information before commencement of all land use activities which are subject to this chapter. This information shall be used in processing all other site related development permits and approvals. Development may be required to be modified or may be conditioned to meet the requirements of this chapter. The checklist shall contain the following information:

1. Legal description of the land, and assessor's parcel number.
2. As defined herein, the location of the following, if applicable:
 - a. Wetlands;
 - b. Erosion hazard areas;
 - c. Floodplains and floodways;
 - d. Riparian habitat;
 - e. Geologically hazardous areas;
 - f. Landslide hazard areas;
 - g. Mine hazard areas;
 - h. Seismic hazard areas;
 - i. Streams and rivers.
3. Any voluntary methods or activities
4. anticipated by the applicant pertaining to critical areas, including incentives being offered by local or state government.
5. Duplicate plans drawn to scale showing the nature, location, dimensions and elevations of the area in question, including existing or proposed structures, estimated amounts of fill material, drainage facilities, significant natural features, and the location of the above items, if applicable. Survey quality documents will not normally be required.
6. The requirement for delineating the location of possible critical areas will be waived if field investigation by county staff indicates the following:
 - a. Sufficient information exists for staff to estimate the boundaries of any critical areas without a delineation by the applicant; or
 - b. No structures and uses, except for exempt activities, are proposed to be located within any possible critical area.
7. Subject to field investigation by county staff, or other reliable and relevant information, the information submitted by the applicant shall be presumed valid for all purposes under this chapter. (Ord. 94-22 (part), 1994).

17A.03.040 Processing of critical areas checklist and information.

Processing of critical areas checklist and information. The Kittitas County planning department shall serve as the administrative agency for this chapter. All discretionary decisions hereunder shall be made by the planning director or his designee. The director may consult with other official sources, including the landowner, to determine the presence of critical areas. Utilization of outside data and information by either the director or the applicant is permitted by the Kittitas County critical areas policy document, and may be utilized to verify or dispute the designation or existence of critical areas on any property.

The critical areas checklist shall be processed concurrently with all other development permits requested concerning the site. After the application is complete, the director shall make a binding determination as to whether the parcel contains critical areas. The written determination shall include findings setting forth the basis for the determination. The written determination shall be made within fifteen business days of submittal of a complete checklist, together with receipt of the complete application as to any other related land use permit being requested for the parcel.

The director's decision may be appealed by the applicant to the Kittitas County board of commissioners, except that if the underlying permits require processing by any other decisionmaker, such as the Kittitas County planning commission, zoning adjustor, or board of adjustment, appeal shall lie to that body. That body shall either make a final decision, or a recommendation to the board of commissioners, consistent with the nature of the underlying permit, concerning the critical areas designation and related mitigation. The decision or recommendation shall be coordinated with the decisionmaker's final decision or recommendation on the

underlying permit. If the board of county commissioners does not have jurisdiction to review the underlying permit, such as a conditional use permit granted by a board of adjustment and appealable directly from that board to superior court, the board of county commissioners shall nevertheless have jurisdiction of all appeals under this critical areas ordinance which de novo appeal shall be heard prior to the need to file an appeal on the underlying permit in superior court. (Ord. 94-22 (part), 1994).

17A.03.045 Coordination with the State Environmental Policy Act and other concurrent permitting.

Coordination with the State Environmental Policy Act and other concurrent permitting. The director shall coordinate application of the critical areas ordinance with any required SEPA review and the processing of any other associated permits. Any required critical areas mitigation shall be separate from SEPA conditions imposed as part of a threshold determination. The objective is to provide a concurrent, coordinated, and consistent review of development activities within critical areas, without creating another regulatory review or appeal process. (Ord. 94-22 (part), 1994).

17A.03.050 Appeal deadlines.

Appeal deadlines. All appeals of the director's decision concerning critical area designation or other discretionary decision making under this chapter shall utilize the same timelines for appeals related to any underlying permits. In the event there is no underlying permit, or the appeal deadline is not clear from other county ordinances, appeals must be filed with the board of commissioners no more than twenty business days following the date of mailing the decision to the applicant. All appeals shall be de novo, and conducted by the board of commissioners at a public hearing no later than a month following the filing of the appeal, with issuance of a decision no more than ten business days from the public hearing, or as otherwise agreed by the appellant and the board. The board's decision shall be final, subject to appeal to superior court. (Ord. 94-22 (part), 1994).

17A.03.055 Inventory of available information.

Inventory of available information. The Kittitas County planning department shall maintain an inventory of available information which shows the location, referenced in this chapter, of critical areas. This information shall be made available to the public. The planning department shall prepare materials which enable citizens to clearly understand the location of critical areas on and adjacent to their property, and what obligations, rights and opportunities they have regarding such lands. (Ord. 94-22 (part), 1994).

17A.03.060 Request for technical assistance.

Request for technical assistance. Kittitas County shall enlist, as much as practicable, technical assistance to help those wishing to develop land that contains, or potentially contains any of the various critical areas defined by the critical areas policy document. Such help shall be aimed at addressing mitigation of such adverse effects of said development that the county deems to be important in the context of this document. (Ord. 94-22 (part), 1994).

17A.03.065 Property rights.

1. All regulatory or administrative actions taken pursuant to this chapter shall not result in an unconstitutional taking of private property, and shall not expand or reduce the scope of private property protections provided in the state and federal constitutions. This chapter shall not prohibit uses permitted prior to its adoption and shall remain in effect until the county adopts development regulations pursuant to RCW 36.70A.120. Classifying or designating critical areas does not imply a change in the landowner's right to use his or her land under current law.
2. In applying this chapter, the planning department shall refer to relevant legal authorities at all levels of government, including federal and state constitutions, federal and state statutes, federal and state administrative regulations, and judicial interpretations thereof. The application and administration of this chapter shall assure that proposed regulatory or administrative actions do not unconstitutionally infringe upon private property rights; and are not arbitrary or discriminatory.
3. Periodic reports shall be made at least annually to the board of county commissioners by the planning director and prosecuting attorney concerning county compliance with constitutional and judicial requirements. The planning director shall immediately advise the board should any provisions of this

chapter in his opinion be in violation of state or federal constitutional requirements, or recent court decisions, and whether the provision is required by the state of Washington or discretionary with the county. If the provision which generates concern is a requirement of the state, the board of county commissioners shall immediately advise the appropriate state department or agency. If the provision is discretionary with the county, the board of commissioners shall promptly schedule a public hearing to consider the ordinance provision or policy. (Ord. 94-22 (part), 1994).

17A.03.070 Conservation moneys.

Kittitas County shall examine the feasibility of enhancement moneys for fish and wildlife habitat conservation areas and wetlands. These programs at a minimum should provide conservation moneys for habitat and wetland enhancement, the exemption and/or reduction of habitats and wetlands and their buffers from the usual rate of local property tax, and a penalty system for withdrawal. These programs shall include an element whereby the Kittitas County actively participates in the acquisition of state, federal, or private funds or materials for landowners. Lastly, the programs should have an element for landowners who may volunteer to provide fish and wildlife habitat conservation areas or wetlands if they are not required to do so, and receive benefits as outlined in this proposal. (Ord. 94-22 (part), 1994).

17A.03.075 Economically feasible mitigation efforts.

Economically feasible mitigation efforts. Kittitas County shall encourage economically feasible mitigation efforts when protecting critical areas. (Ord. 94-22 (part), 1994).

17A.03.080 Noncompliance.

Any person who engages in work at a project site within a critical area and (1) fails to comply with this chapter; or (2) fails to comply with any permit condition required pursuant to this chapter shall be subject to enforcement proceedings and sanctions as specified in the Kittitas County zoning or code enforcement ordinances. (Ord. 94-22 (part), 1994).

17A.03.085 Warning and disclaimer of liability.

The degree of hazard protection required by this chapter is considered reasonable for mandatory regulatory purposes under Chapter 36.70A RCW. These provisions are based on scientific and engineering considerations, and extensive public comment. Catastrophic natural disasters can, and will, occur on rare occasions. This chapter does not imply that land outside the designated critical areas or activities permitted within such areas will be free from exposure or damage. This chapter shall not create liability on the part of Kittitas County, and officers or employees thereof, for any damages that result from reliance on this chapter or any administrative decision lawfully made hereunder. (Ord. 94-22 (part), 1994).

17A.03.090 Severability.

If any section, subsection, sentence, clause, phrase, part or portion of this chapter is for any reason held to be invalid or unconstitutional by any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this chapter or the application of the provision to other persons or circumstances. (Ord. 94-22 (part), 1994).

Chapter 17A.04

CRITICAL AREAS DESIGNATION AND DEVELOPMENT STANDARDS

Sections

- 17A.04.010 Wetlands.
- 17A.04.015 No net loss of wetland areas.
- 17A.04.020 Buffer width requirements.
- 17A.04.025 Wetland buffer ranges.
- 17A.04.030 Wetland buffer averaging.

- 17A.04.035 Natural condition of wetland buffer.
- 17A.04.040 Allowed uses.
- 17A.04.045 Building setback lines from wetland buffers.
- 17A.04.050 Wetland replacement ratios.

17A.04.010 Wetlands.

Wetlands in Kittitas County are defined in Section 17A.02.310 and classified in four categories: Category I (extreme high value), Category II (high value), Category III (average value), Category IV (less than average value). Critical area wetlands in Kittitas County are defined as Category I, Category II, Category III and Category IV wetlands as determined by the planning manager.

Category IV wetlands may be determined by the director to constitute a critical area based upon application of the criteria in this chapter. (Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.04.015 No net loss of wetland areas.

Kittitas County shall require, to the extent practical, and except for Category IV wetlands, a zero net loss of natural wetlands functions and values together with, if reasonably possible through voluntary agreements or government incentives, a gain of wetlands in the long term. (Ord. 94-22 (part), 1994).

17A.04.020 Buffer width requirements.

Wetland buffer requirements apply to all nonexempt activities on regulated wetlands. All wetland buffers shall be measured from the wetland boundary.

Category Size of Wetland Required Buffer

Category	Size of Wetland	Required Buffer
I	any size	50 - 200 feet
II	over 2,000 sq. ft.	25 - 100 feet
III	over 10,000 sq. ft.	20 - 80 feet
IV*	43,560 sq. ft. (1 acre)	Building setbacks will be determined by the zoning lot line setbacks, but shall not exceed 25 feet.

*Includes only nonirrigation induced or enhanced Category IV wetlands. Irrigation water does influence ground water table elevations in Kittitas County.

(Ord. 96-14 (part), 1996; Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.04.025 Wetland buffer ranges.

The wetland buffer ranges have been established to reflect the impact of certain intense land uses on wetland function and values. The director shall base the buffer size on the following criteria and shall establish the least restrictive width of buffer necessary to account for all of the following considerations:

1. The overall intensity of the proposed use;
2. The presence of threatened, endangered, or sensitive species;
3. The site's susceptibility to severe erosion;
4. The use of a buffer enhancement plan by the applicant which uses native vegetation or other measures which will enhance the functions and values of the wetland or buffer. (Ord. 94-22 (part), 1994).

17A.04.030 Wetland buffer averaging.

Wetland buffers may be modified by averaging buffer widths. Wetland buffer width averaging shall be allowed only where the applicant demonstrates that the following exists:

1. That averaging is necessary to avoid an extraordinary hardship to the applicant caused by circumstances peculiar to the property;

2. That the wetland contains variations in sensitivity due to existing physical characteristics;
3. That the proposed use would be located adjacent to areas where buffer width is reduced, and that such land uses are low in impact;
4. That width averaging will not adversely impact wetland function and values. (Ord. 9422 (part), 1994).

17A.04.035 Natural condition of wetland buffer.

Natural condition of wetland buffer. Wetland buffer areas shall be retained in their natural condition or may be improved to enhance buffer functions and values. Where buffer disturbance has occurred during construction, revegetation with native vegetation may be required. The Kittitas County noxious weed ordinance shall be adhered to. (Ord. 94-22 (part), 1994).

17A.04.040 Allowed uses.

In addition to exempt activities otherwise identified herein, the following activities are allowed to occur on wetland and wetland buffer areas: nonmotorized outdoor recreational activities including hunting and fishing; educational activities; existing and ongoing agricultural activities, silviculture and mining; and maintenance of existing facilities, structures, ditches, roads, bridges and other utility systems. Up to two acres of Class IV wetlands may be filled, drained or modified with no approval required from the planning manager. If more than two acres of Class IV wetlands are filled, drained or modified, approval of the planning manager is required. Such development activity shall provide mitigation in accordance with Section 17A.04.050 for that portion of the wetland fill or modification that exceeds two acres. Category IV wetlands may be used for secondary stormwater management facilities having no reasonable alternative on-site location, provided there is no significant adverse impact to the functions and values of those wetlands. (Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.04.045 Building setback lines from wetland buffers.

A building setback line equal to the side yard setback requirement of the applicable zoning district is required from the edge of any wetland buffer. Minor intrusions into the area of the building setback may be allowed if the director determines that such intrusions will not negatively impact the wetland. The setbacks shall be shown on all site plans submitted with the application. (Ord. 94-22 (part), 1994).

17A.04.050 Wetland replacement ratios.

Wetland replacement ratios are expressed in gross area required for replacement. The actual replacement, enhancement or rehabilitation of wetlands shall be determined by the director and meet all applicable standards for such. Replacement areas shall be determined according to function, acreage, type, location, time factors, ability to be self sustaining and projected success. Wetland functions and values shall be calculated using the Kittitas County critical areas policy document and the professional judgment of the director.

Category of Wetland	Replacement Ratio
I	3:1
II	2:1
III	1.5:1
IV	1:1 for the portion of a wetland fill or modification

(Ord. 96-14 (part), 1996; Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

Chapter 17A.05

FREQUENTLY FLOODED AREAS

Sections

17A.05.010 County flood prevention ordinance.

17A.05.015 Delineated floodplain boundaries on preliminary plats.

17A.05.020 No net loss of floodplain storage.

17A.05.010 County flood prevention ordinance.

The Kittitas County Flood Prevention Ordinance No. 93-18 is hereby adopted by reference as the development regulation for all uses defined in this chapter and in the Kittitas County critical areas policy document. (Ord. 94-22 (part), 1994).

17A.05.015 Delineated floodplain boundaries on preliminary plats.

All preliminary plats must clearly delineate the one-hundred-year floodplain boundary, according to the FEMA Flood Insurance Rate Map. (Ord. 94-22 (part), 1994).

17A.05.020 No net loss of floodplain storage.

1. A no net loss of floodplain storage concept shall be incorporated in all new construction on existing lots and all future development on the following rivers, streams and lakes, which are designated as "shoreslines of the state" under 90.58 RCW and listed under 173-18-230 WAC:

Stream	Legal Description
Big Creek	From the Wenatchee National Forest boundary downstream to mouth on Yakima River.
Cabin Creek	From the Wenatchee National Forest boundary downstream to mouth on Yakima River.
Cle Elum River	From the Wenatchee National Forest boundary crossing Cle Elum Lake downstream to mouth on Yakima River.
Columbia River	From Chelan County line on the Columbia River downstream along the Douglas and Kittitas County line to Yakima County.
Kachess River	From the Wenatchee National Forest downstream through Lake Easton State Park and to mouth on Yakima River.
Little Creek	From the Wenatchee National Forest boundary downstream to mouth on Yakima River.
Log Creek	From confluence of Log Creek and unnamed creek downstream to mouth of Cabin Creek.
Manastash Creek	From confluence of North and South Forks Manastash Creek downstream to mouth on Yakima River.
Manastash	From the Wenatchee National Forest Creek south boundary downstream to mouth on Manastash Creek.
Swauk Creek	From the Wenatchee National Forest boundary downstream to mouth on Yakima River.
Taneum Creek	From the Wenatchee National Forest boundary downstream to mouth on Yakima River.
Teaway River	From the confluence of the Middle Fork and the West Fork Teaway River downstream to Yakima River.
Teaway River	From the Wenatchee National Forest (Middle Fork) boundary downstream to mouth on Teaway River.
Teaway River	From the Wenatchee National Forest (North Fork) boundary downstream to the Teaway River.
Teaway River	From the Wenatchee National Forest (West Fork) boundary downstream to the Teaway River.

Wilson Creek	From mouth at Naneum Creek downstream to mouth on Yakima River.
Yakima River	From the Wenatchee National Forest boundary downstream to the Yakima County line.
Little Naches River	From the confluence of the North Fork and Middle Fork of Little Naches River downstream left bank to mouth of Naches River.

Lakes

Manastash Lake
 Easton Lake
 Lost Lake
 Cooper Lake
 Tucquala Lake

2. Additional streams or lakes may be added to this section by the director, for the protection of critical areas based upon the following criteria:
 - a. History of flood damage;
 - b. Stream channel instability and susceptibility to erosion;
 - c. Floodplain width.

Floodplain storage shall be maintained on each parcel subject to this chapter. Insignificant loss of floodplain storage associated with residential developments and associated buildings on these parcels should not exceed ten cubic yards. If parcel conditions are such that compliance with the section is unreasonable, the director may determine the extent to which a development must comply. (Ord. 94-22 (part), 1994).

Chapter 17A.06

GEOLOGICALLY HAZARDOUS AREAS

Sections

17A.06.010 Kittitas County Uniform Building Code.
 17A.06.015 Areas requiring specialized engineering.
 17A.06.020 Natural resource based activities.
 17A.06.025 Areas of snow avalanche hazards - Snoqualmie Pass.
 17A.06.030 Siting of structures on mine hazard areas.
 17A.06.035 Disposal of volcanic ash fallout.

17A.06.010 Kittitas County Uniform Building Code.

The Kittitas County adopted version of the Uniform Building Code contains provisions for geologically hazardous areas and shall apply to all such areas. (Ord. 94-22 (part), 1994).

17A.06.015 Areas requiring specialized engineering.

Areas identified as high risk erosion/landslide geologic hazard areas including cliff or talus slopes, may require specialized engineering to ascertain the property is suitable for development purposes. The director is authorized to require such engineering. (Ord. 94-22 (part), 1994).

17A.06.020 Natural resource based activities.

Natural resource based activities shall not be unduly restricted or prohibited in areas of known geologic hazards. (Ord. 94-22 (part), 1994).

17A.06.025 Areas of snow avalanche hazards - Snoqualmie Pass.

In conjunction with the Uniform Building Code, Kittitas County shall enforce the policies contained within the Snoqualmie Pass Sub-Area Comprehensive Plan for avalanche hazard areas. (Ord. 94-22 (part), 1994).

17A.06.030 Siting of structures on mine hazard areas.

Siting of structures on known mine hazard areas should be avoided. (Ord. 9422 (part), 1994).

17A.06.035 Disposal of volcanic ash fallout.

Intentional disposal of volcanic ash fallout into any bodies of water shall not be allowed. (Ord. 94-22 (part), 1994).

Chapter 17A.07

HABITAT

Sections

17A.07.010 Riparian habitat.

17A.07.015 Designation of big game winter range.

17A.07.020 Priority species habitat.

17A.07.025 Habitats for species of local importance.

17A.07.030 Species of local importance.

17A.07.010 Riparian habitat.

1. Riparian Habitat Critical Areas shall constitute Type 1, 2 and 3, including portions of Type 4 and 5 waters at the intersecting points with a Type 1, 2, or 3 waters. Type 4 waters will be designated a critical area for a distance of forty to five hundred feet. Type 5 waters shall be designated a critical area where it is located within the buffers for Types 1, 2 or 3 waters, as determined by the planning manager.
2. Performance Standards Buffers.

Type 1 waters 40-200 feet from OHWM.

Type 2 waters 40-100 feet from OHWM.

Type 3 waters 20- 50 feet from OHWM.

Type 4 waters 10- 20 feet from the intersection with a Type 1, 2 or 3 water for a distance of 40 to 500 feet. From the point at which the buffer ends (40 - 500 feet upstream from the confluence), there shall be a 15-foot structural setback from the ordinary high water mark.

Type 5 waters None required (buffering will be provided by the Type 1, 2 or 3 waters' buffers). Note: Building setbacks from a Type 5 water will be 15 feet, unless a buffer greater than or equal to the 15-foot setback is in place.

Additional buffers may be approved by ordinance for habitats for species of local importance.

3. Criteria for Buffer Ranges. The riparian habitat buffer ranges above have been established to reflect the impact of certain intense land uses on riparian habitat functions and values. The director shall base a buffer size on the following criteria and shall establish the least restrictive width of buffer necessary to accommodate the following considerations:
 - a. Overall intensity of the proposed use;
 - b. The presence of a threatened, endangered or sensitive species or anadromous fish;
 - c. The shoreline's historical and current susceptibility to severe erosion, channel instability, or aggrading;
 - d. The presence of multiple channels or islands;
 - e. Use by the applicant of a buffer enhancement plan;

- f. The width of a stream or river and the surface area and depth of a lake.
4. Criteria for Buffer Averaging. The director may average buffer widths on riparian habitat buffers. Buffer width averaging shall be allowed only where the applicant demonstrates the following exist:
 - a. That averaging is necessary to avoid an extraordinary hardship to the applicant caused by circumstances peculiar to the property;
 - b. That the riparian habitat contains variations in sensitivity due to existing physical characteristics;
 - c. That the proposed use would be located adjacent to areas where buffer width is reduced, and that such land uses will not have a significant adverse impact to the habitat and its buffer;
 - d. That buffer width averaging will not adversely impact riparian habitat functions and values.
5. Natural Condition of Riparian Habitat Buffer. Riparian habitat buffer areas shall be retained in their natural condition or may be improved to enhance buffer functions and values. Where buffer disturbance has occurred during construction, revegetation with native vegetation may be required. The Kittitas County noxious weed ordinance shall be adhered to.
6. Allowed Uses. Allowed uses are exempt activities and activities deemed by the administrator to be consistent with the purpose and function of the habitat buffer and which do not cause a significant adverse impact to the habitat and its buffer based on sensitivity of the habitat including but not limited to stock watering, utilization of water rights, trails, recreational uses, hunting, and fishing. (Ord. 96-14 (part), 1996; Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.07.015 Designation of big game winter range.

Big game winter range constitutes all federal land and all land owned or leased by the Washington State Department of Fish and Wildlife. The existing range conservation and management program of the State Department of Fish and Wildlife is long established and relies upon voluntary agreements with landowners together with state purchase of appropriate lands.

Land use activities subject to this critical ordinance continue to be subject to input from the Department of Fish and Wildlife, including SEPA comment. County administrative practices will be revised to solicit comment from the Fish and Wildlife Department concerning short plats and replats, for which comment is currently not requested. The existing comment process and SEPA review will complement the existing efforts to protect winter range and wildlife habitat, without creating a duplicate level of regulatory review. (Ord. 94-22 (part), 1994).

17A.07.020 Priority species habitat.

1. Designation of habitat under this section will only occur if the threatened, endangered, or sensitive priority species is not located in a riparian habitat, floodplain, or wetland, which is dealt with elsewhere in this chapter. To the extent not otherwise protected under this chapter, the area designated shall be the mapped location of a threatened, endangered, or sensitive priority species.
2. Performance Standards. Protective measures for the designated area shall be determined by reference to applicable state and federal law for the protection of threatened, endangered, or sensitive priority species. (Ord. 94-22 (part), 1994).

17A.07.025 Habitats for species of local importance.

1. These habitats may be identified from time to time, resulting in amendment of this chapter. Residents of the county may from time to time identify and nominate for consideration such habitats, and shall have the burden of presenting evidence concerning the criteria set forth below. The nomination shall be forwarded by the planning department for consideration to the Kittitas planning commission, which shall make a recommendation to the Kittitas County board of commissioners.

Nomination and consideration of habitats for species of local importance shall consider the following:

- a. A seasonal range or habitat element which if altered may reduce the likelihood that the species will maintain or reproduce over the long term;
- b. Areas of high relative density or species richness, breeding habitat, winter range, and movement

- corridors;
 - c. Habitat with limited availability or high vulnerability to alteration;
 - d. Whether these habitats are already identified and protected under the provisions of this or other county ordinances or state or federal law.
2. At the time of amendment adoption designating habitat for species of local importance, the county shall also adopt performance standards based upon recommendations from county residents and appropriate government agencies. (Ord. 94-22 (part), 1994).

17A.07.030 Species of local importance.

1. These species may be identified from time to time, resulting in amendment of this chapter. Residents of the county may from time to time identify and nominate for consideration such species, and shall have the burden of presenting evidence concerning the criteria set forth below. The nomination shall be forwarded by the planning department for consideration to the Kittitas County planning commission, which shall make a recommendation to the Kittitas County board of commissioners.
The nomination and the decision shall consider:
 - a. Concern due to population status; or
 - b. Sensitivity to habitat manipulation.
2. At the time of adoption of a species of local importance, the Kittitas County board shall also adopt performance standards based upon recommendations from county residents and appropriate government agencies. (Ord. 9422 (part), 1994).

Chapter 17A.08

AQUIFER RECHARGE AREAS

Sections

- 17A.08.010 Designation of aquifer recharge areas.
- 17A.08.015 Hazardous materials.
- 17A.08.020 On-site sewage disposal regulations.
- 17A.08.025 Wellhead protection areas.

17A.08.010 Designation of aquifer recharge areas.

No critical aquifer recharge locations have been identified in Kittitas County. If highly vulnerable recharge areas are identified, studies will be initiated to determine if ground water contamination has occurred. Future classification of these areas will include consideration of the degree to which the aquifer is used as a potable water source, feasibility of protective measures to preclude further degradation, availability of treatment measures to maintain potability, and availability of alternative potable water sources.

Current county regulations are incorporated by reference and will adequately protect aquifer recharge areas until such time as additional information indicates the need for further studies. (Ord. 94-22 (part), 1994).

17A.08.015 Hazardous materials.

Proposals falling under the provisions of Section 17A.03.015 and which deal with hazardous materials which may contaminate ground or surface water shall comply with all applicable federal and state laws and regulations, and shall demonstrate said compliance to the planning director. To the extent such proposals are not otherwise regulated under state and federal law, the applicant shall submit a hazardous materials plan, developed in consultation with the Kittitas County environmental health department. At a minimum, the hazardous materials plan shall include:

1. A description of operations and identify hazardous materials which may be used with the proposal;
2. Description of how hazardous materials will be handled on site;

3. Description of containment for hazardous material;
4. A site map showing the location of the facility, property boundaries, locations of hazardous materials, and other features of the site;
5. Secondary containment for wastewater, fuels, and other materials deemed by the Kittitas County environmental health and solid waste departments to pose a significant adverse impact on ground or surface water;
6. The use of monitoring to ensure that the hazardous materials do not leak or contaminate ground or surface water;
7. The use of settling ponds, restrictions on off-site discharge, biofiltration or other methods deemed by the Kittitas County planning department and/or Kittitas County environmental health and solid waste departments necessary to prevent a significant adverse impact on ground or surface water;
8. Setbacks for materials considered by the Kittitas County planning department, Kittitas County environmental health and solid waste departments, or the Kittitas County fire marshal to pose a significant adverse impact on ground or surface water. (Ord. 94-22 (part), 1994).

17A.08.020 On-site sewage disposal regulations.

On-site sewage disposal regulations. The Kittitas County on-site sewage disposal regulations (December 1978) are hereby adopted by reference as the development regulations for all uses defined in this chapter. (Ord. 94-22 (part), 1994).

17A.08.025 Wellhead protection areas.

Wellhead protection areas. All noncommunity wells must be placed a minimum of fifty feet from property lines. (Ord. 9422 (part), 1994).

Chapter 17A.55

CAZ COMMERCIAL AGRICULTURAL ZONE AND CAZO COMMERCIAL AGRICULTURAL ZONE OVERLAY

(Repealed by Ord. 98-13)

Kittitas County Code

Title 18 | CODE ENFORCEMENT

Chapters

- 18.01 General Provisions
- 18.02 Infraction Corrective Orders
- 18.04 Infraction Hearings
- 18.05 Penalties
- 18.06 Legal Provisions

Chapter 18.01

GENERAL PROVISIONS

Sections

- 18.01.010 Applicability.
- 18.01.020 Enforcement.

Attachment B. Synthesis Tables - Effects of Human Activities on Wetland Functions

Source: Wetlands in Washington State - Volume 1: A Synthesis of the Science
(Sheldon et al. 2005)

D R A F T

Table 4-3. Summary of types of environmental disturbances created by some types of land use.

Disturbance	Scale of Disturbance	Agriculture	Urbanization	Mining
Changing the physical structure within wetlands (filling, vegetation removal, tilling of soils, compaction of soils)	Site scale	xx	xx	h
Changing the amounts of water	Landscape scale	xx	xx	?
	Site scale	xx	xx	h
Changing fluctuations of water levels (frequency, amplitude, direction of flows)	Landscape scale	xx	xx	?
	Site scale	xx	xx	h
Changing the amounts of sediment	Landscape scale	xx	xx	h
	Site scale	xx	xx	h
Increasing the amount of nutrients	Landscape scale	xx	xx	nm
	Site scale	xx	xx	nm
Increasing the amount of toxic contaminants	Landscape scale	xx	xx	x
	Site scale	xx	xx	xx
Changing the acidity	Landscape scale	nm	nm	x
	Site scale	nm	nm	xx
Increasing the concentrations of salt	Landscape scale	x	nm	nm
	Site scale	x	nm	nm
Fragmentation	Landscape scale	xx	xx	h
Other disturbances	Site scale	xx	xx	h
<p>Key to symbols used in table:</p> <p>(xx) Land use creates a major disturbance of environmental factors</p> <p>(x) Land use creates a disturbance</p> <p>(nm) Studies on impacts of this land use do not mention this disturbance</p> <p>(h) Literature is lacking but disturbances can be hypothesized based on authors' experience</p> <p>(?) Information lacking</p>				

Table 4-4. Synthesis of the information reported in the literature on the negative impacts of different human disturbances on wetland functions.

Disturbance Type	Functions							
	Hydrologic	Water Quality	Plants	Habitat for Invertebrates	Habitat for Amphibians and Reptiles	Habitat for Fish	Habitat for Birds	Habitat for Mammals
Changing the physical structure of wetlands	+	+	++	++	+	+	++	+
Changing the amount of water	+	+	++	++	++	+	+	?
Changing fluctuations of water levels	?	?	++	+	++	+	?	?
Changing amounts of sediment	+	?	++	++	?	?	?	?
Increasing amounts of nutrients	+	+	++	++	++	+	+	+
Increasing amounts of toxic contaminants	?	+	++	++	++	++	++	?
Changing acidity	0	+	+	++	++	+	+	+
Increasing concentrations of salt	0	?	++	++	?	?	+	?
Fragmentation	0	?	?	?	++	?	++	+
Other disturbances	?	?	++	+	++	++	++	++
<p>Key to symbols used in table:</p> <p>++ Major negative impacts on specific functions have been documented</p> <p>+ Some data suggest impacts or impacts could be hypothesized</p> <p>0 Data indicate that impacts are minimal</p> <p>? Information is lacking</p>								

Table 4-5. Synthesis of the negative impacts of some land uses on wetland functions.

Land Use	Functions							
	Hydrologic	Water Quality Improvement	Plants	Habitat for Invertebrates	Habitat for Reptiles and Amphibians	Habitat for Fish	Habitat for Birds	Habitat for Mammals
Agriculture	+	+	++	++	++	++	++	+?
Urbanization	+	+	++	++	++	++	++	+?
Mining	?	?	+	++	++	+	+	+?
<p>Key to symbols used in table:</p> <p>++ Major negative impacts on specific functions have been documented</p> <p>+ Some data suggest impacts or impacts could be hypothesized</p> <p>? Information is lacking</p> <p>+? Some impacts have been documented but more information is needed</p>								

**Attachment C. Skagit County CAO Update for
Agricultural Areas**

DRAFT

An Ordinance Adopting Changes to SCC 14.04 and SCC 14.24 and Enrolling Skagit County in the ESHB 1886 Voluntary Stewardship Program for Critical Areas Protection

Whereas the Washington State Legislature, through Engrossed Substitute House Bill 1886, effective July 22, 2011, created a Voluntary Stewardship Program (“VSP”) for protection of critical areas in areas of agricultural activities while safeguarding Skagit County’s agricultural industry from litigation and excessive regulatory burden.

Whereas, over the course of the past fifteen years, Skagit County has incurred more than \$5,000,000 in legal costs defending Skagit Valley’s agricultural industry against lawsuits over critical areas;

Whereas, pursuant to ESHB 1886, counties that wish to enroll must do so by January 22, 2011;

Whereas ESHB 1886 makes enrollment in the VSP “an alternative to protecting critical areas in areas used for agricultural activities through development regulations”;

Whereas Skagit County is currently under order from the State Growth Management Hearings Board to make the County’s Critical Areas Ordinance for Ongoing Agriculture compliant with the Growth Management Act by December 28, 2011;

Whereas, on August 9, 2011, the Board of County Commissioners adopted Resolution R20110239, creating a work program and schedule for consideration of enrollment in the VSP;

Whereas, on August 23, 2011, the Planning Commission held a workshop to review the current Critical Areas Ordinance, and a work session on October 4, 2011, to review the Voluntary Stewardship Program;

Whereas Skagit County Planning & Development Services (“PDS”) created a webpage for this project that includes the background, the proposal, meeting information, and many other related documents and video links;

Whereas, in advance of the Planning Commission workshop, PDS provided broad notice to the community and stakeholders, mailing a postcard to approximately 340 stakeholders; emailing the text of that postcard to the County’s press release email list, the PDS community email list, and the County’s Salmon Strategy email list;

Whereas, on October 4, 2011, the Planning Commission held a work session to review the Voluntary Stewardship Program with staff and representatives from the Skagit County Agriculture Advisory Board, Skagit County Conservation District, and Washington State Conservation Commission;

Whereas, on October 12, the County’s Agricultural Advisory Board voted 7-1 to support enrollment in the VSP and to recommend nomination of both the Samish and Skagit as state priority watersheds;

Whereas, on October 13, 2011, PDS released for public comment proposed modifications to the Critical Areas Ordinance for Ongoing Agriculture as currently codified in SCC Chapter 14.04 (“definitions”) and SCC Chapter 14.24 (“critical areas”);

Whereas the SEPA Responsible Official has issued a Determination of Non-Significance for this non-project proposal to amend SCC 14.04 and 14.24;

Whereas, pursuant to ESHB 1886 § 4(2)(b), Skagit County invited agricultural and environmental groups and local tribes to confer regarding County enrollment in the VSP.

Whereas, on November 1, 2011, the Planning Commission held a public hearing on the proposal;

Whereas, on November 15, 2011, the Planning Commission deliberated on the proposal and voted 8-0 to recommend enrollment and adoption of amendments to SCC 14.04 and 14.24 as reflected in the attached Planning Commission Recorded Motion;

Whereas PDS and Skagit County Public Works prepared an analysis of the costs and benefits of enrollment in the Voluntary Stewardship Program, as well as an analysis of the factors identified in ESHB 1886 § 4(3) for identification of watersheds to participate in the program and in § 4(4) for nomination of priority watersheds;

Whereas the Board of County Commissioners considered those factors in deliberations on this ordinance;

Now Therefore Be It Ordained That The Board of County Commissioners:

Section 1. Elects to enroll the entirety of unincorporated Skagit County, and all of its watersheds, in the Voluntary Stewardship Program established by Engrossed Substitute House Bill 1886 (2011).

Section 2. Nominates the Samish and Skagit watersheds for consideration by the State Conservation Commission as priority watersheds.

Section 3. Adopts the amendments to SCC 14.04 and 14.24 as recommended by the Planning Commission in the attached Recorded Motion dated November 15, 2011.

Section 4. Directs the Public Works Department, in coordination with PDS and Health Department, to begin implementing the Voluntary Stewardship Program. Public Works should implement aspects of the Program that do not rely on external funding as soon as possible, and work to integrate existing watershed programs into the VSP to avoid duplication of effort and maximize effectiveness.

Witness Our Hands and the Official Seal of Our Office this 19 day of December, 2011.

**Board of County Commissioners
Skagit County, Washington**



Ron Wesen

Ron Wesen, Chair

Kenneth A. Dahlstedt

Kenneth A. Dahlstedt, Commissioner

Sharon D. Dillon

Sharon D. Dillon, Commissioner

ATTEST:

Linda Hammons

Linda Hammons, Clerk

Skagit County Board of Commissioners

APPROVED AS TO CONTENT:

Gary R. Christensen

Gary R. Christensen, Director

Planning & Development Services

APPROVED AS TO FORM:

Ryan Walters

Ryan Walters, Civil Deputy

Skagit County Prosecutor's Office

Skagit County Planning Commission's Recorded Motion Recommending Changes to the Critical Areas Ordinance for Ongoing Agriculture and Enrollment in the ESHB 1886 Voluntary Stewardship Program

WHEREAS, Skagit County is currently under order from the State Growth Management Hearings Board to make the County's Critical Areas Ordinance for Ongoing Agriculture compliant with the Growth Management Act by December 28, 2011;

WHEREAS, the Washington State Legislature, through Engrossed Substitute House Bill 1886, effective July 22, 2011, created a Voluntary Stewardship Program ("VSP") for protection of critical areas in areas of agricultural activities;

WHEREAS, the legislation makes enrollment in the VSP "an alternative to protecting critical areas in areas used for agricultural activities through development regulations";

WHEREAS, pursuant to ESHB 1886, counties that wish to enroll must do so by January 22, 2011;

WHEREAS, on August 9, 2011, the Board of County Commissioners, through Resolution R20110239, found it in the best interest of Skagit County, its agricultural community, and the needs of Skagit River basin fish and wildlife, including anadromous fisheries, to evaluate the potential enrollment in the ESHB 1886 Voluntary Stewardship Program;

WHEREAS, through Resolution R20110239, the Board of County Commissioners instructed County staff to develop a draft ordinance for consideration by the Planning Commission that complies with ESHB 1886 §4(1)(b) and integrates the Voluntary Stewardship Program into the County's Critical Areas Ordinance;

WHEREAS, on August 23, 2011, the Planning Commission held a public workshop to consider enrolling in the Voluntary Stewardship Program and to provide input into the development of draft ordinance language. Notice for this workshop was made by mailing a postcard to approximately 340 individuals and organizations from the ag-fish postal mailing list, sent electronically to subscribers of the County's press release email list, the PDS email list, and the Salmon Strategy email list;

WHEREAS, on October 12, the County's Agricultural Advisory Board voted 7-1 to support enrollment in the VSP and to recommend nomination of both the Samish and Skagit as state priority watersheds;

WHEREAS, on October 13, 2011, a notice of availability, SEPA determination of nonsignificance, and public hearing notice was issued and published and mailed to interested parties;

WHEREAS, on October 14, 2011, the same notice along with supporting documents, was posted on the County website and sent to the Department of Commerce, in accordance with RCW 36.70A.106(3)(b);

WHEREAS, pursuant to ESHB 1886 § 4(2)(b), Skagit County invited agricultural and environmental groups and local tribes to confer about County enrollment in the VSP;

WHEREAS, on November 1, 2011, the Skagit County Planning Commission held a public hearing and received public testimony and comments through the end of the public hearing; and

WHEREAS, on November 10, 2011, the Department published responses to those comments on the County website;

WHEREAS, on November 15, 2011, the Skagit County Planning Commission met to review the public comments, consider the Department's recommendation, and to deliberate on the proposed action.

Now Therefore Be It Resolved:

After duly considering the written and spoken comments and considering the record before it, the Planning Commission enters the following findings of fact, reasons for action, and recommendation to the Board of County Commissioners:

Findings of Fact and Reasons for Action

1. The viability of agriculture, as well as the recovery of salmon populations, is of critical importance to Skagit County and its citizens.
2. The long history of expensive litigation surrounding Skagit County's critical areas ordinance for ongoing agriculture has not benefited agriculture or salmon.
3. The Voluntary Stewardship Program ("VSP") established by Engrossed Substitute House Bill 1886 (2011) offers a new opportunity for real progress to be made toward protection of salmon and riparian habitat, without imposing new mandatory requirements on agriculture.
4. By creating "an alternative to protecting critical areas in areas used for agricultural activities through development regulations," enrollment in the VSP offers an exit to costly litigation and sets the stage for a new cooperative approach to salmon recovery and enhancement of agricultural lands.
5. Local drainage and irrigation districts and the Western Washington Agricultural Association worked with many agencies, including WDFW, NOAA-NMFS, and the US Army Corps of Engineers, to develop the Drainage-Fish Initiative (DFI) and the Tidegate-Fish Initiative (TFI) under which the impacts on critical areas from the maintenance of drainage infrastructure are mitigated.
6. In order to be successful with any work plan later adopted to implement the VSP, all parties must commit to the difficult task of working cooperatively, in good faith, with a steady focus on the outcome of balancing critical areas protection and preservation of agriculture.
7. Enrollment in the Voluntary Stewardship Program is consistent with Comprehensive Plan policies and Countywide Planning Policies regarding conservation of agriculture and sustainable use of natural resources, as well as policies encouraging incentive-based methods of protecting fish and wildlife habitat conservation areas.

Recommendation

Based on the above findings and reasons for action, Dave Hughes moved and Annie Lohman seconded that the Skagit County Planning Commission recommend that the Board of County Commissioners:

1. Adopt the proposed code amendments to SCC Title 14.04 and 14.24 as reflected in Attachment A.
2. Enroll the entirety of Skagit County, and all of its watersheds, in the Voluntary Stewardship Program established by Engrossed Substitute House Bill 1886 (2011).
3. Nominate the Samish and Skagit watersheds for consideration by the State Conservation Commission as priority watersheds.

Commission Vote	Support	Oppose	Absent	Abstain
Jason Easton, Chair	✓			
Mary J. McGoffin, Vice Chair	✓			
Josh Axthelm	✓			
Carol Ehlers	✓			
Dave Hughes	✓			
Annie Lohman	✓			
Matt Mahaffie	✓			
Elinor Nakis	✓			
<hr/>				
	8	0	0	0

SKAGIT COUNTY PLANNING COMMISSION
SKAGIT COUNTY, WASHINGTON



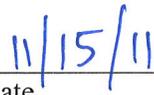
Jason Easton, Chair



Gary R. Christensen, Secretary



Date



Date

Attachment A

Recommended Changes to Critical Areas Ordinance for Ongoing Agriculture (SCC 14.04.020, 14.24.070, 14.24.120)

14.04.020 Definitions

[The following definitions in SCC 14.04.020 are hereby modified as follows:]

Agriculture or agricultural activity: the use of land for commercial production of horticultural, viticultural, floricultural, dairy, apiary, vegetable, or animal products, or of berries, grain, hay, straw, turf, seed, cottonwood trees, Christmas trees (not subject to excise tax imposed by RCW ~~84.33.100 through~~ 84.33.140), or livestock, including those activities directly pertaining to the production of crops or livestock including, but not limited to, cultivation, harvest, grazing, on-site animal waste storage and disposal, fertilization, the operation and maintenance of farm and stock ponds, drainage ditches, irrigation systems, and canals, and normal maintenance, operation and repair of existing serviceable structures, facilities, or improved areas. ~~Activities that bring an area into agricultural use are not considered agricultural activities. In addition, in order for parcels of land under 20 acres to qualify under this definition, they must meet the criteria of RCW 84.34.020(2)(b) and (c).~~

Agronomic rates: means a quantity of animal waste, process wastewater, or other crop nutrients that, when added to the soil by mechanical means, will achieve crop production goals. The determination of agronomic rate shall take into account the nutrient requirements of the crop production system, including crop nutrient requirements, amounts of nutrients applied as waste or wastewater and commercial fertilizer, amounts of irrigation water, amounts present in the soil, and losses of nutrients through denitrification, ammonia volatilization and leaching, and State water quality standards.

Artificial watercourse: ditches and other water conveyance systems, not constructed from natural watercourses, which are artificially constructed and actively maintained for irrigation and drainage. Artificial watercourses include lateral field ditches used to drain farmland where the ditch did not replace a natural watercourse.

Best management practices (BMPs), agricultural: practices or structures designed to reduce the quantities of pollutants such as sediment, nitrogen, phosphorus, and animal wastes that are washed by rain and snow melt from farms into nearby surface waters such as lakes, creeks, streams, rivers, and estuaries. Agricultural BMPs can include fairly simple changes in practices such as fencing cows from streams to keep animal waste out, planting grass in gullies where water flows off a planted field to reduce the amount of sediment that runoff picks up as it flows to rivers and lakes, reducing the amount of plowing in fields where row crops are planted to reduce soil erosion and nitrogen and phosphorus loss from fertilizers applied to the crop land. BMPs can also involve building structures, such as large animal waste storage tanks that allow farmers to choose when to spread manure on their fields as opposed to spreading it based on accumulated volume.

Best management practices (BMPs), critical areas: physical or structural tools and/or management practices which, when used singularly or in combination, prevent or reduce adverse impacts to critical areas or their buffers. When used in the context of agricultural activities, BMPs refers to the most current conservation practice standards developed by the Natural Resource Conservation Service (NRCS) and contained in the Field Office Technical Guide, or other practices identified by NRCS, an NRCS technical service provider, or other qualified ~~expert-professional~~ as adequately addressing the applicable resource impact issues to meet the requirements of the Critical Areas Ordinance, Chapter 14.24 SCC. In cases where new standards have been developed to address requirements under the Endangered Species Act, these new standards shall apply. Where no new standard has been developed, the existing NRCS standard shall apply. BMPs are used in various voluntary Federal programs that provide technical support and funding incentives.

Ongoing agriculture: the continuation of any existing agricultural activity on Agricultural—Natural Resource lands or Rural Resource—Natural Resource lands, including crop rotations; provided, however, that for lands in RRC-NRL that are subject to the provisions of SCC 14.24.120, any property owner who applies for and receives CaRD approval under SCC 14.18.300 through 14.18.330 shall, at the time of CaRD approval, automatically be subject to the buffer requirements of SCC 14.24.530 and shall no longer be subject to the provisions of SCC 14.24.120. Activities undertaken for the first time after May 13, 1996, the date Skagit County adopted Ordinance 16156, the Critical Areas Ordinance, do not constitute “ongoing agriculture”; provided, that any lands that were fallow on May 13, 1996, but had been in agricultural production within 5 years prior to May 13, 1996, shall be considered “ongoing agriculture” for purposes of this definition. Activities that bring an area into agricultural use are not considered ongoing agriculture. In addition, in order for parcels of land under 20 acres to qualify under this definition, they must meet the criteria of RCW 84.34.020(2)(b) and (c).

~~Qualified expert: a person having substantial demonstrated experience as a practicing specialist and who has a degree in a related field from an accredited college or university or who has equivalent training.~~

Qualified professional: a person with experience and training in the applicable field or critical area. A qualified professional must have obtained a B.S. or B.A. or equivalent degree in biology, engineering, environmental studies, fisheries, geology or related field, and 2 years of related work experience.

(1) A qualified professional for watercourses, wetlands, and wildlife habitat conservation areas must have a degree in biology or related field and relevant professional experience in functional assessment and mitigation techniques.

(2) A qualified professional for preparing geotechnical reports and geotechnical design recommendations must be a professional geologist or geotechnical engineer, licensed in the State of Washington.

(3) A qualified professional for critical aquifer recharge areas must be a hydrogeologist or professional engineer, licensed in the State of Washington, who is trained and qualified to analyze geologic, hydrologic, and groundwater flow systems.

Request for investigation: is the written statement filed as described in SCC 14.44.010.

Resource management system conservation plan (RMS plan): is a plan that has been prepared in consultation with the Skagit Conservation District or the Natural Resources Conservation Service (NRCS), may or may not include enrollment in the ~~conservation reserve enhancement program~~ Conservation Reserve Enhancement Program (CREP), and includes conservation practices and resource management objectives that meet the NRCS Field Office Technical Guide minimum resource protection standards of Section 4 thereof and quality criteria of Section 3 thereof for each natural resource (soil, water, animals, plants and air).

Technical service provider: is an individual, nonprofit organization, private entity or public agency that has been certified or “conditionally certified” by the Natural Resources Conservation Service to provide technical assistance on behalf of the United States Department of Agriculture in conservation planning and the design, layout, and checkout of approved conservation practices.

V-ditching: is the practice of cutting ditches into a field after the crop has been harvested in the fall where necessary to drain surface and groundwater from the field during the winter months. This practice is necessary to allow sufficient time in the spring for the fields to dry out before planting and to prevent the inundation of over-wintering crops. V-ditches are then plowed under when the field is planted in the spring.

Watercourse: shall include all natural watercourses, modified natural watercourses, and artificial watercourses, as defined by this Section.

~~Water quality standards violation: is a violation of the standards in SCC 14.24.120(3)(a)(i) through (iii).~~

Watercourse protection measure violation: is a violation of the required watercourse protection measures for ongoing agriculture in SCC 14.24.120(4).

14.24.070 Activities allowed without standard review.

- (1) [No change]
- (2) [No change]
- (3) [No change]
- (4) [No change]
- (5) [No change]
- (6) [No change]

(7) Provided the requirements of SCC 14.24.120(4)(d) are met for ongoing agriculture, the lawful operation and maintenance of public and private diking and drainage systems which protect life and property along the Skagit and Samish Rivers and tidal estuaries in Skagit County. This exemption ~~shall apply~~ applies to the existing structures and design prism of levees, dikes, and artificial watercourses ~~and the following subflood control zones: Britt Slough SFCZ, Dunbar SFCZ~~ 40 feet landward of the landward toe of the structure or facility and 40 feet waterward of the waterward toe of the structure, measured horizontally from the face of the levee, dike or bank of the artificial drainage structure toward the ordinary high water mark. The exempt area for operation and maintenance may be managed to meet federal standards for funding assistance established by the United States Army Corps of Engineers under Public Law 84-99 or other laws and regulations adopted to guide the diking and drainage functions. This exemption ~~shall does~~ not apply to public or private activities ~~which that~~ expand the levee, dike, or drain beyond its design characteristics as of June 1, 1999, at the time of adoption of this ~~Critical Areas Ordinance, paragraph; and nor~~ activities ~~which that~~ expand or create new facilities ~~shall not be exempt~~.

(8) [No change]

(9) [No change]

(10) [No change]

(11) [No change]

(12) [No change]

14.24.120 Ongoing agriculture.

(1) Purpose and Intent. The purpose of this Section is to address 2 mandates under the Growth Management Act (GMA): (a) to protect the existing functions and values of fish and wildlife habitat conservation areas (FWHCAs) in and adjacent to natural, modified natural, and artificial watercourses as defined in SCC 14.04.020 (collectively “watercourses”), and (b) to conserve and protect agricultural lands of long-term commercial significance, specifically those lands in ongoing agricultural activity as defined by SCC 14.04.020 that are located adjacent to these watercourses.

(a) For purposes of this Section, “existing functions and values” ~~shall means~~ the following:

(i) Water quality standards identified in Chapter 173-201A WAC, including the provisions that account for natural or baseline conditions.

(ii) The existing presence or absence of large woody debris within the watercourse.

(iii) The existing riparian buffer characteristics and width, including but not limited to the existing amount of shade provided by the existing riparian buffer.

(iv) The existing channel morphology.

(b) Because many of the areas that are the subject of this Section are located in the Skagit and Samish River deltas or floodplains, where substantial diking, ~~and drainage and subflood control zone~~ infrastructure have been constructed and where various diking and drainage districts ~~and subflood control zones~~ have lawful obligations to maintain agricultural and other drainage functions and infrastructure as established in RCW Titles 85 and 86, this Section also must accommodate those ongoing diking, drainage, and flood control functions. ~~Agricultural operations on lands which are not included in the definition of ongoing agriculture are required to comply with the other provisions of this Chapter.~~

(c) It is the goal of Skagit County to administer the provisions of this Section consistent with local, State, and Federal programs, statutes and regulations to protect the health, welfare, and safety of the community, to accommodate continued operation and maintenance of the diking, drainage, and flood control infrastructure and to protect agriculture, natural resources, natural resource industries, and fish and wildlife habitat conservation areas in and adjacent to watercourses. This Section is intended, to the maximum extent possible, to rely on and coordinate with but not substitute for or duplicate other State and Federal programs, statutes, and regulations that address agricultural activities in a manner that protects water quality and fish habitat. This Section is intended to supplement those existing State and Federal programs, statutes, and regulations only in those areas where the County has determined existing programs do not fully address GMA requirements to protect FWHCAs in and adjacent to watercourses and to conserve agricultural lands of long-term commercial significance.

~~(d) Because this Section only applies to areas in ongoing agriculture, and applies to artificial and modified natural watercourses as defined in SCC 14.04.020 that have been constructed and/or maintained to address drainage and flood control mandates under RCW Titles 85 and 86, most of the existing functions and values of the FWHCAs at issue in this Section no longer contain all of the natural, forested riparian buffer attributes and associated functions and values identified as necessary for fish habitat. As such, this Section is to be applied in conjunction with the monitoring, adaptive management and habitat commitments described in Resolution No. R20030210 to more fully address all of the habitat function and value requirements necessary to make County-wide progress towards the County's goal to restore, where necessary, and maintain healthy salmon runs in these river systems.~~

(d) Skagit County hereby elects to enroll the entirety of unincorporated Skagit County, and all its watersheds, in the Voluntary Stewardship Program established by Engrossed Substitute House Bill 1886 (2011). Skagit County intends the Voluntary Stewardship Program, in conjunction with the provisions of this Section and Chapter, to protect critical areas in areas of agricultural activity.

(2) Applicability. Except as may otherwise be required by ESHB 1933, Chapter 321, Laws of 2003, for agricultural lands located within the jurisdiction of the Shoreline Management Act, Chapter 90.58 RCW, this Section shall apply to the following:

(a) As defined in SCC 14.04.020, all ongoing agriculture (including operation and maintenance of agricultural drainage infrastructure) which is located within 200 feet from a watercourse, or any ongoing agriculture (including operations and maintenance of agricultural drainage infrastructure) ~~which that~~ adversely impacts the existing functions and values of a watercourse, ~~shall be is~~ subject to the requirements of this Section. Isolated, artificial watercourses that have no channelized surface hydraulic connection or no piped hydraulic connection between the artificial watercourse and any natural or modified natural watercourse or any salt water shall not be subject to the requirements of this Section. Drainage tile used to convey groundwater shall not be considered a piped hydraulic connection.

(b) The provisions of this Section shall not be interpreted to permit expansion of ongoing agriculture (including agricultural drainage infrastructure) into areas that did not meet the definition of ongoing agriculture on May 13, 1996, including lands that were fallow on that date but had been in agricultural production within 5 years prior to that date, unless such expansion can comply with all of the requirements for critical areas protection found in this Chapter, including but not limited to the requirement to adhere to the standard critical areas buffers and setbacks.

(c) In this Section, the term “best management practices (BMPs)” refers to one or all definitions of that term in SCC 14.04.020, depending on which definition is relevant within the context used.

~~(e)~~(d) Agricultural operations on lands which are not included in that do not meet the definition of ongoing agriculture are required to comply with the other provisions of this Chapter.

(3) No Harm or Degradation Standard.

(a) All ongoing agricultural activities ~~shall~~must be conducted so as not to cause harm or degradation to the existing functions and values of FWHCAs in and adjacent to watercourses (the “no harm or degradation” standard). For purposes of this Section, the ~~term phrase~~ “no harm or degradation” ~~shall~~means the following:

- (i) Meeting the ~~state water pollution control laws~~ water quality standards required by Chapter 90.48 RCW (Water Pollution Control Act) and Chapter 173-201A WAC, including the provisions that apply if a natural or baseline condition already exceeds listed water quality standards; and
 - (ii) Meeting the requirements of any total maximum daily load (TMDL) ~~requirements~~ water quality improvement projects established by the Department of Ecology (ECY) pursuant to Chapter 90.48 RCW; and
 - (iii) Meeting all applicable requirements of Chapter 77.55 RCW (Hydraulics Code) and Chapter 220-110 WAC (Hydraulics Code Rules); and
 - (iv) Meeting the specific watercourse protection measures for ongoing agriculture specified in Subsection (4) of this Section; and
 - (v) No evidence of significant degradation to the existing fish habitat characteristics of the watercourse from those characteristics identified in the baseline inventory described in Resolution No. ~~R20030210~~ R20040211 that can be directly attributed to the agricultural activities that are described in this Section.
- (b) The references to Chapters 77.55 and 90.48 RCW and Chapters 173-201A and 220-110 WAC contained in this Subsection shall not be interpreted to replace ECY and the Washington Department of Fish and Wildlife (WDFW) authority to implement and enforce these State programs with County responsibility to do so, but rather are intended to provide County input and a supplemental County involvement as needed to implement the County's GMA obligations under this Section.
- (c) ~~Reserved. Owners or operators regulated under this Subsection shall conduct their ongoing agricultural operations in a manner sufficient to meet the "no harm or degradation" standard of Subsection (3)(a) of this Section, including, if necessary, developing and implementing BMPs to meet this standard. The owner or operator may choose but is not required to consult with the Skagit Conservation District (SCD), the Natural Resource Conservation Service (NRCS), an NRCS technical service provider, the Washington State University Extension Service or other qualified expert as defined in SCC 14.04.020 to determine what combination of BMPs are necessary to meet the "no harm or degradation" standard. BMPs must be designed for site-specific conditions and shall include pollution prevention and control measures that effectively address the following management areas:~~
- ~~(i) Livestock and dairy management;~~
 - ~~(ii) Nutrient and farm chemical management;~~
 - ~~(iii) Soil erosion and sediment control management;~~

~~(iv) Agricultural drainage infrastructure management.~~

~~Planning and Development Services shall maintain a nonexclusive list of BMPs to guide implementation of the requirements of this Subsection.~~

(d) An owner or operator is responsible only for those conditions caused by agricultural activities conducted by the owner or operator and is not responsible for conditions that do not meet the requirements of this Subsection resulting from the actions of others or from natural conditions not related to the agricultural operations. In those situations where the County is presented with data showing a violation of a State water quality standard at a particular location, but where the County cannot identify any condition or practice existing or occurring at a particular agricultural operation that is causing the violation, the County shall refer the information regarding the State water quality violation to ECY and shall follow other procedures described in SCC 14.44.085. Conditions resulting from unusual weather events (such as a storm in excess of 25-year, 24-hour storm), or other exceptional circumstances that are not the product of obvious neglect are not the responsibility of the owner or operator, but shall be subject to the requirements for emergency actions described in SCC 14.24.070(1).

(4) Required Watercourse Protection Measures for Ongoing Agriculture. Unless the emergency provisions of SCC 14.24.070(1) apply, the following watercourse protection measures ~~shall be~~ are required ~~for ongoing agriculture within 200 feet of a watercourse or ongoing agriculture which adversely impacts existing functions and values of a watercourse, except for isolated artificial watercourses that have no channelized surface hydraulic connection or no piped hydraulic connection between the artificial watercourse and any natural or modified natural watercourse or any salt water. Drainage tile used to convey groundwater shall not be considered a piped hydraulic connection. Failure to comply with these mandatory watercourse protection measures for ongoing agriculture shall result in enforcement as provided in SCC 14.44.085.~~

(a) Livestock and Dairy Management. Livestock and dairy operations ~~shall be conducted so as not to~~ must not contribute any wastes or sediments into a natural or modified natural watercourse in violation of adopted State water quality standards pollution control laws. ~~Livestock and dairy operations shall meet the following minimum watercourse protection measures:~~

(i) Livestock access to watercourses ~~shall~~ must be managed consistent with this Subsection. Access to a watercourse for livestock watering and/or stream crossings ~~shall~~ must be limited to only the amount of time necessary for watering and/or crossing a watercourse. Livestock watering facilities or access ~~shall~~ must be constructed consistent with applicable NRCS conservation practice standards, and ~~shall~~ must not be constructed to provide access to agricultural

land that does not meet the definition of ongoing agriculture unless that agricultural land and the crossing can meet all requirements of Chapter 14.24 SCC.

- (ii) Dairy operations ~~shall~~must comply with the requirements of Chapter 90.64 RCW (Dairy Nutrient Management Act).
 - (iii) Livestock pasture ~~shall~~must be managed so as to maintain vegetative cover sufficient to avoid contributing sediments to a watercourse in violation of State water ~~quality standards~~pollution control laws.
 - (iv) Any existing or new livestock confinement or concentration of livestock areas that is located upgradient from a watercourse which results in bare ground (such as around a watering trough) ~~shall~~must be constructed and maintained to prevent sediment and/or nutrient runoff contaminants from reaching a watercourse in violation of State water ~~quality standards~~pollution control laws.
- (b) Nutrient and Farm Chemical Management.
- (i) The owner or operator ~~shall~~must not place manure in a watercourse or in a location where such wastes are likely to be carried into a watercourse by any means. Spreading of manure within 50 feet of any watercourse, ~~and/or~~ spreading of liquid manure on bare ground, is prohibited from October 31st to March 1st ~~is prohibited~~; unless otherwise permitted pursuant to:
 - (A) An approved and implemented dairy nutrient management plan (DNMP) as prescribed by Chapter 90.64 RCW; or
 - (B) ~~Approved and implemented BMPs~~A farm plan prepared or approved by the Conservation District; or,
 - ~~(C) A year when the County determines that conditions support an extension of the deadline, as described in Subsection (4)(b)(ii) of this Section.~~
 - ~~(ii) Each year, prior to March 1st and prior to October 31st, the County shall determine whether this work window should be extended, delayed, or shortened, based on weather, soil and fish run characteristics in that particular year. The County will consult with agencies with expertise in making this determination. The County shall provide notification regarding changes to this work window through media, recorded messages, updates on its website, and/or other means reasonably calculated to reach the intended recipients.~~
 - ~~(iii)~~(ii) Agricultural operators ~~shall~~may not apply crop nutrients other than at agronomic rates ~~which are~~ recommended for that particular crop.

~~(iv)~~(iii) Farm chemicals ~~shall~~ may only be applied consistent with all requirements stated on the chemical container labels and all applicable Federal and State laws and regulations, such as Chapter 15.58 RCW (Pesticide Control Act), Chapter 17.21 RCW (Pesticide Application Act), and 7 ~~United States Code (USC)~~ 136 et seq. (Federal Insecticide, Fungicide, and Rodenticide Act).

(c) Soil Erosion and Sediment Control Management.

(i) Roads used for ongoing agricultural activities ~~shall~~ must be designed such that road surfaces, fill, and associated structures are constructed and maintained to avoid contributing sediment to watercourses.

(ii) Agricultural equipment operation ~~shall~~ must not cause watercourse bank sloughing or other failure due to operation too close to the top of the bank.

(iii) Watercourse construction and maintenance ~~shall~~ must meet the requirements for drainage operation and maintenance described under Subsection (4)(d) of this Section.

(iv) ~~All~~ V-ditching ~~shall~~ must not be constructed to drain into a watercourse that ~~does not~~ contains salmonids, unless the topography of the field is such that the only alternative to drain the field by gravity is to drain the V-ditch into a watercourse that does contain salmonids. When draining a V-ditch into a watercourse that does contain salmonids, appropriate BMPs should be used to avoid contributing excess amounts of sediment to the watercourse. For the purpose of determining whether a watercourse contains salmonids, the County will use salmonid distribution based on the “limiting factors analysis” data compiled by the Washington State Conservation Commission.

(d) Operation and Maintenance of Public and Private Agricultural Drainage Infrastructure. The following practices ~~shall~~ apply to any watercourse that is part of drainage infrastructure, except those practices performed pursuant to a fully-executed Drainage-Fish Initiative or Tidegate-Fish Initiative agreement:

(i) Regularly scheduled agricultural drainage infrastructure maintenance that includes dredging or removal of accumulated sediments in any watercourse shall be conducted between June 15th and October 31st, ~~unless this work window is changed as described in Subsection (4)(d)(A) of this Section.~~ If an approved hydraulics project permit provides for a different work window, those requirements ~~shall~~ control. If presence of fall or over-winter crops prevents regularly scheduled maintenance during this time period, then the maintenance may be conducted outside this work window; provided, that the person or entity proposing to conduct the maintenance outside the work window can

demonstrate that the presence of crops prevents maintenance within the work window and provided the maintenance is conducted using best management practices to minimize sediment or other impacts to water quality.

~~(A) The County shall evaluate this work window each year prior to June 15th and prior to October 31st, to determine whether a different window is justified by current year weather, soil and fish run conditions. The County will consult with agencies with expertise, the drainage districts and other interested parties prior to making this determination.~~

~~(B) If the County determines that a different window is justified, the County shall provide notification of such change through media, recorded messages or updates on its website, and/or by other means reasonably calculated to reach the intended recipients.~~

~~(C)~~(A) Owners or operators shall consult with districts conducting drainage maintenance to schedule their crop rotations for crops that may still be in the field after October 31st so that, to the maximum extent possible, such drainage maintenance can occur in a year when the fall crops are not being raised in the field adjacent to the drainage infrastructure scheduled for drainage maintenance.

(ii) Unless there is no feasible alternative, regularly scheduled maintenance that includes dredging or removal of accumulated sediments in any watercourse should be conducted at those times when there is no or minimal water flow in the watercourse being maintained to minimize potential for distributing sediments to salmonid-bearing waters.

(iii) Excavation spoils ~~shall~~ **must** be placed so as not to cause bank failures and so that drainage from such spoils will not contribute sediment to the watercourse.

(iv) Mowing or cutting of vegetation located within a watercourse that is part of drainage infrastructure may be conducted at any time; provided, that the cutting is above the ground surface within the channel and in a manner that does not disturb the soil or sediments; and provided, that the cut vegetation does not block water flow. Watercourse bank vegetation shall be preserved or allowed to reestablish as soon as practicable after drainage construction and maintenance are completed to stabilize earthen ditch banks.

(v) Districts ~~and subflood control zones~~ subject to this Section, operating pursuant to authority in RCW Title 85 or 86, which are conducting drainage activities shall complete and submit a drainage maintenance checklist to the County by June 1st of each year. The checklist shall describe the intent of the district to

comply with the drainage maintenance requirements of Subsection (4)(d) of this Section. The districts may seek assistance from NRCS, SCD and/or the County in completing the checklist or addressing the requirements of this Subsection. The checklist shall be available from Skagit County Planning and Development Services, mailed to any entity conducting drainage activities, and shall be submitted to Planning and Development Services when completed. The districts may submit modifications to the information in the checklist, if circumstances affecting district maintenance change after the initial submittal.

(A) The County shall send a written notice to any district ~~or subflood control zone~~ not submitting this completed checklist by June 1st of each year, stating that the County has not received the required checklist and that the district ~~or subflood control zone~~ is not authorized to conduct drainage maintenance activity until the district ~~or subflood control zone~~ has submitted the completed checklist evidencing intent to comply with this Subsection.

(B) Subsequent commencement of drainage maintenance work without submitting a completed checklist shall be subject to enforcement pursuant to Chapter 14.44 SCC.

(vi) Immediate measures necessary to drain fields inundated by an unanticipated flooding event or failure of the agricultural drainage infrastructure shall be subject to the requirements for emergency repair described in SCC 14.24.070(1).

(5) Recognition for Agricultural Owners and Operators Who Have Implemented Extra Watercourse Protection Measures. This Subsection intends to recognize the extra watercourse protection measures for ongoing agriculture taken by landowners or operators who have implemented an approved dairy nutrient management plan (DNMP) or resource management system plan (RMS plan) (including, but not limited to, CREP) from SCD or NRCS.

(a) Those portions of land upon which owners or operators have sought and implemented an approved DNMP or an RMS plan consistent with the conservation practices and management standards that meet the FOTG quality criteria for each natural resource (soil, water, animals, plants and air) ~~shall be~~ entitled to a presumption of compliance with the “no harm or degradation” standards described in Subsection (3) of this Section. The RMS plan or DNMP must include within the planning unit any watercourses located on the property, as well as all upland areas within the owner’s control that could potentially adversely impact the watercourse and/or associated fish habitat.

(b) Such presumption of compliance may be rebutted and enforcement commenced as described in SCC 14.44.085 if the County obtains credible evidence that the agricultural operation is not meeting the no harm or degradation standards of Subsection (3) of this Section. To be entitled to this presumption, the owner or operator shall provide the County with documented evidence of implementation of those elements of the approved plan that are relevant to the resource impact at issue at the time a Request for Investigation (RFI) is presented to the County under SCC 14.44.010.

(6) Enforcement. ~~Enforcement of the requirements of this Subsection shall be as described in SCC 14.44.085. The Department is directed to enforce the requirements of this Subsection, including the mandatory watercourse protection measures, as described in SCC 14.44.085.~~

**Attachment D. Department of Commerce Letter to
Douglas County**

DRAFT



STATE OF WASHINGTON
DEPARTMENT OF COMMERCE

128 - 10th Avenue SW • PO Box 42525 • Olympia, Washington 98504-2525 • (360) 725-4000

November 30, 2011

Mr. Mark Kulaas
Planning Director
Douglas County Transportation & Land Services
140 – 19th Street NW Suite A
East Wenatchee, Washington 98802

RE: Question regarding compliance with RCW 36.70A.560

On October 18, 2011, you requested a review of your critical areas ordinance for compliance with GMA as it relates to the regulation of agricultural activities in critical areas. Commerce has consulted with other state agencies on this issue. The following is our advice for your consideration. Specifically, we reviewed Sections **19.18.030** and **14.98** from your county code; these sections are included at the end of this letter.

There are two parts to the question you asked of Department of Commerce:

1. What updates to the ordinance are currently required to comply with the Growth Management Act?
2. Does the existing ordinance comply with the requirements of the GMA to protect critical areas as it relates to existing and on-going agriculture?

1. What updates are required to comply with the Growth Management Act

Douglas County completed the required review and update to the critical areas ordinance on January 28, 2003. RCW 36.70A.560 requires Douglas County to review and, if necessary, revise its critical area ordinance as it specifically applies to agricultural activities to comply with the requirements of the Growth Management Act (GMA) by December 1, 2012.

Douglas County is required by RCW 36.70A.560 to review and if necessary revise its critical areas ordinance only as it specifically applies to agricultural activities.

2. Does the existing ordinance comply with the requirements of the GMA to protect critical areas as it relates to existing and on-going agricultural activities?

In our phone conversations with Douglas County planning staff during the month of October, your staff described the overall approach to dealing with agricultural activities as contained within your ordinance. Douglas County Code, **19.18.030 (C)** exempts existing and on-going agriculture from the regulatory provisions, but still requires agriculture to substantively comply with the requirement to protect critical areas. Agricultural activities protect critical areas by using best management practices (BMP), as identified by specific industry

standards. No permit is required before conducting agricultural activities. However, if through a code enforcement action, harm to a critical area is found, agricultural activities are required to be modified to conform to best management practices to prevent further harm to the critical area. Based on examples of recent cases of code enforcement, county staff indicated cooperation and coordination between Douglas County and relevant resource-related state agency representatives occurred to achieve local CAO compliance.

This overall approach appears to be generally consistent with your responsibilities under the Growth Management Act. However, we have a number of recommendations below that would clarify that this approach is developed including the best available science, and that, while existing and on-going agriculture is exempt from permitting requirements, it is still required to meet the substantive requirement to protect existing critical areas functions and values. Additionally, we believe it is important to clarify that new agricultural activities or expansion of existing agricultural activities are subject to the regulatory provisions of your ordinance.

As you know, the Act intends conservation of both commercially significant agricultural lands and protection of critical areas. Our guidance on this topic includes the following:

WAC 365-190-020 (7) It is the intent of these guidelines that critical areas designations overlay other land uses including designated natural resource lands. For example, if both critical area and natural resource land use designations apply to a given parcel or a portion of a parcel, both or all designations must be made. Regarding natural resource lands, counties and cities should allow existing and ongoing resource management operations, that have long-term commercial significance, to continue. Counties and cities should encourage resource land managers to use the best management practices of their industry, especially where existing and ongoing resource management operations that have long-term commercial significance include designated critical areas. Future operations or expansion of existing operations should be done in consideration of protecting critical areas, and with special consideration for conservation or protection measures needed to preserve or enhance anadromous fisheries.

We recommend the following be included in any future review and, if needed, revisions to your CAO:

- 1. Add the Statutory Definition of “Agricultural Activities” to Your Definitions Section**
We recommend you consider adding the statutory definition of “agricultural activities” to the definitions section of your ordinance. The phrase “agricultural activities” is used in **19.18.030 (C.)**, but not defined in your ordinance. RCW 36.70A.560 defines agricultural activities as follows:

"agricultural activities" means agricultural uses and practices currently existing or legally allowed on rural land or agricultural land designated under RCW [36.70A.170](#) including, but not limited to: Producing, breeding, or increasing agricultural products; rotating and changing agricultural crops; allowing land used for agricultural activities to lie fallow in which it is plowed and tilled but left unseeded; allowing land used for agricultural activities to lie dormant as a result of adverse agricultural market conditions; allowing land used for

agricultural activities to lie dormant because the land is enrolled in a local, state, or federal conservation program, or the land is subject to a conservation easement; conducting agricultural operations; maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities, when the replacement facility is no closer to a critical area than the original facility; and maintaining agricultural lands under production or cultivation.

2. Clarify the Duties of Landowners When Undertaking Exempt Activities

If activities are exempt, the ordinance should be clear that the exempt activity should take all reasonable care to protect the functions and values of the critical area. We recommend you include a statement that exempt activities must still substantively protect critical areas to the extent practicable. The statement recommended in the *Critical Areas Assistance Handbook* is as follows:

“Exempt activities shall avoid impacts to critical areas. All exempted activities shall use reasonable methods to avoid potential impacts to critical areas. To be exempt from this Chapter does not give permission to degrade a critical area or ignore risk from natural hazards. Any incidental damage to, or alteration of, a critical area that is not a necessary outcome of the exempted activity shall be restored, rehabilitated, or replaced at the responsible party’s expense.”

This is general language from the guidebook is not specific to agricultural activities. In this context, “reasonable methods to avoid impacts” include the best management practices required by **19.18.030 (C.)**, which can be found within the NRCS Field Office Technical Guides (and preferably, referenced within your CAO as a source for BAS).

3. Include Best Available Science (BAS) in the Required Update

This review will need to include best available science. We have a list of state agency resources on our website at <http://www.commerce.wa.gov/site/418/default.aspx>. Please consider these as resources for protecting critical areas for any land use activity. Much of the BAS developed by Ecology and WDFW includes recommendations for agricultural activities and even those that are not specific may still be relevant. Science that is not specific to agricultural lands can be useful in developing critical areas protection programs for agricultural lands.

The Field Office Technical Guides (FOTG) developed by the Natural Resource Conservation Service (NRCS) appear to exhibit the characteristics of a valid scientific process, and, therefore, can be considered to constitute part of the BAS. However, many of the conservation practices recommended in the FOTG are not specific enough about how to implement BMPs to ensure that implementation will achieve compliance with state water quality standards nor ensure protection of critical area functions and values. Also, because there is little data on the implementation of NRCS BMPs, two important parts of the county’s overall program are its policies on implementation of BMPs, and the monitoring and adaptive management components (see #5 below for more information on how this applies to wetlands). **19.18.030 (C.)** references BMPs. If you choose to use the FOTG, we recommend you include a reference to the FOTGs applicable to agriculture in Douglas County in your record, along with a finding that these are included in the BMPs to which **19.18.030 (C.)**

refers. Your adopting ordinance should include a finding of fact that these guides are included in the material relied on by Douglas County to include best available science. Your local conservation district can probably help you determine which FOTGs would be used in Douglas County.

4. Regulation of any New or Expanded Agricultural Activities

This exemption applies to existing and on-going agricultural activities. Under your current ordinance, any new agricultural activities or any expansion of existing agriculture into a critical area or its buffer would be subject to the provisions of your CAO. During implementation, we recommend you make sure to clarify that the exemption is limited to existing agricultural activities. You may also want to document the extent of existing agricultural activities so that if there are allegations that an agricultural activity was started or expanded illegally, you have some means of resolving the dispute based on fact.

5. Clarify how the Exemption Applies to Wetlands

In some cases, agricultural activities are conducted in wetlands. In balancing the interests of conserving agricultural lands and critical areas, state agencies support continued use of farmed wetlands for agricultural activities provided this does not introduce new adverse impacts to wetlands.

Specific to wetlands, we recommend you further clarify that “Existing and ongoing agricultural activities” should not include removing trees, diverting or impounding water, excavation, ditching, draining, culverting, filling, grading, and similar activities that introduce new adverse impacts to wetlands or other aquatic resources. Conversion of wetlands that are not currently in agricultural use—regardless of their wetland rating—to a new agricultural use should be subject to the same regulations that govern new development. Maintenance of agricultural ditches should be limited to removing sediment in existing ditches to a specified depth at date of last maintenance.

Ecology recommends including language clarifying that wetland protection regulations fully apply when farmed wetlands are converted to other uses. The “grandfathered use” protection that applies to existing agriculture on wetlands does not apply to other proposed uses.

Ecology also recommends the use of farm conservation plans and incentive-based programs to improve agricultural practices in and near wetlands. For more on Ecology’s recommendations for agricultural activities in or near wetlands, please see section 8.3.3.7 (pages 8-18 and 8-19) in *Wetlands in Washington State. Volume 2: Guidance for Protecting and Managing Wetlands*, April 2005, Ecology publication #05-06-008.

6. Clarify how the Exemption Applies to Fish and Wildlife Conservation Areas

For fish and wildlife habitat conservation areas, WDFW recommends that the following activities should be avoided within fish and wildlife habitat conservation areas: tree cutting, road building, clearing, earth moving, mining, filling, burning, and similar activities that introduce new adverse impacts to fish and wildlife habitat conservation areas. A Conversion of fish and wildlife habitat conservation areas that are not currently in agricultural use to a new agricultural use should be subject to the same regulations that govern new development

Agricultural activities should consider the following best management practices: conservation tillage, use of cover crops, integrated pest management, use of non-chemical alternatives to pesticides, and alternative irrigation systems that reduce water use, erosion, and return flows. New agricultural activity should not be allowed within riparian habitat areas and their buffers. (See Priority Habitats and Species Management Recommendation: Riparian, Knutsen and Naef 1997).

7. Include Your Conservation District in Your Implementation Plans

Conservation districts in Washington have a long history of helping to resolve disputes between agricultural operator and their neighbors over agricultural impacts. We recommend you consult with your conservation district as you develop your strategy. We also recommend you contact the Washington Conservation Commission for more information about the Voluntary Stewardship Program.

These recommendations may help your review of your ordinance if you choose not to pursue a Voluntary Stewardship Program, or in watersheds that do not participate in a Voluntary Stewardship Program. Commerce and other state agencies may provide more detailed comments during your CAO update if this is the path selected by the county.

If you have any further questions, please feel free to contact me at (509) 434-4491.

Best regards,



Dave Andersen, AICP
Plan Review and Technical Assistance Manager
Growth Management Service

Reviewed Sections from Douglas County Code:

19.18.030 Exemptions.

The activities enumerated below are exempt from the provisions of this chapter. The final determination of whether an activity is exempt is an administrative function of the director.

C. Agricultural activities normal or necessary to general farming conducted according to industry recognized best management practices including the raising of crops or the grazing of livestock;

D. The normal maintenance and repair of culverts and bridges that does not involve the use of heavy equipment, and that does not require permit issuance from other local, state or federal agencies. (Ord. TLS 03-01-01B Exh. B (part): Ord. TLS 97-10-71B Exh. G (part)) **And,**

Title 14 DEVELOPMENT PERMIT PROCEDURES AND ADMINISTRATION

14.98.031 Agricultural building.

“Agricultural building” means a structure, for the personal use of an agriculturalist, designed and constructed to store agricultural implements, house livestock and poultry and/or store agricultural products and supplies to support the operation of the agriculturalist. (Ord. TLS 03-01-01B Exh. B (part): Ord. TLS 97-10-71B Exh. B (part))

14.98.032 Agricultural market.

“Agricultural market” means a building, structure, or land area used for the sale of fresh fruit or vegetables, grown either on- or off-site, and may include as incidental and accessory to the principle use, the sale of food items and nonfood items in a setting centered on an agricultural theme. An agricultural market is distinguished from a home fruit stand by a larger scale of activity and a greater range of products offered. This definition does not include the sale of livestock, gasoline or fuels. (Ord. TLS 03-01-01B Exh. B (part))

14.98.034 Agricultural-to-agriculture (ag-to-ag) transfers.

“Agricultural-to-agriculture (ag-to-ag) transfers” means land divisions solely for the purpose of transferring parcels between owners for bona fide agricultural use. No residential building lots are created through this process. (Ord. TLS 03-01-01B Exh. B (part): Ord. TLS 97-10-71B Exh. B (part))

14.98.035 Agriculturally related industry.

“Agriculturally related industry” means those industrial uses directly related to the packaging, processing, storage, or physical or chemical alteration of the agricultural product. Such industries include, but are not limited to: cold storage plants, controlled atmosphere, produce packing and processing facilities, wineries and their accessory uses such as tasting and sales rooms. (Ord. TLS 03-01-01B Exh. B (part))

14.98.037 Agriculture.

“Agriculture” means the tilling of the soil; the raising of crops; forestry; horticulture; nonretail greenhouses, nurseries and gardening; and the keeping or raising of livestock and poultry. (Ord. TLS 03-01-01B Exh. B (part): Ord. TLS 97-10-71B Exh. B (part))

14.98.038 Agritainment.*

“Agritainment” means day-use recreation and entertainment activities centered on an agricultural theme. Agritainment includes activities such as field mazes, hayrides, sleigh rides, farm/field tours, “u-pick” and “rent-a-tree,” animal rides and petting zoos. (Ord. TLS 03-01-01B Exh. B (part). Formerly 14.98.039)

* Code reviser’s note: This section was formerly codified as Section 14.98.039. It has been editorially renumbered to preserve alphabetization.

Attachment E. Appendices from Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands (Granger et al. 2005)

Appendix 8-B Recommendations for Wetland Language in a Critical Areas Ordinance

Appendix 8-D Guidance on Widths of Buffers and Ratios for Compensatory Mitigation for Use with the Eastern Washington Wetland Rating System

Appendix 8-E Rationale for the Guidance on Recommended Widths of Buffers and Other Methods for Protecting Wetlands

Appendix 8-F Rationale for the Guidance on Recommended Ratios for Compensatory Mitigation

Appendix 8-B

Recommendations for Wetland Language in a Critical Areas Ordinance

Appendix 8-B is a complement to Chapter 8 and its other appendices. Local governments should not use suggested language contained in Appendix 8-B in their critical areas ordinances without also carefully reviewing all of Chapter 8 and its supporting appendices.

This appendix contains specific recommendations for language that can be used in critical area regulations to protect wetlands. The recommendations are based on the relevant best available science from Volume 1. While other language may also adequately include the best available science, the language recommended in this appendix represents the State of Washington's best attempt to provide a reasonable, science-based approach to wetlands regulation.

The language below is provided in a format similar to that found in many local critical areas ordinances and therefore is different from other appendices. This appendix does not include the more general provisions typically found in critical areas regulations that relate to all critical areas. These can be found in Appendix A of the *Critical Areas Assistance Handbook* published by the Washington State Department of Community, Trade and Economic Development in November 2003 (http://www.cted.wa.gov/uploads/CA_Handbook.pdf). This appendix revises the wetland specific provisions in Appendix A of the *Critical Areas Assistance Handbook*.

Appendix 8-B should be used in conjunction with Appendices 8-C through 8-F, which contain guidance on wetland mitigation ratios and buffer widths with supporting rationale as well as with Chapter 8, which includes additional discussion on developing the necessary elements of a wetland regulatory ordinance. This appendix includes:

Wetland Provisions

- Designating, Defining, Identifying, and Mapping Wetlands
- Applicability
- Regulated Activities
- Activities Allowed in Wetlands
- Wetland Ratings
- Standards
 - General Requirements
 - Criteria for a Critical Area Report for Wetlands
 - Requirements for Compensatory Mitigation
 - Subdivisions
 - Signs and Fencing of Wetlands
 - Wetland Buffers

- Stormwater Management Impacts to Wetlands
- Agricultural Impacts to Wetlands
- Removal of Hazard Trees
- Unauthorized Alterations and Enforcement

Wetland Provisions

Designating, Defining, Identifying, and Mapping Wetlands

A. **Designating, Defining, and Identifying Wetlands.** Wetlands are those areas, identified in accordance with the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997), that meet the following definition: “Wetland” or “wetlands” means areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetlands.

All areas within the [city/county] meeting the criteria in the wetland definition in the *Wetlands Identification and Delineation Manual* (Ecology 1997), regardless of whether these areas have previously been identified or mapped, are hereby designated critical areas and are subject to the provisions of this Title.

B. **Mapping.** The approximate location and extent of wetlands are shown on the adopted critical area(s) maps. The following critical area(s) maps, including [*locally adopted maps or the National Wetlands Inventory*] are hereby adopted. Additionally, soil maps produced by U.S. Department of Agriculture Natural Resources Conservation Service may be useful in helping to identify potential wetland areas. These maps are to be used as a guide for the [city/county], project applicants, and/or property owners to identify potential wetland areas that may be subject to the provisions of this Title.

It is the actual presence of wetlands on a parcel, as delineated by the requirements of the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997), that triggers the requirements of this Title, whether or not the wetland is identified on the adopted maps. The exact location of a wetland’s boundary shall be determined through the performance of a field delineation by a qualified wetlands professional, applying the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997) as required by RCW 36.70A.175.

Applicability

No sample language is provided for the applicability section of a critical areas ordinance. Please see Chapter 8.3.2 for the discussion on applicability. Code language needs to be crafted to align with the manner in which the local government chooses to trigger its regulations. The two options discussed in Chapter 8 are: 1) integrating provisions for wetland protection throughout various elements of the development code as appropriate (e.g., grading and filling ordinance, stormwater management, etc.); or 2) developing a specific critical areas (or wetland) ordinance and permit that encompasses all activities that may influence a wetland. Section 8.3.2 in Chapter 8 includes a discussion of applicability for both options.

Regulated Activities

The following activities are regulated if they occur in a regulated wetland or its buffer:

- A. The removal, excavation, grading, or dredging of soil, sand, gravel, minerals, organic matter, or material of any kind;
- B. The dumping of, discharging of, or filling with any material;
- C. The draining, flooding, or disturbing of the water level or water table;
- D. The driving of pilings;
- E. The placing of obstructions;
- F. The construction, reconstruction, demolition, or expansion of any structure;
- G. The destruction or alteration of wetland vegetation through clearing, harvesting, shading, intentional burning, or planting of vegetation that would alter the character of a regulated wetland, provided that these activities are not part of a forest practice governed under Chapter 76.09 RCW and its rules; or
- H. Activities that result in:
 - 1. a significant change of water temperature;
 - 2. a significant change of physical or chemical characteristics of the sources of water to the wetland;
 - 3. a significant change in the quantity, timing or duration of the water entering the wetland, or
 - 4. the introduction of pollutants.

Activities Allowed in Wetlands

The activities listed below are allowed in wetlands in addition to those activities listed in the provisions established in *Allowed Activities* (Section [#]) in this Title. These activities do not require submission of a critical area report, except where such activities result in a loss to the functions and values of a wetland or wetland buffer. These activities include:

- A. Conservation or preservation of soil, water, vegetation, fish, shellfish, and other wildlife that does not entail changing the structure or functions of the existing wetland;
- B. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling of soil, planting of crops, chemical applications, or alteration of the wetland by changing existing topography, water conditions, or water sources;
- C. Drilling for utilities/utility corridors under a wetland, with entrance/exit portals located completely outside of the wetland boundary, provided that the drilling does not interrupt the ground water connection to the wetland or percolation of surface water down through the soil column. Specific studies by a hydrologist are necessary to determine whether the ground water connection to the wetland or percolation of surface water down through the soil column is disturbed; or
- D. Enhancement of a wetland through the removal of non-native invasive plant species. Removal of invasive plant species shall be restricted to hand removal. All removed plant material shall be taken away from the site and appropriately disposed of. Revegetation with appropriate native species at natural densities is allowed in conjunction with removal of invasive plant species.

Wetland Ratings

A. Wetlands shall be rated according to the Washington State wetland rating system for [eastern or western Washington] (*Washington State Wetland Rating System for Eastern Washington - Revised*, Ecology Publication #04-06-015; *Washington State Wetland Rating System for Western Washington - Revised*, Ecology Publication #04-06-025) or as revised by Ecology. Wetland rating categories shall be applied as the wetland exists at the time of the adoption of this Title or as it exists at the time of an associated permit application. Wetland rating categories shall not change due to illegal modifications.

Note: Choose either the rating system for eastern or western Washington as appropriate.

Wetland Rating Categories – Eastern Washington

1. **Category I.** Category I wetlands are: 1) those identified by the Washington Natural Heritage Program/DNR as high quality, relatively undisturbed wetlands, or wetlands that support state Threatened or Endangered plant species; 2) alkali wetlands; 3) bogs; 4) mature and old-growth forested wetlands over ¼ acre in size dominated by slow-growing native trees; 5) forested wetlands with stands of Aspen; or 6) wetlands that perform many functions very well.

Category I wetlands represent a unique or rare wetland type, are more sensitive to disturbance than most wetlands, are relatively undisturbed and contain some ecological attributes that are impossible to replace within a human lifetime, or provide a very high level of functions.

2. **Category II.** Category II wetlands are: 1) forested wetlands in the channel migration zone of rivers; 2) mature forested wetlands containing fast growing trees; 3) vernal pools present within a mosaic of other wetlands; or 4) wetlands with a moderately high level of functions. These wetlands are difficult, though not impossible, to replace, and provide high levels of some functions. These wetlands occur more commonly than Category I wetlands, but still need a high level of protection.
3. **Category III.** Category III wetlands are: 1) vernal pools that are isolated; or 2) wetlands with a moderate level of functions. Generally, wetlands in this category have been disturbed in some way, and are often smaller, less diverse and/or more isolated in the landscape than Category II wetlands. They may not need as much protection as Category I and II wetlands.
4. **Category IV.** Category IV wetlands have the lowest levels of functions and are often heavily disturbed. These are wetlands that should be replaceable, and in some cases may be improved. However, experience has shown that replacement cannot be guaranteed in any specific case. These wetlands do provide some important functions and should be protected to some degree.

Wetland Rating Categories – Western Washington

1. **Category I.** Category I wetlands are: 1) relatively undisturbed estuarine wetlands larger than 1 acre; 2) wetlands that are identified by scientists of the Washington Natural Heritage Program/DNR as high quality wetlands; 3) bogs larger than ½ acre; 4) mature and old-growth forested wetlands larger than 1 acre; 5) wetlands in coastal lagoons; or 6) wetlands that perform many functions well.

Category I wetlands represent a unique or rare wetland type, are more sensitive to disturbance than most wetlands, are relatively undisturbed and

contain some ecological attributes that are impossible to replace within a human lifetime, or provide a very high level of functions.

2. **Category II.** Category II wetlands are: 1) estuarine wetlands smaller than 1 acre, or disturbed estuarine wetlands larger than 1 acre; 2) a wetland identified by the Washington State Department of Natural Resources as containing “sensitive” plant species; 3) a bog between ¼ and ½ acre in size; 4) an interdunal wetland larger than 1 acre; or 5) wetlands with a moderately high level of functions.

Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions. These wetlands occur more commonly than Category I wetlands, but they still need a relatively high level of protection.

3. **Category III.** Category III wetlands are: 1) wetlands with a moderate level of functions; or 2) interdunal wetlands between 0.1 and 1 acre in size. Generally, wetlands in this category may have been disturbed in some way and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
4. **Category IV.** Category IV wetlands have the lowest levels of functions and are often heavily disturbed. These are wetlands that should be replaceable, and in some cases may be improved. However, experience has shown that replacement cannot be guaranteed in any specific case. These wetlands may provide some important functions, and should be protected to some degree.

Standards

General Requirements

A. Activities and uses shall be prohibited in wetlands and wetland buffers, except as provided for in this Title.

B. **Category I Wetlands.** Activities and uses shall be prohibited from Category I wetlands, except as provided for in the *Public Agency and Utility Exception* (Section [#]), *Reasonable Use Exception* (Section [#]), and *Variance* (Section [#]) elements of this Title.

C. **Category II and III Wetlands.** For Category II and III wetlands, the following standard shall apply:

1. Where wetland fill is proposed, it is presumed that an alternative development location exists; activities and uses shall be prohibited unless the applicant can demonstrate that:

- a. The basic project purpose cannot reasonably be accomplished on another site or sites in the general region while still successfully avoiding or resulting in less adverse impact on a wetland; and
- b. All on-site alternative designs that would avoid or result in less adverse impact on a wetland or its buffer, such as a reduction in the size, scope, configuration or density of the project, are not feasible.

Full compensation for the loss of acreage and functions of wetland and buffers shall be provided under the terms established under *Mitigation* (Section [#]) in this Title.

D. Category IV Wetlands. Activities and uses that result in unavoidable impacts may be permitted in Category IV wetlands and associated buffers in accordance with an approved critical area(s) report and compensatory mitigation plan, and only if the proposed activity is the only reasonable alternative that will accomplish the applicant's objectives. Full compensation for the loss of acreage and functions of wetland and buffers shall be provided under the terms established under *Mitigation* (Section [#]) in this Title.

Criteria for a Critical Area Report for Wetlands

A. Preparation by a Qualified Professional. A critical area report for wetlands shall be prepared by a qualified professional who is a certified Professional Wetland Scientist or a non-certified professional wetland scientist with a minimum of five (5) years of experience in the field of wetland science, including experience preparing wetland reports.

See Appendix 8-H for further information on what constitutes a qualified wetland professional.

B. Minimum Standards for Wetland Reports. The written report and the accompanying plan sheets shall contain the following information, at a minimum:

1. The written report shall include at a minimum:
 - a. The name and contact information of the applicant; the name, qualifications, and contact information for the primary author(s) of the wetland critical area report; a description of the proposal; identification of all the local, state, and/or federal wetland-related permit(s) required for the project; and a vicinity map for the project;
 - b. A statement specifying the accuracy of the report and all assumptions made and relied upon;
 - c. Documentation of any fieldwork performed on the site, including field data sheets for delineations, function assessments, baseline hydrologic data, etc.;

- d. A description of the methodologies used to conduct the wetland delineations, function assessments, or impact analyses including references;
- e. Identification and characterization of all critical areas, wetlands, water bodies, shorelines, floodplains, and buffers on or adjacent to the proposed project area. For areas off-site of the project site, estimate conditions within 300 feet of the project boundaries using the best available information;
- f. For each wetland identified on-site and within 300 feet of the project site provide: the wetland rating per *Wetland Ratings* (Section [#]) of this Title; required buffers; hydrogeomorphic classification; wetland acreage based on a professional survey from the field delineation (acres for on-site portion and entire wetland area including off-site portions); Cowardin classification of vegetation communities; habitat elements; soil conditions based on site assessment and/or soil survey information; and to the extent possible, hydrologic information such as location and condition of inlet/outlets (if they can be legally accessed), estimated water depths within the wetland, and estimated hydroperiod patterns based on visual cues (e.g., algal mats, drift lines, flood debris, etc.). Provide acreage estimates, classifications, and ratings based on entire wetland complexes, not only the portion present on the proposed project site;
- g. A description of the proposed actions including an estimation of acreages of impacts to wetlands and buffers based on the field delineation and survey and an analysis of site development alternatives including a no-development alternative;
- h. An assessment of the probable cumulative impacts to the wetlands and buffers resulting from the proposed development;
- i. A description of reasonable efforts made to apply mitigation sequencing pursuant to *Mitigation Sequencing* (Section [#]) to avoid, minimize, and mitigate impacts to critical areas;
- j. A discussion of measures, including avoidance, minimization, and compensation, proposed to preserve existing wetlands and restore any wetlands that were degraded prior to the current proposed land use activity;
- k. A conservation strategy for habitat and native vegetation that addresses methods to protect and enhance on-site habitat and wetland functions, and;
- l. Evaluation of functions of the wetland and adjacent buffer using a functions assessment method recognized by local or state agency

staff and including the reference for the method used and all data sheets.

2. A copy of the site plan sheet(s) for the project must be included with the written report and must include, at a minimum:
 - a. Maps (to scale) depicting delineated and surveyed wetland and required buffers on-site, including buffers for off-site critical areas that extend onto the project site; the development proposal; other critical areas; grading and clearing limits; areas of proposed impacts to wetlands and/or buffers (include square footage estimates);
 - b. A depiction of the proposed stormwater management facilities and outlets (to scale) for the development, including estimated areas of intrusion into the buffers of any critical areas. The written report shall contain a discussion of the potential impacts to the wetland(s) associated with anticipated hydroperiod alterations from the project.

C. Compensatory Mitigation Reports. When a project involves wetland and/or buffer impacts, a compensatory mitigation report shall be required, meeting the following minimum standards:

1. **Preparation by a Qualified Professional.** A compensatory mitigation report for wetland or buffer impacts shall be prepared by one or more qualified professional(s) including someone who is a certified Professional Wetland Scientist or a non-certified professional wetland scientist with a minimum of five (5) years experience designing compensatory mitigation projects. The compensatory mitigation projects must have been installed and monitored for a minimum of two (2) years, in order to verify success. In addition, the design team may include civil engineers, landscape architects, or landscape designers depending upon the complexity of the project.
2. **Wetland Critical Area Report.** A critical area report for wetlands must accompany or be included in the compensatory mitigation report and include the minimum parameters described in *Minimum Standards for Wetland Reports* (Section [#]) of this Title.
3. **Compensatory Mitigation Report.** The report must include a written report and plan sheets that must contain, at a minimum, the following elements. Full guidance can be found in the *Guidance on Wetland Mitigation in Washington State - Part 2: Guidelines for Developing Wetland Mitigation Plans and Proposals*, April 2004 (Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10; Ecology Publication #04-06-013b) or as revised.
 - a. The written report must contain, at a minimum:

- i. The name and contact information of the applicant; the name, qualifications, and contact information for the primary author(s) of the Compensatory Mitigation Report; a description of the proposal; a summary of the impacts and proposed compensation concept; identification of all the local, state, and/or federal wetland related permit(s) required for the project; and a vicinity map for the project;
- ii. Description of the existing wetland and buffer areas proposed to be impacted including: acreages (or square footage) based on professional surveys of the delineations; Cowardin classifications including dominant vegetation community types (for upland and wetland habitats); hydrogeomorphic classification of wetland(s) on and adjacent to the site; the results of a functional assessment for the entire wetland and the portions proposed to be impacted; wetland rating based on *Wetland Ratings* (Section [#]) of this Title;
- iii. An assessment of the potential changes in wetland hydroperiod from the proposed project and how the design has been modified to avoid, minimize, or reduce adverse impacts to the wetland hydroperiod;
- iv. An assessment of existing conditions in the zone of the proposed compensation, including: vegetation community structure and composition, existing hydroperiod, existing soil conditions, existing habitat functions. Estimate future conditions in this location if the compensation actions are NOT undertaken (i.e., how would this site progress through natural succession?);
- v. A description of the proposed conceptual actions for compensation of wetland and upland areas affected by the project. Describe future vegetation community types for years 1, 3, 5, 10, and 25 post-installation including the succession of vegetation community types and dominants expected. Describe the successional sequence of expected changes in hydroperiod for the compensation site(s) for the same time periods as vegetation success. Describe the change in habitat characteristics expected over the same 25-year time period;
- vi. The field data collected to document existing conditions and on which future condition assumptions are based for hydroperiod (e.g., existing hydroperiod based on piezometer data, staff/crest gage data, hydrologic modeling, visual observations, etc.) and soils (e.g., soil pit data - hand dug or mechanically trenched,

and soil boring data. Do not rely upon soil survey data for establishing existing conditions.);

- vii. A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs (for remaining wetlands and compensatory mitigation wetlands);
 - viii. A bond estimate for the entire compensatory mitigation including the following elements: site preparation, plant materials, construction materials, installation oversight, maintenance twice/year for up to five (5) years, annual monitoring field work and reporting, and contingency actions for a maximum of the total required number of years for monitoring;
 - ix. Proof of establishment of Notice on Title for the wetlands and buffers on the project site, including the compensatory mitigation areas.
- b. The scaled plan sheets for the compensatory mitigation must contain, at a minimum:
- i. Surveyed edges of the existing wetland and buffers, proposed areas of wetland and/or buffer impacts, location of proposed wetland and/or buffer compensation actions;
 - ii. Existing topography, ground-proofed, at two-foot contour intervals in the zone of the proposed compensation actions if any grading activity is proposed to create the compensation area(s). Also existing cross-sections of on-site wetland areas that are proposed to be impacted, and cross-section(s) (estimated one-foot intervals) for the proposed areas of wetland or buffer compensation;
 - iii. Surface and subsurface hydrologic conditions including an analysis of existing and proposed hydrologic regimes for enhanced, created, or restored compensatory mitigation areas. Also, illustrations of how data for existing hydrologic conditions were used to determine the estimates of future hydrologic conditions;
 - iv. Proposed conditions expected from the proposed actions on site including future hydrogeomorphic types, vegetation community types by dominant species (wetland and upland), and future hydrologic regimes;

- v. Required wetland buffers for existing wetlands and proposed compensation areas. Also, identify any zones where buffers are proposed to be reduced or enlarged outside of the standards identified in this Title;
- vi. A plant schedule for the compensatory area including all species by proposed community type and hydrologic regime, size and type of plant material to be installed, spacing of plants, “typical” clustering patterns, total number of each species by community type, timing of installation;
- vii. Performance standards (measurable standards reflective of years post-installation) for upland and wetland communities, monitoring schedule, and maintenance schedule and actions by each biennium.

D. Additional Information. When appropriate, the [director] may also require the wetland report to include an evaluation by the State Department of Ecology or an independent qualified expert regarding the applicant's analysis and the effectiveness of any proposed mitigating measures or programs and to include any recommendations as appropriate.

- 1. If the development proposal site contains or is within a wetland area, the applicant shall submit an affidavit, which declares whether the applicant has knowledge of any illegal alteration to any or all wetlands on the proposed site and whether the applicant previously had been found in violation of this ordinance. If the applicant has been found previously in violation, the applicant shall declare whether such violation has been corrected to the satisfaction of the jurisdiction.
- 2. The [director] shall determine if the mitigation and monitoring plans and bonding measures proposed by the applicant are sufficient to protect the public health, safety, and welfare, consistent with the goals, purposes, objectives, and requirements of this Title.

Requirements for Compensatory Mitigation

A. Compensatory mitigation for alterations to wetlands shall achieve equivalent or greater biologic functions. Compensatory mitigation plans shall be consistent with the *Guidance on Wetland Mitigation in Washington State - Part 2: Guidelines for Developing Wetland Mitigation Plans and Proposals*, April 2004 (Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10; Ecology Publication #04-06-013b), or as revised.

B. Mitigation Shall Be Required in the Following Order of Preference:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations.
5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments.
6. Monitoring the required compensation and taking remedial or corrective measures when necessary.

C. Compensating for Lost or Affected Functions. Compensatory mitigation shall address the functions affected by the proposed project, with an intention to achieve functional equivalency or improvement of functions. The goal shall be for the compensatory mitigation to provide similar wetland functions as those lost, except when either:

1. The lost wetland provides minimal functions as determined by a site-specific function assessment, and the proposed compensatory mitigation action(s) will provide equal or greater functions or will provide functions shown to be limiting within a watershed through a formal Washington State watershed assessment plan or protocol; or
2. Out-of-kind replacement of wetland type or functions will best meet watershed goals formally identified by the [city/county], such as replacement of historically diminished wetland types.

D. Preference of Mitigation Actions. Methods to achieve compensation for wetland functions shall be approached in the following order of preference:

1. Restoration (re-establishment and rehabilitation) of wetlands.
2. Creation (establishment) of wetlands on disturbed upland sites such as those with vegetative cover consisting primarily of non-native introduced species. This should only be attempted when there is an adequate source of water and it can be shown that the surface and subsurface hydrologic regime is conducive for the wetland community that is anticipated in the design.

3. Enhancement of significantly degraded wetlands in combination with restoration or creation. Such enhancement should be part of a mitigation package that includes replacing the impacted area and meeting appropriate ratio requirements.

See Appendices 8-C and 8-D for definitions of the types of compensatory mitigation actions (restoration, creation, enhancement).

E. Type and Location of Compensatory Mitigation. Unless it is demonstrated that a higher level of ecological functioning would result from an alternate approach, compensatory mitigation for ecological functions shall be either in-kind and on-site, or in-kind and within the same stream reach, sub-basin, or drift cell (if estuarine wetlands are impacted). Compensatory mitigation actions shall be conducted within the same sub-drainage basin and on the site of the alteration except when all of the following apply:

1. There are no reasonable on-site or in sub-drainage basin opportunities (e.g., on-site options would require elimination of high-functioning upland habitat), or on-site and in sub-drainage basin opportunities do not have a high likelihood of success based on a determination of the capacity of the site to compensate for the impacts. Considerations should include: anticipated replacement ratios for wetland mitigation, buffer conditions and proposed widths, available water to maintain anticipated hydrogeomorphic classes of wetlands when restored, proposed flood storage capacity, and potential to mitigate riparian fish and wildlife impacts (such as connectivity);
2. Off-site mitigation has a greater likelihood of providing equal or improved wetland functions than the impacted wetland; and
3. Off-site locations shall be in the same sub-drainage basin unless:
 - a. Established watershed goals for water quality, flood storage or conveyance, habitat, or other wetland functions have been established by the [city/county] and strongly justify location of mitigation at another site; or
 - b. Credits from a state-certified wetland mitigation bank are used as compensation and the use of credits is consistent with the terms of the bank's certification.
4. The design for the compensatory mitigation project needs to be appropriate for its location (i.e., position in the landscape). Therefore, compensatory mitigation should not result in the creation, restoration, or enhancement of an atypical wetland. An atypical wetland refers to a compensation wetland (e.g., created or enhanced)

that does not match the type of existing wetland that would be found in the geomorphic setting of the site (i.e., the water source(s) and hydroperiod proposed for the mitigation site are not typical for the geomorphic setting). Likewise, it should not provide exaggerated morphology or require a berm or other engineered structures to hold back water. For example, excavating a permanently inundated pond in an existing seasonally saturated or inundated wetland is one example of an enhancement project that could result in an atypical wetland. Another example would be excavating depressions in an existing wetland on a slope, which required the construction of berms to hold the water.

F. Timing of Compensatory Mitigation. It is preferred that compensatory mitigation projects be completed prior to activities that will disturb the on-site wetlands. At the least, compensatory mitigation shall be completed immediately following disturbance and prior to use or occupancy of the action or development. Construction of mitigation projects shall be timed to reduce impacts to existing fisheries, wildlife, and flora.

The [director] may authorize a one-time temporary delay in completing construction or installation of the compensatory mitigation when the applicant provides a written explanation from a qualified wetland professional as to the rationale for the delay. An appropriate rationale would include identification of the environmental conditions that could produce a high probability of failure or significant construction difficulties (e.g., project delay lapses past a fisheries window; or installing plants should be delayed until the dormant season to ensure greater survival of installed materials). The delay shall not create or perpetuate hazardous conditions or environmental damage or degradation, and the delay shall not be injurious to the health, safety, and general welfare of the public. The request for the temporary delay must include a written justification that documents the environmental constraints that preclude implementation of the compensatory mitigation plan. The justification must be verified and approved by the [city/county].

G. Mitigation Ratios. [insert appropriate acreage ratios]

See Appendices 8-C and 8-D for recommended mitigation ratios and criteria for increasing or reducing ratios to be used with the Washington State wetland rating systems. Appendix 8-F provides the rationale for the recommended ratios.

1. The mitigation ratio is the acreage required for compensatory mitigation divided by the acreage of impact.
2. The ratios are for a concurrent compensatory mitigation project. If the impacts to a wetland are to be mitigated by using an approved and established mitigation bank, the rules and ratios applicable to the bank should be used.

3. The ratios are based on the assumption that the category, based on *Wetland Ratings* (Section [#]) of this Title, and hydrogeomorphic (HGM) class/subclass of the wetland proposed as compensation are the same as the category and HGM class/subclass of the wetland impacts.
4. Ratios for projects in which the category and HGM class/subclass of wetlands proposed as compensation is not the same as that of the wetland impacts will be determined on a case-by-case basis using the recommended ratios as a starting point. The ratios could be higher in such cases.
5. The ratio for using rehabilitation as compensation is 2 times that for using re-establishment or creation (R/C) (1 acre of R/C = 2 acres of rehabilitation). The ratio for using enhancement as compensation is 4 times that for using R/C (1 acre of R/C = 4 acres of enhancement).
6. Re-establishment or creation (R/C) can be used in combination with rehabilitation or enhancement. For example, 1 acre of impact to a Category III wetland would require two acres of R/C. If an applicant provides 1 acre of R/C (i.e. replacing the lost acreage at a 1:1 ratio), the remaining 1 acre of R/C necessary to compensate for the impact could be substituted with 2 acres of rehabilitation or 4 acres of enhancement.
7. Generally the use of enhancement alone as compensation is discouraged. Using enhancement in combination with the replacement of wetland area at a minimum of 1:1 through re-establishment or creation is preferred.

H. Preservation. Impacts to wetlands may be mitigated by preservation of wetland areas when used in combination with other forms of mitigation such as creation, restoration, or enhancement. Preservation may also be used by itself, but more restrictions apply as outlined below.

1. **Acceptable Uses of Preservation.** The preservation of at-risk, high-quality wetlands and habitat may be considered as part of an acceptable mitigation plan when the following criteria are met:
 - a. Preservation is used as a form of compensation only after the standard sequencing of mitigation (avoid, minimize, and then compensate). Refer to *Mitigation Sequencing* (Section [#]) of this Title;
 - b. Restoration (re-establishment and rehabilitation), creation, and enhancement opportunities have also been considered, and preservation is proposed by the applicant and approved by the permitting agencies as the best compensation option;

- c. The preservation site is determined to be under imminent threat; that is, the site has the potential to experience a high rate of undesirable ecological change due to on-site or off-site activities that are not regulated (e.g., logging of forested wetlands). This potential includes permitted, planned, or likely actions;
 - d. The area proposed for preservation is of high quality or critical for the health of the watershed or basin due to its location. Some of the following features may be indicative of high-quality sites:
 - i. Category I or II wetland rating (using the Washington State wetland rating system for eastern or western WA);
 - ii. Rare or irreplaceable wetland type (e.g., bogs, mature forested wetlands, estuaries) or aquatic habitat that is rare or a limited resource in the area;
 - iii. Habitat for threatened or endangered species;
 - iv. Provides biological and/or hydrological connectivity;
 - vi. High regional or watershed importance (e.g., listed as priority site in a watershed or basin plan);
 - vii. Large size with high species diversity (plants and/or animals) and/or high abundance of native species;
 - viii. A site that is continuous with the head of a watershed, or with a lake or pond in an upper watershed that significantly improves outflow hydrology and water quality.
2. **Preservation in combination with other forms of compensation.** Using preservation as compensation is acceptable when done in combination with restoration, creation, or enhancement, provided that a minimum of 1:1 acreage replacement is provided by re-establishment or creation and the criteria below are met:
- a. All criteria listed in [H.1] are met.
 - b. The impact area is small and/or impacts are occurring to a low-functioning system (Category III or IV wetland);
 - c. Preservation of a high-quality system occurs in the same watershed or basin as the wetland impact;

- d. Preservation sites include buffer areas adequate to protect the habitat and its functions from encroachment and degradation; and
 - e. Mitigation ratios for preservation in combination with other forms of mitigation shall range from 10:1 to 20:1, as determined on a case-by-case basis, depending on the quality of the wetlands being impacted and the quality of the wetlands being preserved.
3. **Preservation as the sole means of compensation for wetland impacts.** Preservation alone shall only be used as compensatory mitigation in exceptional circumstances. Preservation alone shall not apply if impacts are occurring to functions that must be replaced on site, such as flood storage or water quality treatment that need to be replicated by water quality measures implemented within the project limits. Preservation of at-risk, high-quality wetlands and habitat (as defined above) may be considered as the sole means of compensation for wetland impacts when the following criteria are met:
- a. All criteria listed in [H.1] and [H.2] are met;
 - b. There are no adverse impacts to habitat for fish and species listed as endangered and threatened;
 - c. There is no net loss of habitat functions within the watershed or basin;
 - d. Higher mitigation ratios are applied. Mitigation ratios for preservation as the sole means of mitigation shall generally start at 20:1. Specific ratios should depend upon the significance of the preservation project and the quality of the wetland resources lost.

I. **Wetland Mitigation Banks.**

- 1. Credits from a wetland mitigation bank may be approved for use as compensation for unavoidable impacts to wetlands when:
 - a. The bank is certified under Chapter 173-700 WAC;
 - b. The [director] determines that the wetland mitigation bank provides appropriate compensation for the authorized impacts; and
 - c. The proposed use of credits is consistent with the terms and conditions of the bank's certification.

2. Replacement ratios for projects using bank credits shall be consistent with replacement ratios specified in the bank's certification.
3. Credits from a certified wetland mitigation bank may be used to compensate for impacts located within the service area specified in the bank's certification. In some cases, the service area of the bank may include portions of more than one adjacent drainage basin for specific wetland functions.

Subdivisions

The subdivision and short subdivision of land in wetlands and associated buffers is subject to the following:

- A. Land that is located wholly within a wetland or its buffer may not be subdivided.
- B. Land that is located partially within a wetland or its buffer may be subdivided provided that an accessible and contiguous portion of each new lot is:
 1. Located outside of the wetland and its buffer; and
 2. Meets the minimum lot size requirements of [locally adopted zoning dimensions].
- C. Access roads and utilities serving the proposed subdivision may be permitted within the wetland and associated buffers only if the [city/county] determines that no other feasible alternative exists, consistent with this Title.

Signs and Fencing of Wetlands

A. **Temporary Markers.** The outer perimeter of the wetland buffer and the clearing limits identified by an approved permit or authorization shall be marked in the field with temporary "clearing limits" fencing in such a way as to ensure that no unauthorized intrusion will occur. The marking is subject to inspection by the [director] prior to the commencement of permitted activities. This temporary marking shall be maintained throughout construction and shall not be removed until permanent signs, if required, are in place.

B. **Permanent Signs.** As a condition of any permit or authorization issued pursuant to this Title, the [director] may require the applicant to install permanent signs along the boundary of a wetland or buffer.

1. Permanent signs shall be made of an enamel-coated metal face and attached to a metal post or another non-treated material of equal durability. Signs must be posted at an interval of one (1) per lot or every fifty (50) feet, whichever is less, and must be maintained by

the property owner in perpetuity. The sign shall be worded as follows or with alternative language approved by the director:

Protected Wetland Area
Do Not Disturb
Contact [Local Jurisdiction]
Regarding Uses, Restrictions, and Opportunities for Stewardship

2. The provisions of Subsection (1) may be modified as necessary to assure protection of sensitive features or wildlife.

C. Fencing

1. The [director] shall determine if fencing is necessary to protect the functions and values of the critical area. If found to be necessary, the [director] shall condition any permit or authorization issued pursuant to this Title to require the applicant to install a permanent fence at the edge of the wetland buffer, when fencing will prevent future impacts to the wetland.
2. The applicant shall be required to install a permanent fence around the wetland or buffer when domestic grazing animals are present or may be introduced on site.
3. Fencing installed as part of a proposed activity or as required in this Subsection shall be designed so as to not interfere with species migration, including fish runs, and shall be constructed in a manner that minimizes impacts to the wetland and associated habitat.

Wetland Buffers

A. Buffer Requirements. [insert buffer requirements]

See Appendices 8-C and 8-D for recommended buffer widths and criteria for increasing, reducing and averaging buffers to be used with the Washington State wetland rating systems. Appendix 8-E provides the rationale for the recommended buffers.

B. Measurement of Wetland Buffers. All buffers shall be measured from the wetland boundary as surveyed in the field. The width of the wetland buffer shall be determined according to the wetland category and the proposed land use as identified in this Title. The buffer for a wetland created, restored, or enhanced as compensation for approved wetland alterations shall be the same as the buffer required for the category of the created, restored, or enhanced wetland. Only fully vegetated buffers will be considered. Lawns, walkways, driveways, and other mowed or paved areas will not be considered buffers.

C. **Buffers on Mitigation Sites.** All mitigation sites shall have buffers consistent with the buffer requirements of this Title and based on the expected category of the wetland once the mitigation actions are completed.

D. **Buffer Maintenance.** Except as otherwise specified or allowed in accordance with this Title, wetland buffers shall be retained in an undisturbed or enhanced condition. In the case of compensatory mitigation sites, removal of invasive non-native weeds is required for the duration of the mitigation bond.

E. **Impacts to Buffers.** Requirements for the compensation for impacts to buffers are outlined in *Compensatory Mitigation Requirements* (Section [#]) of this title.

F. **Overlapping Critical Area Buffers.** If buffers for two contiguous critical areas overlap (such as buffers for a stream and a wetland), the wider buffer applies.

G. **Buffer Uses.** The following uses may be permitted within a wetland buffer in accordance with the review procedures of this Title, provided they are not prohibited by any other applicable law and they are conducted in a manner so as to minimize impacts to the buffer and adjacent wetland:

1. **Conservation and Restoration Activities.** Conservation or restoration activities aimed at protecting the soil, water, vegetation, or wildlife.
2. **Passive Recreation.** Passive recreation facilities designed and in accordance with an approved critical area report, including:
 - a. Walkways and trails, provided that those pathways are limited to minor crossings having no adverse impact on water quality. They should be generally parallel to the perimeter of the wetland, located only in the outer twenty-five percent (25%) of the wetland buffer area, and located to avoid removal of significant trees. They should be limited to pervious surfaces no more than five (5) feet in width for pedestrian use only. Raised boardwalks utilizing non-treated pilings may be acceptable; and
 - b. Wildlife viewing structures.
3. **Stormwater Management Facilities.** Stormwater management facilities, limited to stormwater dispersion outfalls and bioswales, may be allowed within the outer twenty-five percent (25%) of the buffer of Category III or IV wetlands only, provided that:
 - a. No other location is feasible; and
 - b. The location of such facilities will not degrade the functions or values of the wetland; and

- c. Stormwater management facilities are not allowed in buffers of Category I or II wetlands.

Stormwater Management Impacts to Wetlands

A. **Protection of Wetland Hydrology.** Wetland hydrology shall be protected through the development process. Post-development wetland hydrology shall match pre-development wetland hydrology to the maximum extent feasible.

B. **Construction of New Surface Water Conveyance Systems.** Construction of new surface water conveyance systems in wetland buffers is allowed only if discharging at the wetland edge has less adverse impact upon the wetland or wetland buffer than if the surface water is discharged at the buffer edge and allowed to naturally drain through the buffer.

C. **Stormwater Facilities on Roads Adjacent to Wetlands and their Buffers.** Construction of new surface water flow control or surface water quality treatment facilities are only allowed in wetlands and buffers when such facilities are located in the right-of-way of an existing road and conducted consistent with established guidelines for road maintenance and best management practices. This does NOT include an outlet structure for a detention facility that is designed to impound water in a wetland up-gradient of a road, unless the provisions in *Limits on Use of Wetlands for Stormwater Detention* (Subsection [#]) are satisfied.

D. **Limits on Use of Wetlands for Stormwater Detention.** Wetlands cannot be used for stormwater detention and treatment unless the project satisfies the guidance and criteria developed by the Puget Sound Wetlands and Stormwater Management Research Program (Azous and Horner, eds, 2001, *Wetlands and Urbanization: Implications for the Future*) and contained in Appendix I-D of the *Stormwater Management Manual for Western Washington*, titled “Wetlands and Stormwater Management Guidelines.” Compensatory mitigation should be provided for unavoidable loss of functions through hydrologic or structural modification of wetlands.

At this point we are not aware of wetland management guidelines that have been developed to address stormwater issues specific to eastern Washington. However, many of the wetland management principles embodied in Appendix I-D of the stormwater manual are applicable to wetlands regardless of the region in which they are located.

Agricultural Impacts to Wetlands

Chapter 8 of this volume recommends that a local government regulate on-going agricultural activities in wetlands through best management practices and farm plans. The scope and details of such practices and plans are too site-specific and detailed for the purposes of this appendix.

The following language addresses the conversion of wetlands to new agricultural uses, and conversion of wetlands currently in agricultural use to non-agricultural uses. Both of these activities are legitimately regulated by a local government through its critical areas ordinance.

A. The conversion of wetlands not currently in agricultural use to a new agricultural use is subject to the compensatory mitigation provisions of this Title, including avoidance, minimization, and compensatory mitigation. Conversion includes the clearing of wetland vegetation for pasture or preparation for planting of crops.

B. The conversion of wetlands currently in agricultural uses to non-agricultural uses is subject to the compensatory mitigation provisions of this Title, including avoidance, minimization, and mitigation.

Removal of Hazard Trees

Refer to Section 8.3.3.12 in Chapter 8 of this volume for the discussion on the removal hazard trees in wetlands and their buffers. A local critical areas ordinance may defer to its clearing, landscaping, or other applicable code to address the removal of hazard trees. Local governments should require that hazard trees be replaced either in kind or with species that are underrepresented in the community and under the direction of an arborist. A recommended goal for the replacement of hazard trees is 2:1 for younger trees and 4:1 for mature and old-growth trees.

Unauthorized Alterations and Enforcement

A. When a wetland or its buffer has been altered in violation of this Title, all ongoing development work shall stop and the critical area shall be restored. The [city/county] shall have the authority to issue a “stop-work” order to cease all ongoing development work and order restoration, rehabilitation, or replacement measures at the owner’s or other responsible party’s expense to compensate for violation of provisions of this Title.

B. **Requirement for Restoration Plan.** All development work shall remain stopped until a restoration plan is prepared and approved by [city/county]. Such a plan shall be prepared by a qualified professional using the currently accepted scientific principles and shall describe how the actions proposed meet the minimum requirements described in Subsection (C). The [director] shall, at the violator’s expense, seek expert advice in determining the adequacy of the plan. Inadequate plans shall be returned to the applicant or violator for revision and resubmittal.

C. **Minimum Performance Standards for Restoration.** The following minimum performance standards shall be met for the restoration of a wetland, provided that if the violator can demonstrate that greater functions and habitat values can be obtained, these standards may be modified:

1. The historic structure, functions, and values of the affected wetland shall be restored, including water quality and habitat functions;
2. The historic soil types and configuration shall be replicated;
3. The wetland and buffers shall be replanted with native vegetation that replicates the vegetation historically found on the site in species types, sizes, and densities. The historic functions and values should be replicated at the location of the alteration; and
4. Information demonstrating compliance with other applicable provisions of this Title shall be submitted to the [director].

D. Site Investigations. The [director] is authorized to make site inspections and take such actions as are necessary to enforce this Title. The [director] shall present proper credentials and make a reasonable effort to contact any property owner before entering onto private property.

E. Penalties. Any person, party, firm, corporation, or other legal entity convicted of violating any of the provisions of this Title shall be guilty of a misdemeanor. Each day or portion of a day during which a violation of this Title is committed or continued shall constitute a separate offense. Any development carried out contrary to the provisions of this Title shall constitute a public nuisance and may be enjoined as provided by the statutes of the State of Washington. The [city/county] may levy civil penalties against any person, party, firm, corporation, or other legal entity for violation of any of the provisions of this Title. The civil penalty shall be assessed at a maximum rate of [amount] dollars per day per violation.

If the wetland affected cannot be restored, monies collected as penalties shall be deposited in a dedicated account for the preservation or restoration of landscape processes and functions in the watershed in which the affected wetland is located. The [city/county] may coordinate its preservation or restoration activities with other [city/county] in the watershed to optimize the effectiveness of the restoration action.

Appendix 8-D

Guidance on Widths of Buffers and Ratios for Compensatory Mitigation for Use with the Eastern Washington Wetland Rating System

8D.1 Introduction

This appendix provides guidance on widths of buffers, ratios for compensatory mitigation, and other measures for protecting wetlands that are linked to the *Washington State Wetland Rating System for Eastern Washington-Revised* (Hruby 2004a). Refer to Appendix 8-C for guidance for western Washington. Appendices 8-C through 8-F have been formatted similar to the main text of this volume (i.e., with a numbering system) to help with organization.

The tables below list the recommended widths of buffers for various alternatives, examples of measures to minimize impacts, and ratios for compensatory mitigation.

- **Table 8D-1.** Width of buffers needed to protect wetlands in eastern Washington if impacts from land use and wetland functions are NOT incorporated (Buffer Alternative 1). [Page 4]
- **Table 8D-2.** Width of buffers based on wetland category and modified by the intensity of the impacts from changes in proposed land use (Buffer Alternative 2). [Page 5]
- **Table 8D-3.** Types of land uses that can result in high, moderate, and low levels of impacts to adjacent wetlands (used in Buffer Alternatives 2 and 3). [Page 5]
- **Table 8D-4.** Width of buffers needed to protect Category IV wetlands in eastern Washington (Buffer Alternative 3). [Page 6]
- **Table 8D-5.** Width of buffers needed to protect Category III wetlands in eastern Washington (Buffer Alternative 3). [Page 6]
- **Table 8D-6.** Width of buffers needed to protect Category II wetlands in eastern Washington (Buffer Alternative 3). [Page 7]
- **Table 8D-7.** Width of buffers needed to protect Category I wetlands in eastern Washington (Buffer Alternative 3). [Page 8]
- **Table 8D-8.** Examples of measures to minimize impacts to wetlands from different types of activities. [Page 10]

- **Table 8D-9.** Comparison of recommended buffer widths for high intensity land uses between Alternative 3 (step-wise scale) and Alternative 3A (graduated scale) based on score for habitat functions [Page 14].
- **Table 8D-10.** Comparison of recommended widths for buffers between Alternative 3 and Alternative 3A for proposed land uses with high impacts with mitigation for impacts. [Page 15]
- **Table 8D-11.** Mitigation ratios for projects in eastern Washington. [Page 21]

The guidance in this appendix can be used in developing regulations such as critical areas ordinances for protecting and managing the functions and values of wetlands. The recommendations are based on the analysis of the current scientific literature found in Volume 1. The detailed rationale for the recommendations is provided in Appendices 8-E and 8-F.

The recommendations on buffer widths and mitigation ratios are general, and there may be some wetlands for which these recommendations are either too restrictive or not protective enough. The recommendations are based on the assumption that a wetland will be protected only at the scale of the site itself. They do not reflect buffers and ratios that might result from regulations that are developed based on a larger landscape-scale approach.

8D.2 Widths of Buffers

Requiring buffers of a specific width has been one of the primary methods by which local jurisdictions in Washington have protected the functions and values of wetlands. Generally, buffers are the uplands adjacent to an aquatic resource that can, through various physical, chemical, and biological processes, reduce impacts to wetlands from adjacent land uses. The physical characteristics of buffers (e.g., slope, soils, vegetation, and width) determine how well buffers reduce the adverse impacts of human development. These characteristics are discussed in detail in Chapter 5, Volume 1.

In addition to reducing the impacts of adjacent land uses, buffers also protect and maintain a wide variety of functions and values provided by wetlands. For example, buffers can provide the terrestrial habitats needed by many species of wildlife that use wetlands to meet some of their needs.

The review of the scientific literature has shown, however, that buffers alone cannot adequately protect all functions that a wetland performs. Additional guidance is, therefore, provided on other ways in which wetlands can be managed and regulated to provide some of the necessary protection that buffers alone do not provide. The following guidance for protecting the functions and values of wetlands is based on their category as determined through the rating system for eastern Washington.

Basic assumptions for using the guidance on widths for buffers

Recommendations for widths of buffers assume that:

- The wetland has been categorized using the *Washington State Wetland Rating System for Eastern Washington-Revised* (Hruby 2004a).
- The buffer is vegetated with native plant communities that are appropriate for the *ecoregion* or with a plant community that provides similar functions. Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. The U.S. Environmental Protection Agency maintains updated maps of ecoregions that are available at <http://www.epa.gov/naaujdh/pages/models/ecoregions.htm> . Ecoregions currently mapped for Washington are: Coast Range, Puget Lowland, Cascades, Eastern Cascades Slopes and Foothills, North Cascades, Columbia Plateau, Blue Mountains, and Northern Rockies.
- If the vegetation in the buffer is disturbed (grazed, mowed, etc.), proponents planning changes to land use that will increase impacts to wetlands need to rehabilitate the buffer with native plant communities that are appropriate for the ecoregion, or with a plant community that provides similar functions.
- The width of the buffer is measured in horizontal distance (see drawing below).



- The buffer will remain relatively undisturbed in the future within the width specified.

Three alternatives for protecting the functions of wetlands using buffers are described in the following sections:

- **Buffer Alternative 1.** Width based only on wetland category.
- **Buffer Alternative 2.** Width based on wetland category and the intensity of impacts from proposed changes in land use.
- **Buffer Alternative 3.** Width based on wetland category, intensity of impacts, and wetland functions or special characteristics. This alternative has two options for determining the widths of buffers when they are based on the score for habitat. Alternative 3 provides three buffer widths based on habitat scores, while Alternative 3A provides a graduated scale of widths for buffers based on habitat scores.

The buffer widths recommended for each alternative were based on the review of scientific information in Volume 1. The guidance in this appendix synthesizes the information about the types and sizes of buffers needed to protect the functions and special characteristics of wetlands.

Appendices 8-C and 8-D do not provide the metric equivalents for buffer widths even though most of the research on buffers uses the metric scale. This decision was made because most local governments use the English Standard measures. For example, a buffer width is set at 50 feet rather than 15 meters.

8D.2.1 Buffer Alternative 1: Width Based Only on Wetland Category

This alternative, in which the width of buffers is based only on the category of the wetland, is the simplest (Table 8D-1). The width recommended for each category of wetland in Alternative 1 is the widest recommended for that category in both Alternatives 2 and 3 (discussed below). Alternative 1 provides the least flexibility because many different types of wetlands and types of human impacts are combined. For example, not all wetlands that fall into Category I or II need a 300-foot buffer. If no distinctions are made between the wetlands that fall into Category I or II, all wetlands that fall into these categories have to be protected with a 300-foot buffer so adequate protection is provided for those wetlands that do need a buffer this wide. Also, the widths recommended for this alternative are those needed to protect the wetland from proposed land uses that have the greatest impacts since no distinctions between impacts are made.

Table 8D-1. Width of buffers needed to protect wetlands in eastern Washington if impacts from land use and wetland functions are NOT incorporated (Buffer Alternative 1).

Category of Wetland	Widths of Buffers
IV	50 ft
III	150 ft
II	200 ft
I	250 ft

8D.2.2 Buffer Alternative 2: Width Based on Wetland Category and Modified by the Intensity of the Impacts from Proposed Land Use

The second alternative increases the regulatory flexibility by including the concept that not all proposed changes in land uses have the same level of impact (Table 8D-2). For example, one new residence being built on 5 acres of land near a wetland is expected to have a smaller impact than 20 houses built on the same 5 acres. Three categories of impacts from proposed land uses are outlined: land uses that can create high impacts, moderate impacts, and low impacts to wetlands. Different land uses that can cause these levels of impacts are listed in Table 8D-3.

Table 8D-2. Width of buffers needed to protect wetlands in eastern Washington considering impacts of proposed land uses (Buffer Alternative 2).

Category of Wetland	Land Use with Low Impact *	Land Use with Moderate Impact *	Land Use with High Impact*
IV	25 ft	40 ft	50 ft
III	75 ft	110 ft	150 ft
II	100 ft	150 ft	200 ft
I	125 ft	190 ft	250 ft

* See Table 8D-3 in this appendix for types of land uses that can result in low, moderate, and high impacts to wetlands.

Table 8D-3. Types of proposed land use that can result in high, moderate, and low levels of impacts to adjacent wetlands.

Level of Impact from Proposed Change in Land Use	Types of Land Use Based on Common Zoning Designations *
High	<ul style="list-style-type: none"> • Commercial • Urban • Industrial • Institutional • Retail sales • Residential (more than 1 unit/acre) • Conversion to high-intensity agriculture (dairies, nurseries, greenhouses, growing and harvesting crops requiring annual tilling and raising and maintaining animals, etc.) • High-intensity recreation (golf courses, ball fields, etc.) • Hobby farms
Moderate	<ul style="list-style-type: none"> • Residential (1 unit/acre or less) • Moderate-intensity open space (parks with biking, jogging, etc.) • Conversion to moderate-intensity agriculture (orchards, hay fields, etc.) • Paved trails • Building of logging roads • Utility corridor or right-of-way shared by several utilities and including access/maintenance road
Low	<ul style="list-style-type: none"> • Forestry (cutting of trees only) • Low-intensity open space (hiking, bird-watching, preservation of natural resources, etc.) • Unpaved trails • Utility corridor without a maintenance road and little or no vegetation management.

* Local governments are encouraged to land-use designations for zoning that are consistent with these examples.

8D.2.3 Buffer Alternative 3: Width Based on Wetland Category, Intensity of Impacts, Wetland Functions, or Special Characteristics

The third alternative provides the most flexibility by basing the widths of buffers on three factors: the wetland category, the intensity of the impacts (as used in Alternative 2), and the functions or special characteristics of the wetland that need to be protected as determined through the rating system. The recommended widths for buffers are shown in Tables 8D-4 to 8D-7. Using this alternative, a wetland may fall into more than one category in the table. For example, a forested, riparian, wetland may be rated a Category II wetland because it is a riparian forest, but it may be rated a Category I wetland based on its score for functions.

If a wetland meets more than one of the characteristics listed in Tables 8D-4 to 8D-7, the buffer recommended to protect the wetland is the widest one. For example, if a Category I wetland (Table 8D-7) scores 32 points for habitat and 27 points for water quality functions, a 200-foot buffer is needed for land uses with high impacts because the widths needed to protect habitat are wider than those needed for the other functions.

Table 8D-4. Width of buffers needed to protect Category IV wetlands in eastern Washington (Buffer Alternative 3 for wetlands scoring less than 30 points for all functions).

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use	Other Measures Recommended for Protection
Score for all 3 basic functions is less than 30 points	Low - 25 ft Moderate – 40 ft High – 50 ft	No recommendations at this time ¹

Table 8D-5. Width of buffers needed to protect Category III wetlands in eastern Washington (Buffer Alternative 3 for wetlands scoring 30 – 50 points for all functions or isolated vernal pools).

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use	Other Measures Recommended for Protection
Moderate level of function for habitat (score for habitat 20 - 28 points)	Low - 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time ¹
Not meeting above characteristic	Low - 40 ft Moderate – 60 ft High – 80 ft	No recommendations at this time ¹

¹ No information on other measures for protection was available at the time this document was written. The Washington State Department of Ecology will continue to collect new information for future updates to this document.

Table 8D-6. Width of buffers needed to protect Category II wetlands in eastern Washington (Buffer Alternative 3 for wetlands scoring 51-69 points for all functions or having the “Special Characteristics” identified in the rating system).

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use (apply most protective if more than one criterion is met)	Other Measures Recommended for Protection
High level of function for habitat (score for habitat 29 - 36 points)	Low - 100 ft Moderate – 150 ft High – 200 ft	Maintain connections to other habitat areas
Moderate level of function for habitat (score for habitat 20 - 28 points)	Low - 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time ²
High level of function for water quality improvement and low for habitat (score for water quality 24 - 32 points; habitat less than 20 points)	Low - 50 ft Moderate – 75 ft High – 100 ft	No additional surface discharges of untreated runoff
Vernal pool	Low - 100 ft Moderate – 150 ft High – 200 ft OR Develop a regional plan to protect the most important vernal pool complexes – buffers of vernal pools outside protection zones can then be reduced to: Low - 40 ft Moderate – 60 ft High – 80 ft	No intensive grazing or tilling in the wetland
Riparian forest	Buffer width to be based on score for habitat functions or water quality functions	Riparian forest wetlands need to be protected at a watershed or sub-basin scale (protection of the water regime in the watershed) Other protection based on needs to protect habitat and/or water quality functions
Not meeting above characteristics	Low - 50 ft Moderate – 75 ft High – 100 ft	No recommendations at this time ²

² See footnote on the previous page.

Table 8D-7. Width of buffers needed to protect Category I wetlands in eastern Washington (Buffer Alternative 3 for wetlands scoring 70 points or more for all functions or having the “Special Characteristics” identified in the rating system).

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use (apply most protective if more than one criterion is met)	Other Measures Recommended for Protection
Natural Heritage Wetlands	Low - 125 ft Moderate – 190 ft High – 250 ft	No additional surface discharges to wetland or its tributaries No septic systems within 300 ft Restore degraded parts of buffer
Bogs	Low - 125 ft Moderate – 190 ft High – 250 ft	No additional surface discharges to wetland or its tributaries Restore degraded parts of buffer
Forested	Buffer size to be based on score for habitat functions or water quality functions	If forested wetland scores high for habitat, need to maintain connectivity to other natural areas Restore degraded parts of buffer
Alkali	Low – 100 ft Moderate – 150 ft High – 200 ft	No additional surface discharges to wetland or its tributaries Restore degraded parts of buffer
High level of function for habitat (score for habitat 29 - 36 points)	Low – 100 ft Moderate – 150 ft High – 200 ft	Maintain connections to other habitat areas Restore degraded parts of buffer
Moderate level of function for habitat (score for habitat 20 - 28 points)	Low – 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time ³
High level of function for water quality improvement (24 – 32 points) and low for habitat (less than 20 points)	Low – 50 ft Moderate – 75 ft High – 100 ft	No additional surface discharges of untreated runoff
Not meeting any of the above characteristics	Low – 50 ft Moderate – 75 ft High – 100 ft	No recommendations at this time ³

³ See footnote on page 6.

8D.2.4 Special Conditions for a Possible Reduction in Buffer Widths

8D.2.4.1 Condition 1: Reduction in Buffer Width Based on Reducing the Intensity of Impacts from Proposed Land Uses

The buffer widths recommended for proposed land uses with high-intensity impacts to wetlands can be reduced to those recommended for moderate-intensity impacts under the following conditions:

- For wetlands that score moderate or high for habitat (20 points or more for the habitat functions), the width of the buffer can be reduced if both of the following criteria are met:
 - 1) A relatively undisturbed, vegetated corridor at least 100 feet wide is protected between the wetland and any other Priority Habitats as defined by the Washington State Department of Fish and Wildlife (“relatively undisturbed” and “vegetated corridor” are defined in questions H 2.1 and H 2.2.1 of the *Washington State Wetland Rating System for Eastern Washington – Revised* (Hruby 2004a)). Priority Habitats in eastern Washington include:
 - Wetlands
 - Riparian zones
 - Aspen stands
 - Cliffs
 - Prairies
 - Caves
 - Stands of Oregon White Oak
 - Old growth forests
 - Talus slopes
 - Urban natural open space (for current definitions of Priority Habitats see <http://wdfw.wa.gov/hab/phshabs.htm>)

The corridor must be protected for the entire distance between the wetland and the Priority Habitat by some type of legal protection such as a conservation easement.

- 2) Measures to minimize the impacts of different land uses on wetlands, such as the examples summarized in Table 8D-8, are applied.
- For wetlands that score less than 20 points for habitat, the buffer width can be reduced to that required for moderate land-use impacts by applying measures to minimize the impacts of the proposed land uses (see examples in Table 8D-8).

Table 8D-8. Examples of measures to minimize impacts to wetlands from proposed change in land use that have high impacts. (This is not a complete list of measures.)

Examples of Disturbance	Activities and Uses that Cause Disturbances	Examples of Measures to Minimize Impacts
Lights	<ul style="list-style-type: none"> • Parking lots • Warehouses • Manufacturing • Residential 	<ul style="list-style-type: none"> • Direct lights away from wetland
Noise	<ul style="list-style-type: none"> • Manufacturing • Residential 	<ul style="list-style-type: none"> • Locate activity that generates noise away from wetland
Toxic runoff*	<ul style="list-style-type: none"> • Parking lots • Roads • Manufacturing • Residential areas • Application of agricultural pesticides • Landscaping 	<ul style="list-style-type: none"> • Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 ft of wetland • Apply integrated pest management
Stormwater runoff	<ul style="list-style-type: none"> • Parking lots • Roads • Manufacturing • Residential areas • Commercial • Landscaping 	<ul style="list-style-type: none"> • Retrofit stormwater detention and treatment for roads and existing adjacent development • Prevent channelized flow from lawns that directly enters the buffer
Change in water regime	<ul style="list-style-type: none"> • Impermeable surfaces • Lawns • Tilling 	<ul style="list-style-type: none"> • Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	<ul style="list-style-type: none"> • Residential areas 	<ul style="list-style-type: none"> • Use privacy fencing; plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion; place wetland and its buffer in a separate tract
Dust	<ul style="list-style-type: none"> • Tilled fields 	<ul style="list-style-type: none"> • Use best management practices to control dust
<p>* These examples are not necessarily adequate for minimizing toxic runoff if threatened or endangered species are present at the site.</p>		

8D.2.4.2 Condition 2: Reductions in Buffer Widths Where Existing Roads or Structures Lie Within the Buffer

Where a legally established, non-conforming use of the buffer exists (such as a road or structure that lies within the width of buffer recommended for that wetland), proposed actions in the buffer may be permitted as long as they do not increase the degree of non-conformity. This means no increase in the impacts to the wetland from activities in the buffer.

For example, if a land use with high impacts (e.g., building an urban road) is being proposed next to a Category II wetland with a moderate level of function for habitat, a 150-foot buffer would be needed to protect functions (see Table 8D-6). If, however, an existing urban road is already present and only 50 feet from the edge of the Category II wetland, the additional 100 feet of buffer may not be needed if the road is being widened. A vegetated buffer on the other side of the road would not help buffer the existing impacts to the wetland from the road. If the existing road is resurfaced or widened (e.g., to add a sidewalk) along the upland edge, without any further roadside development that would increase the degree of non-conformity, the additional buffer is not necessary. The associated increase in impervious surface from widening a road, however, may necessitate mitigation for impacts from stormwater.

If, however, the proposal is to build a new development (e.g., shopping center) along the upland side of the road, the impacts to the wetland and its functions may increase. This would increase the degree of non-conformity. The project proponent would need to provide the additional 100 feet of buffer extending beyond the road or apply buffer averaging (see Section 8D.1.6).

8D.2.4.3 Condition 3: Reduction in Buffer Widths Through an Individual Rural Stewardship Plan

A Rural Stewardship Plan (RSP) is the product of a collaborative effort between rural property owners and a local government to tailor a management plan specific for a rural parcel of land. The goal of a RSP is better management of wetlands than would be achieved through strict adherence to regulations. In exchange, the landowner gains flexibility in the widths of buffers required, in clearing limits, and in other requirements found in the regulations. For example, dense development in rural residential areas can be treated as having a low level of impact when the development of the site is managed through a locally approved RSP. The voluntary agreement includes provisions for restoration, maintenance, and long-term monitoring and specifies the widths of buffers needed to protect each wetland within the RSP.

8D.2.5 Conditions for Increasing the Width of, or Enhancing, the Buffer

8D.2.5.1 Condition 1: Buffer is Not Vegetated with Plants Appropriate for the Region

The recommended widths for buffers are based on the assumption that the buffer is vegetated with a native plant community appropriate for the ecoregion or with one that performs similar functions. If the existing buffer is unvegetated, sparsely vegetated, or vegetated with invasive species that do not perform needed functions, the buffer should either be planted to create the appropriate plant community or the buffer should be widened to ensure that adequate functions of the buffer are provided. Generally, improving the vegetation will be more effective than widening the buffer.

8D.2.5.2 Condition 2: Buffer Has a Steep Slope

The review of the literature (Volume 1) indicates that the effectiveness of buffers at removing pollutants before they enter a wetland decreases as the slope increases. If a buffer is to be based on the score for its ability to improve water quality (see Tables 8D-4 through 8D-7) rather than habitat or other criteria, then the buffer should be increased by 50% if the slope is greater than 30% (a 3-foot rise for every 10 feet of horizontal distance).

8D.2.5.3 Condition 3: Buffer Is Used by Species Sensitive to Disturbance

If the wetland provides habitat for a species that is particularly sensitive to disturbance (such as a threatened or endangered species), the width of the buffer should be increased to provide adequate protection for the species based on its particular, life-history needs. Some buffer requirements for priority species are available on the Washington State Department of Fish and Wildlife web page (<http://wdfw.wa.gov/hab/phsrecs.htm>). The list of priority species for vertebrates is at <http://wdfw.wa.gov/hab/phsvert.htm>; for invertebrates it is at <http://wdfw.wa.gov/hab/phsinvrt.htm>. Information on the buffer widths needed by some threatened, endangered, and sensitive species of wildlife is provided in Appendix 8-H.

8D.2.6 Buffer Averaging

The widths of buffers may be averaged if this will improve the protection of wetland functions, or if it is the only way to allow for reasonable use of a parcel. There is no scientific information available to determine if averaging the widths of buffers actually protects functions of wetlands. The authors have concluded that averaging could be allowed in the following situations:

Averaging may not be used in conjunction with any of the other provisions for reductions in buffers listed above (listed above).

- Averaging to **improve wetland protection** may be permitted when **all** of the following conditions are met:
 - The wetland has significant differences in characteristics that affect its habitat functions, such as a wetland with a forested component adjacent to a degraded emergent component or a “dual-rated” wetland with a Category I area adjacent to a lower rated area
 - The buffer is increased adjacent to the higher-functioning area of habitat or more sensitive portion of the wetland and decreased adjacent to the lower-functioning or less sensitive portion
 - The total area of the buffer after averaging is equal to the area required without averaging
 - The buffer at its narrowest point is never less than 3/4 of the required width
- Averaging to **allow reasonable use** of a parcel may be permitted when **all** of the following are met:
 - There are no feasible alternatives to the site design that could be accomplished without buffer averaging
 - The averaged buffer will not result in degradation of the wetland’s functions and values as demonstrated by a report from a qualified wetland expert (see Appendix 8-G for a definition of a qualified wetland expert)
 - The total buffer area after averaging is equal to the area required without averaging
 - The buffer at its narrowest point is never less than 3/4 of the required width

8D.2.7 Modifying Buffer Widths in Alternative 3 Using a Graduated Scale for the Habitat Functions (Alternative 3A)

Alternative 3 contains recommendations for protecting the habitat functions of wetlands using only three groupings of scores (0-19, 20-28, 29-36). As a result, a one-point difference between 28 and 29 can result in a 150-foot increase in the width of a buffer around a wetland. The habitat scores were divided into three groups to simplify the regulations based on this guidance. This division is not based on a characterization of risks since the scientific information indicates that the decrease in risk with increasing widths of buffers is relatively continuous for habitat functions.

Such a large increase in width with a one-point increase in the habitat score may be contentious. A jurisdiction may wish to reduce the increments in the widths for buffers by developing a more graduated (but inherently more complicated) scale based on the scores for habitat. Table 8D-9 provides one example of a graduated scale for widths of buffers where the width increases by 10 feet for every one-point increase in the habitat score. (Figure 8D-1 shows the buffer widths graphically.)

Table 8D-9. Comparison of widths for buffers in Alternatives 3 (step-wise scale) and 3A (graduated scale) for proposed land uses with high impacts based on the score for habitat functions in eastern Washington.

Points for Habitat from Wetland Rating Form	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Alternative 3	100	150	150	150	150	150	150	150	150	150	200	200	200	200	200	200	200	200
Alternative 3A	100	100	100	110	120	130	140	150	160	170	180	190	200	200	200	200	200	200

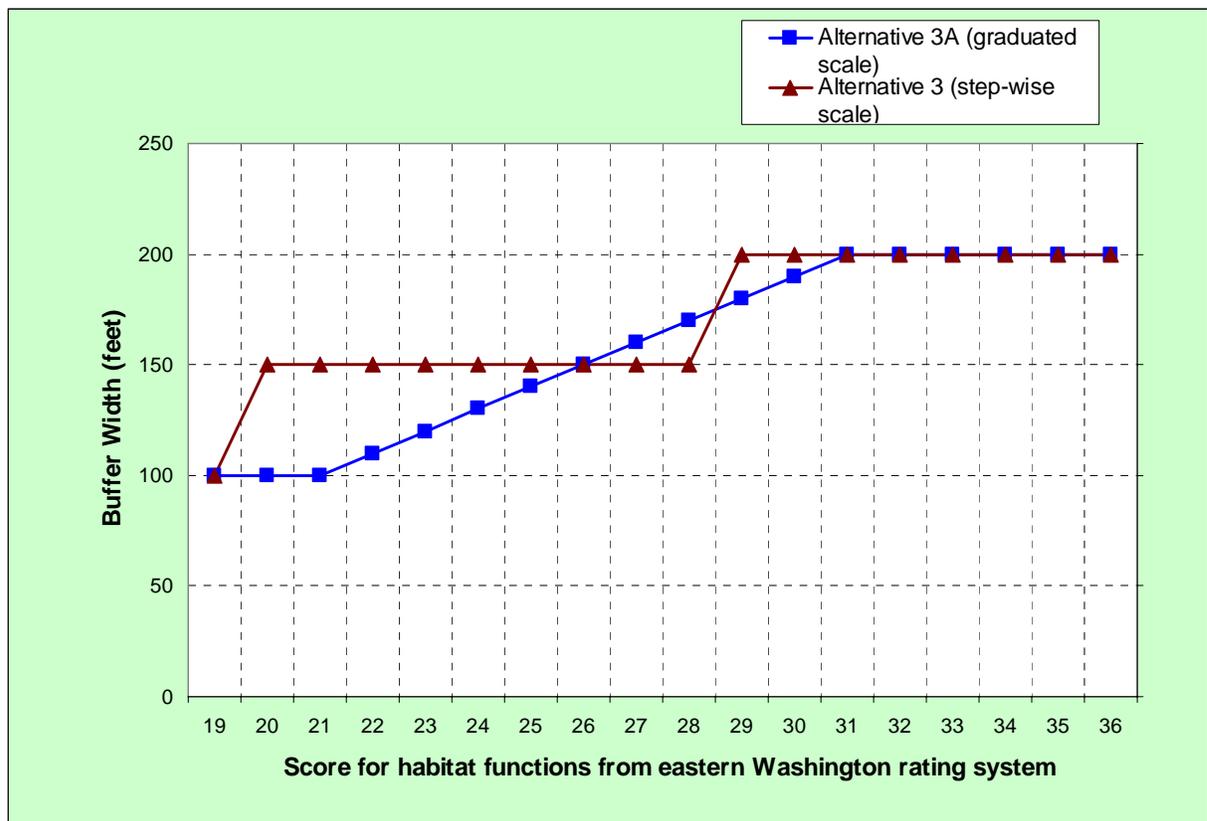


Figure 8D-1. Graphical comparison of widths for buffers in Alternative 3 and 3A for proposed land uses with high impacts based on the score for habitat functions in eastern Washington.

Other scales are possible as long as they keep within the limits established from the scientific information currently available: wetlands with scores for habitat that are higher than 31 points need buffers that are at least 200-feet wide; wetlands with a score of 26 points need buffers of at least 150 feet; and wetlands with a score of 22 points need buffers that are at least 100-feet wide.

These buffer widths can be further reduced by 25 percent if a proposed project with high impacts implements mitigation measures such as those described in Table 8D-8. The measures are part of “Condition 1” in Section 8D.1.4 (Special Conditions for a Possible Reduction in Buffer Widths). The buffer widths under Buffer Alternatives 3 and 3A, and the corresponding 25 percent reduction (per buffer reduction condition 1) are shown in Table 8C-10 and represented graphically below in Figure 8D-2.

Table 8D-10. Comparison of widths for buffers in Alternatives 3 (step-wise scale) and 3A (graduated scale) for proposed land uses with high impacts based on the score for habitat functions in eastern Washington if the impacts are mitigated.

Points for Habitat from Wetland Rating Form	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Alternative 3 (with mitigation of impacts)	75	110	110	110	110	110	110	110	110	110	150	150	150	150	150	150	150	150
Alternative 3A (with mitigation of impacts)	75	75	75	83	90	98	105	113	20	128	135	143	150	150	150	150	150	150

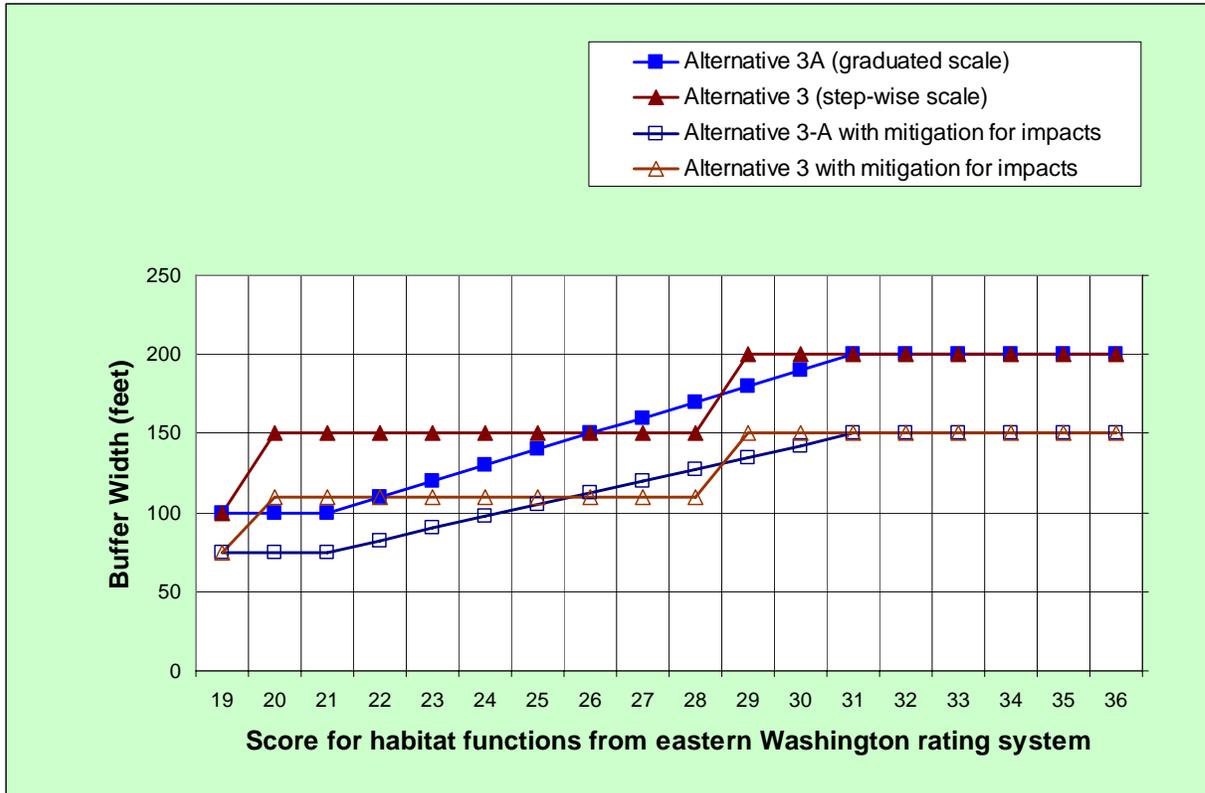


Figure 8D-2. Graphical comparison of widths for buffers in Alternatives 3 and 3A based on the score for habitat functions in eastern Washington with and without mitigating impacts of proposed development outside the buffer.

Alternatives 3 and 3A represent two separate approaches for determining widths of buffers for wetlands scoring between 20 and 31 points for the habitat functions. Local governments should select one of the two approaches and should not hybridize the approaches or adopt both at the same time.

8D.3 Ratios for Compensatory Mitigation

When the acreage required for compensatory mitigation is divided by the acreage of impact, the result is a number known variously as a *replacement*, *compensation*, or *mitigation* ratio. Compensatory mitigation ratios are used to help ensure that compensatory mitigation actions are adequate to offset unavoidable wetland impacts by requiring a greater amount of mitigation area than the area of impact. Requiring greater mitigation area helps compensate for the risk that a mitigation action will fail and for the time lag that occurs between the wetland impact and achieving a fully functioning mitigation site.

8D.3.1 Definitions of Types of Compensatory Mitigation

The ratios presented are based on the type of compensatory mitigation proposed (e.g., restoration, creation, and enhancement). In its *Regulatory Guidance Letter 02-02*, the U.S. Army Corps of Engineers provided definitions for these types of compensatory mitigation. For consistency, the authors of this document use the same definitions which are provided below.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into:

- **Re-establishment:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a **former** wetland. Re-establishment results in a gain in wetland acres (and functions). Activities could include removing fill material, plugging ditches, or breaking drain tiles.
- **Rehabilitation:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a **degraded** wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres. Activities could involve breaching a dike to reconnect wetlands to a floodplain or return tidal influence to a wetland.

Creation (Establishment): The manipulation of the physical, chemical, or biological characteristics present to develop a wetland on an upland or deepwater site where a wetland did not previously exist. Establishment results in a gain in wetland acres. Activities typically involve excavation of upland soils to elevations that will produce a wetland hydroperiod, create hydric soils, and support the growth of hydrophytic plant species.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of a wetland site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in some wetland functions and can lead to a

decline in other wetland functions, but does not result in a gain in wetland acres. Activities typically consist of planting vegetation, controlling non-native or invasive species, modifying site elevations or the proportion of open water to influence hydroperiods, or some combination of these activities.

Protection/Maintenance (Preservation): Removing a threat to, or preventing the decline of, wetland conditions by an action in or near a wetland. This includes the purchase of land or easements, repairing water control structures or fences, or structural protection such as repairing a barrier island. This term also includes activities commonly associated with the term *preservation*. Preservation does not result in a gain of wetland acres, may result in a gain in functions, and will be used only in exceptional circumstances.

Distinction between rehabilitation and enhancement

The distinction between rehabilitation and enhancement as defined above is not clear-cut and can be hard to understand. Actions that rehabilitate or enhance wetlands span a continuum of activities that cannot be defined by specific criteria.

Rehabilitation ←————→ *Enhancement*

In general, rehabilitation involves actions that are more sustainable and that reinstate environmental processes, both at the site and landscape scale (e.g., reinstating hydrologic processes in a diked floodplain by breaching the dikes). Rehabilitation actions often focus on restoring environmental processes that have been disturbed or altered by previous or ongoing human activity. Ecology further defines *rehabilitation* as:

- Actions that restore the original hydrogeomorphic (HGM) class, or subclass, to a wetland whose current HGM class, or subclass, has been changed by human activities
- Actions that restore the water regime that was present and maintained the wetland before human activities changed it

Any other actions taken in existing wetlands would be considered *enhancement*. Enhancement typically involves actions that provide gains in only one or a few functions and can lead to a decline in other functions. Enhancement actions often focus on structural or superficial improvements to a site and generally do not address larger-scale environmental processes.

For example, a wetland that was once a forested, riverine wetland was changed to a depressional, emergent wetland by the construction of a dike and through grazing. Rehabilitating the wetland would involve breaching the dike so the wetland becomes a riverine wetland again, discontinuing the grazing, and reforesting the area. Discontinuing the grazing and reforesting the wetland without re-establishing the links to the riverine system would be considered enhancement.

Basic assumptions for using the guidance on ratios

- The ratios are for a compensatory mitigation project that is concurrent with impacts to wetlands. If impacts are to be mitigated by using an approved and established mitigation bank, the rules and ratios applicable to the bank should be used.
- The ratios are based on the assumption that the category (based on the rating system for eastern Washington) and hydrogeomorphic (HGM) class or subclass of the wetland proposed as compensation are the same as the category and HGM class or subclass of the affected wetland (e.g., impacts to a Category II, riverine wetland are compensated by creating, restoring, or enhancing a Category II riverine wetland).
- Ratios for projects in which the category and HGM class or subclass of wetlands proposed as compensation is not the same as that of the wetland affected will be determined on a case-by-case basis using the recommended ratios as a starting point. The ratios could be higher in such cases.
- The ratio for using rehabilitation as compensation is 2 times that for using re-establishment or creation (R/C) (2 acres of rehabilitation are equivalent to 1 acre of R/C). The ratio for using enhancement as compensation is 4 times that for using R/C (4 acres of enhancement are equivalent to 1 acre of R/C).
- Re-establishment or creation can be used in combination with rehabilitation or enhancement. For example, 1 acre of impact to a Category III wetland would require 2 acres of R/C. If an applicant provides 1 acre of R/C (i.e., replacing the lost acreage at a 1:1 ratio), the remaining 1 acre of R/C necessary to compensate for the impact could be substituted with 2 acres of rehabilitation or 4 acres of enhancement.
- Generally the use of enhancement alone as compensation is discouraged. Using enhancement in combination with the replacement of wetland area at a minimum of 1:1 through re-establishment or creation is preferred.

These ratios were developed to provide a starting point for further discussions with each proponent of compensatory mitigation. They are based on the observations of the success and risk of compensatory mitigation, as reviewed in Volume 1, and do not represent the specific risk or opportunities of any individual project.

As noted above, the ratios for compensatory mitigation are based on the assumption that the category and hydrogeomorphic (HGM) class or subclass of the affected wetland and the mitigation wetland are the same. The ratios may be adjusted either up or down if the category or HGM class or subclass of the wetland proposed for compensation is different. For example, ratios may be lower if impacts to a Category IV wetland are to be mitigated by creating a Category II wetland. The same is true for impacts to wetlands that currently would be considered *atypical* (see definition below).

Also, compensatory mitigation should not result in the creation, restoration, or enhancement of an atypical wetland. An atypical wetland is defined as a wetland whose design does not match the type of wetland that would be found in the geomorphic setting

of the proposed site (i.e., the water source(s) and hydroperiod proposed for the mitigation site are not typical for the geomorphic setting). In addition, any designs that provide exaggerated morphology or require a berm or other engineered structures to hold back water would be considered atypical. For example, excavating a permanently inundated pond in an existing seasonally saturated or inundated wetland is one example of an enhancement project that could result in an atypical wetland. Another example would be excavating depressions in an existing wetland on a slope that required the construction of berms to impound water.

On a case-by-case basis, it is possible to use the scores from the Washington State wetland rating system to compare functions between the mitigation wetland and the impacted wetland. This information may also be used to adjust replacement ratios. Scores from the methods for assessing wetland functions (Hruby et al. 1999) provide another option to establish whether the functions lost will be replaced if both the affected wetland and the wetland used for compensation are of the same HGM class and subclass.

Mitigation ratios for projects in eastern Washington are shown in Table 8D-11. Refer to the text box on the basic assumptions on the previous page before reading the table. As mentioned previously, these ratios were developed to provide a starting point for further discussions with each proponent of compensatory mitigation. They only factor in the observations of mitigation success and risk at a programmatic level, and do not represent the specific risk or opportunity of any individual project.

Table 8D-11: Mitigation ratios for projects in eastern Washington.

Category and Type of Wetland Impacts	Re-establishment or Creation	Rehabilitation Only ⁴	Re-establishment or Creation (R/C) and Rehabilitation (RH) ⁴	Re-establishment or Creation (R/C) and Enhancement (E) ⁴	Enhancement Only ⁴
All Category IV	1.5:1	3:1	1:1 R/C and 1:1 RH	1:1 R/C and 2:1 E	6:1
All Category III	2:1	4:1	1:1 R/C and 2:1 RH	1:1 R/C and 4:1 E	8:1
Category II Forested	4:1	8:1	1:1 R/C and 4:1 RH	1:1 R/C and 6:1 E	16:1
Category II Vernal pool	2:1 Replacement has to be seasonally ponded wetland	4:1 Replacement has to be seasonally ponded wetland	1:1 R/C and 2:1 RH	Case-by-case	Case-by-case
All other Category II	3:1	6:1	1:1 R/C and 4:1 RH	1:1 R/C and 8:1 E	12:1
Category I Forested	6:1	12:1	1:1 R/C and 10:1 RH	1:1 R/C and 20:1 E	24:1
Category I based on score for functions	4:1	8:1	1:1 R/C and 6:1 RH	1:1 R/C and 12:1 E	16:1
Category I Natural Heritage site	Not considered possible ⁵	6:1 Rehabilitation of a Natural Heritage site	R/C Not considered possible ⁵	R/C Not considered possible ⁵	Case-by-case
Category I Alkali	Not considered possible ⁵	6:1 rehabilitation of an alkali wetland	R/C Not considered possible ⁵	R/C Not considered possible ⁵	Case-by-case
Category I Bog	Not considered possible ⁵	6:1 Rehabilitation of a bog	R/C Not considered possible ⁵	R/C Not considered possible ⁵	Case-by-case
NOTE: Preservation is discussed in the following section.					

⁴ These ratios are based on the assumption that the rehabilitation or enhancement actions implemented represent the average degree of improvement possible for the site. Proposals to implement more effective rehabilitation or enhancement actions may result in a lower ratio, while less effective actions may result in a higher ratio. The distinction between rehabilitation and enhancement is not clear-cut. Instead, rehabilitation and enhancement actions span a continuum. Proposals that fall within the gray area between rehabilitation and enhancement will result in a ratio that lies between the ratios for rehabilitation and the ratios for enhancement.

⁵ Natural Heritage sites, alkali wetland, and bogs are considered irreplaceable wetlands because they perform some special functions that cannot be replaced through compensatory mitigation. Impacts to such wetlands would therefore result in a net loss of some functions no matter what kind of compensation is proposed.

8D.3.2 Conditions for Increasing or Reducing Replacement Ratios

Increases in replacement ratios are appropriate under the following circumstances:

- Success of the proposed restoration or creation is uncertain
- A long time will elapse between impact and establishment of wetland functions at the mitigation site
- Proposed mitigation will result in a lower category wetland or reduced functions relative to the wetland being impacted
- The impact was unauthorized

Reductions in replacement ratios are appropriate under the following circumstances:

- Documentation by a qualified wetland specialist (see Appendix 8-H) demonstrates that the proposed mitigation actions have a very high likelihood of success based on prior experience
- Documentation by a qualified wetland specialist demonstrates that the proposed actions for compensation will provide functions and values that are significantly greater than the wetland being affected
- The proposed actions for compensation are conducted in advance of the impact and are shown to be successful
- In wetlands where several HGM classes are found within one delineated boundary, the areas of the wetlands within each HGM class can be scored and rated separately and the ratios adjusted accordingly if **all of the following** apply:
 - The wetland does not meet any of the criteria for wetlands with “Special Characteristics” as defined in the rating system
 - The rating and score for the entire wetland is provided as well as the scores and ratings for each area with a different HGM class
 - Impacts to the wetland are all within an area that has a different HGM class from the one used to establish the initial category
 - The proponents provide adequate hydrologic and geomorphic data to establish that the boundary between HGM classes lies at least 50 feet outside of the footprint of the impacts

8D.3.3 Replacement Ratios for Preservation

In some cases, preservation of existing wetlands may be acceptable as compensation for wetland losses. Acceptable sites for preservation include those that:

- Are important due to their landscape position
- Are rare or limited wetland types
- Provide high levels of functions

Ratios for preservation in combination with other forms of mitigation generally range from 10:1 to 20:1, as determined on a case-by-case basis, depending on the quality of the wetlands being impacted and the quality of the wetlands being preserved. Ratios for preservation as the sole means of mitigation generally start at 20:1. Specific ratios will depend upon the significance of the preservation project and the quality of the wetland resources lost.

Please see Chapter 8 (Section 8.3.7.2) and Appendix 8-B for more information on preservation and the criteria for its use as compensation.

8D.3.4 Replacement Ratios for Temporal Impacts and Conversions

When impacts to wetlands are not permanent, local governments often require some compensation for the temporal loss of wetland functions. *Temporal impacts* refer to impacts to those functions that will eventually be replaced but cannot achieve similar functionality in a short time. For example, clearing forested wetland vegetation for pipeline construction could result in the temporal loss of functions, such as song bird habitat provided by the tree canopy. It may take over 20 years to re-establish the level of function lost as a result of clearing the trees. Although the wetlands will be re-vegetated and over time it is anticipated that their previous level of functioning will be re-established, a temporal loss of functions will occur. There is also some risk of failure associated with the impacts or alterations, especially when soil is compacted by equipment, deep excavation is required, and pipeline trenches alter the water regime at the site.

Therefore, in addition to restoring the affected wetland to its previous condition, local governments should consider requiring compensation to account for the risk and temporal loss of wetland functions. Generally, the ratios for temporal impacts to forested and scrub-shrub wetlands are one-quarter of the recommended ratios for permanent impacts (refer to Table 8D-11), provided that the following measures are satisfied:

- An explanation of how hydric soil, especially deep organic soil, is stored and handled in the areas where the soil profile will be severely disturbed for a fairly significant depth or time

- Surface and groundwater flow patterns are maintained or can be restored immediately following construction
- A 10-year monitoring and maintenance plan is developed and implemented for the restored forest and scrub-shrub wetlands
- Disturbed buffers are re-vegetated and monitored
- Where appropriate, the hydroseed mix to be applied on re-establishment areas is identified

When impacts are to a native emergent community and there is a potential risk that its re-establishment will be unsuccessful, compensation for temporal loss and the risk should be required in addition to restoring the affected wetland and monitoring the site. If the impacts are to wetlands dominated by non-native vegetation (e.g., blackberry, reed canarygrass, or pasture grasses), restoration of the affected wetland with native species and monitoring after construction is generally all that is required.

Loss of functions due to the permanent conversion of wetlands from one type to another also requires compensation. When wetlands are not completely lost but are converted to another type, such as a forested wetland converted to an emergent or shrub wetland (e.g., for a utility right-of-way), some functions are lost or reduced.

The ratios for conversion of wetlands from one type to another will vary based on the degree of the alteration, but they are generally one-half of the recommended ratios for permanent impacts (refer to Table 8D-11).

Refer to Appendix 8-F for the rationale for the ratios provided in this appendix.

Appendix 8-E

Rationale for the Guidance on Recommended Widths of Buffers and Other Methods for Protecting Wetlands

8E.1 Introduction

This appendix provides the rationale for the widths of buffers and other measures recommended to protect and manage wetlands, specifically for Buffer Alternative 3 (Tables 4-7) in Appendices 8-C and 8-D. The rationale is based to a large degree on the synthesis of the scientific literature presented in Volume 1 (Sheldon et al. 2005), which will not be cited further. Other citations are included where they are relevant. The information provided here is also relevant to Alternatives 1 and 2 since these two alternatives are simplified versions of Alternative 3.

The authors recommend that the reader review and fully understand Appendices 8-C and 8-D, and particularly Alternative 3 (Tables 4-7), before reading this appendix. Each table associated with Alternative 3 provides guidance for widths of buffers and other measures for protecting each of the four categories of wetlands as determined by the wetland rating systems for eastern and western Washington (Hruby 2004 a,b). The tables also summarize the characteristics used to determine the recommended width or other measures for protection.

The guidance on wetland buffers is based closely on the scientific literature. This literature clearly recommends that buffers should be based on three primary factors: the type of wetland and the functions and values needing protection, the type of adjacent land use and its expected impacts, and the physical character of the buffer. The recommended buffer widths are based on these factors, and the guidance is based on the following elements that reflect this:

- Using the Washington State wetland rating systems to determine the wetland type and the functions and values needing protection
- Identifying three primary levels of land use based on the severity of potential impacts
- Assuming that the buffer is well vegetated and not on a steep slope

In addition, the guidance assumes that an approach to management that provides a moderate risk is appropriate. Since the scientific literature reports effective buffer widths in ranges, one must select buffer widths from within reported ranges that vary from 25 –

100 feet to protect some wetland functions such as coarse sediment removal, to 100 – 600 feet or more for functions such as wildlife habitat. The widths for buffers have deliberately been selected to fall in the middle of these published ranges. The assumption is that using buffers of these widths will provide a moderate risk to the resource. Using these variable criteria ensures that this guidance will work in a wide range of management settings, including rural, urban, and urbanizing environments.

The widths of buffers are based on the score a wetland receives, including the overall score (i.e., the wetland category), the score for the habitat functions, or the score for the functions that improve water quality. The widths of buffers can also be modified by the presence of special characteristics the wetland may have, as defined in the rating systems (e.g., bogs), as well as the expected impacts of proposed adjacent land uses.

For example, using Alternative 3, two wetlands in western Washington, one rated as a Category I and one as Category II, might both have the same high score (e.g., 31 points) for habitat functions. Both would need to be protected with the same width of buffer (300 feet, 225 feet, or 150 feet depending on the intensity of the impacts of the proposed land uses) because both wetlands have a high level of habitat functions that requires the same protection. If, however, a Category II wetland does not have a high or moderate score for habitat functions or a high score for the functions that improve water quality, it would only require buffers of 100 feet, 75 feet, or 50 feet depending on the proposed land uses.

The widths of buffers required to protect habitat are usually larger than those needed to protect functions that improve water quality. Thus, the highest widths are recommended for wetlands with high scores for habitat.

The score for the hydrologic functions (i.e., flood storage, groundwater recharge, and reducing erosion) is not part of the criteria used to determine buffer widths. The hydrologic functions are not significantly influenced by the width of the buffer. These functions need to be protected at the scale of the watershed or sub-basin in which the wetland is found. Measures to protect the hydrologic functions of wetlands need to be developed from a landscape analysis as described in Chapter 5 of this document.

This appendix is divided into two sections. The first addresses wetlands that provide a high or moderate level of functions for habitat and for improving water quality, and the second addresses wetlands with special characteristics such as bogs and vernal pools.

8E.2 Rationale for Protection Based on the Scores for Functions

8E.2.1 Protection for Wetlands that Provide a High Level of Habitat for Wildlife (Category I and II wetlands with a score of 29 – 36 points for the habitat functions in Tables 6 and 7 of Appendices 8-C and 8-D)

8E.2.1.1 Width of Buffers

In eastern Washington: 200 feet for proposed land uses with high impacts; 150 feet for moderate impacts; 100 feet for low impacts.

In western Washington: 300 feet for proposed land uses with high impacts; 225 feet for moderate impacts; 150 feet for low impacts.

A wetland with a high score for habitat functions (29 - 36 points) has both the physical structures (e.g., vegetation, open water, etc.) and the connections to other wildlife habitats that are necessary for a wide range of species, including birds, mammals and amphibians. This means that the wetland is very likely to be providing habitat for one or more species that needs a larger buffer. Without direct evidence that such species are not using the wetland, one should assume that wildlife species that require a large buffer are using it for habitat.

The review of the literature in Chapter 5 of Volume 1 indicates that the widths of buffers needed to protect wildlife using wetlands range from 100 to 600 feet or more. Most authors who have synthesized the literature on buffers with respect to wildlife habitat recommend buffers of 200 to 300 feet for wetlands that provide good habitat. One synthesis recommended that a buffer adjacent to high-intensity land uses of 200 feet is adequate for protecting most species found in wetlands in eastern Washington and 300 feet in western Washington (Castelle et al. 1992). This difference between eastern and western Washington was based on literature that showed that wildlife species tend to concentrate more around wetlands and streams in arid climates. The specific buffer widths proposed for the different types of land uses fall within the recommendations found in the review of the scientific literature (See Chapter 5 in Volume 1).

Thirteen of the 90 wetlands (14%) used to calibrate the rating system for eastern Washington had scores of 29 or higher for the habitat functions. These were judged to provide the best habitat potential and would require a buffer of 200 feet. Thirteen of the 122 wetlands in western Washington (11%) had scores of 29 or greater and would require a 300-foot buffer.

A 200 or 300-foot buffer alone will not protect the habitat functions of a wetland with a high score for habitat. The connection to other habitat areas also needs to be maintained (see below).

8E.2.1.2 Other Protection Needed for Wetlands that Provide a High Level of Habitat Functions

Maintaining Connections to other Habitat Areas

Wetlands with a high score for habitat functions have the connections to other wildlife habitats that are necessary for a wide range of species. The scientific information summarized in Chapter 3 of Volume 1 points out that fragmentation and disruption of the vegetated corridors between undeveloped areas are a major cause of the loss of species richness (i.e., biodiversity). Existing connections and corridors need to be protected. This can be done by regulating the type and nature of road crossings in the corridor and by limiting changes in land use in the corridor. Such protection is best accomplished through planning based on landscape analysis that identifies critical habitat corridors and protects the mosaic of different ecosystems (see Chapters 5-7 of this Volume).

8E.2.2 Protection for Wetlands that Provide a Moderate Level of Habitat for Wildlife (Category I, II, and III wetlands with a score of 20 - 28 points for the habitat functions in Tables 5, 6, and 7 of Appendices 8-C and 8-D)

8E.2.2.1 Width of Buffers

In both eastern and western Washington: 150 feet for proposed land uses with high impacts; 110 feet for moderate impacts; 75 feet for low impacts.

A wetland with a moderate score for its habitat functions (20 - 28 points out of 36) has some of the physical structures (e.g., vegetation, open water, etc.) and some connections to other wildlife habitats that are necessary for a wide range of species. This means that the wetland is less likely to provide habitat for species that need the largest buffers. On the other hand, wetlands that score in this range do provide habitat for a wide variety of species, some of which, such as waterfowl, still need a relatively large buffer to protect them from disturbance.

8E.2.2.2 Other Protection Needed for Wetlands that Provide a Moderate Level of Habitat Functions

No recommendations are made at this time.

8E.2.3 Wetlands that Provide a High Level of Functions in Improving Water Quality (Category I and II wetlands with a score of 24-32 points for improving water quality in Tables 6 and 7 of Appendices 8-C and 8-D)

8E.2.3.1 Width of Buffers

In both eastern and western Washington: 100 feet for proposed land uses with high impacts; 75 feet for moderate impacts; 50 feet for low impacts.

The functions of water quality improvement within a wetland can be degraded if excess pollutants (e.g., sediments, nutrients, toxic materials) enter the wetland. Buffers of 100 feet are recommended for wetlands that are currently performing these functions well, in order to prevent further degradation. Reviews of data indicate that a buffer of approximately 100 feet will remove 70% or more of the sediment and pollutants from surface runoff before they reach the wetland (Desbonnet et al. 1994). This was judged to be adequate to prevent further degradation even though specific experimental data are lacking to confirm this assumption.

8E.2.3.2 Other Protection Needed to Maintain Functions that Improve Water Quality

No Additional Surface Discharges of Untreated Runoff

Buffers will not adequately protect the water quality improvement functions of wetlands if polluted waters bypass the buffer and enter the wetland via pipes, ditches, or other channels. To protect these functions, it is necessary to limit the introduction of any additional pollutants, from new development or other activities (e.g. lawns, golf courses, etc.), that might enter the wetland through untreated runoff that bypasses the buffer. Changes in land uses adjacent to these wetlands should meet current stormwater detention and treatment requirements, and discharge of stormwater to the buffer diffused through spreaders or other means.

8E.2.4 Category I Wetlands that Do Not Score High Enough for Habitat and Improving Water Quality (Wetlands scoring 70 points or more overall but less than 20 points for habitat functions or less than 24 points for improving water quality in Table 7 of Appendices 8-C and 8-D)

8E.2.4.1 Width of Buffers

In both eastern and western Washington: 100 feet for proposed land uses with high impacts; 75 feet for moderate impacts; 50 feet for low impacts.

It is possible that a wetland could score 70 points or more (Category I) and not score at least 20 points for habitat or 24 points for improving water quality, although none were found in the 212 wetlands used to calibrate the rating system. If a Category I wetland does not meet the criteria for habitat or improving water quality, a standard buffer width of 100 feet for proposed land uses with high impacts is recommended in Alternative 3 as a default. This is based on the assumption that a Category I or II wetland scoring more than 50 points out of 100 will have some functions worth protecting that are not adequately identified using the rating system, especially if buffers are the only protection being provided. A 100-foot buffer provides protection with an overall moderate level of risk to the wetland from any change in land use that generally has a high impact to wetlands.

8E.2.4.2 Other Protection Needed for These Category I Wetlands

No recommendations are made at this time.

8E.2.5 Category II Wetlands that Do Not Score High Enough for Habitat or Improving Water Quality (Wetlands scoring 51-69 points overall but less than 20 points for the habitat functions or less than 24 points for improving water quality in Table 6 of Appendices 8-C and 8-D)

8E.2.5.1 Width of Buffers

In both eastern and western Washington: 100 feet for proposed land uses with high impacts; 75 feet for moderate impacts; 50 feet for low impacts.

If a Category II wetland does not meet the criteria listed for habitat or improving water quality, a standard buffer width of 100 feet for proposed land uses with high impacts is recommended in Alternative 3 as a default. This is based on the assumption that a Category II wetland, scoring more than 50 points out of 100, will have some functions worth protecting that are not adequately identified using the rating system, especially if buffers are the only protection being provided. A 100-foot buffer provides protection with an overall moderate level of risk to the wetland from any proposed land use that has a high impact on wetlands.

8E.2.5.2 Other Protection Needed for These Category II Wetlands

No recommendations are made at this time.

8E.2.6 Category III Wetlands that Do Not Score High Enough for Habitat (Wetlands scoring 30-50 points overall but less than 20 points for habitat functions in Table 5 of Appendices 8-C and 8-D)

8E.2.6.1 Width of Buffers

In both eastern and western Washington: 80 feet for proposed land uses with high impacts; 60 feet for moderate impacts; 40 feet for low impacts

When a Category III wetland does not meet the criteria for habitat, a standard buffer width of 80 feet for proposed land uses with high impacts is recommended in Alternative 3 as a default. This is based on the assumption that a wetland scoring more than 30 points out of 100 will have some functions worth protecting that are not adequately identified using the rating system, especially if buffers are the only protection being provided. Because the overall sensitivity of a Category III wetland is less than that of a Category II or I wetland, the default is set at 80 feet. An 80-foot buffer provides protection with an overall moderate level of risk to the wetland from any change in land use that generally has a high impact to wetlands.

8E.2.6.2 Other Protection Needed for These Category III Wetlands

No recommendations are made at this time.

8E.2.7 Category IV Wetlands (Wetlands scoring less than 30 points overall in Table 4 of Appendices 8-C and 8-D)

8E.2.7.1 Width of Buffers

In both eastern and western Washington: 50 feet for proposed land uses with high impacts; 40 feet for moderate impacts; 25 feet for low impacts.

Category IV wetlands do not meet the criteria listed for habitat or improving water quality so a default of 50 feet for proposed land uses with high impacts is recommended. This is based on the assumption that even low scoring wetlands will need some protection from encroachment, especially if buffers are the only protection being provided. A 50-foot buffer provides protection with an overall moderate level of risk to the wetland from proposed land uses that have a high impact on wetlands.

8E.2.7.2 Other Protection Needed for These Category IV Wetlands

No recommendations are made at this time.

8E.3 Rationale for Wetlands with Special Characteristics in the Rating Systems

The rating systems differentiate between wetlands based on their sensitivity to disturbance, their significance, their rarity, and our ability to replace them in addition to the functions they provide. These characteristics can be considered values that are somewhat independent of the functions provided by a wetland. Because different criteria were used to categorize these wetlands, recommendations for the protection they need has been based on protecting the special characteristics of the wetland, in addition to its functions.

8E.3.1 Natural Heritage Wetlands (Table 7 in Appendices 8-C and 8-D)

8E.3.1.1 Width of Buffers

In both eastern and western Washington: 250 feet for proposed land uses with high impacts; 190 feet for moderate impacts; 125 feet for low impacts.

Natural Heritage wetlands contain rare plants or those that are particularly sensitive to disturbance. These types of species are very sensitive to nutrient enrichment (eutrophication) from the input of nutrient-rich waters (see Chapter 4 of Volume 1). The buffer needs to remove excess nutrients before they reach the wetland. The most efficient vegetated buffer, based on width-to-removal ratios, is about 197 feet for removal of nitrogen and 253 feet for phosphorus (Desbonnet et al. 1994). A buffer of 250 feet, therefore, is recommended for Natural Heritage wetlands that could be affected by proposed land uses that have high impacts.

A 250-foot buffer alone may not protect the species that are rare or sensitive to disturbance if the watershed has high nutrient loadings or a water regime that is unstable. These factors may allow invasive plant species to become established and out-compete the species sensitive to disturbance.

8E.3.1.2 Other Protection Needed for Natural Heritage Wetlands

No Additional Surface Discharges to Wetland or its Tributaries

Buffers will not adequately protect rare plants or those sensitive to disturbance if polluted waters bypass the buffer and enter the wetland via pipes, ditches, or other channels. Furthermore, discharges of stormwater and changes in the water regime from development will change the wetland plant communities (see Chapter 4 of Volume 1). Such changes might reduce the populations of species in the wetland that are rare or sensitive to disturbance. To protect the plants, it is necessary to limit the introduction of additional nutrients that might bypass the buffer and enter the wetland through untreated runoff from new development or changes in land use.

No Septic Systems within 300 Feet of Wetland

Septic systems do not prevent nitrates, a major plant nutrient in wastewater, from entering groundwater. Many wetlands in Washington receive at least some of their water, if not all, from groundwater. This means that nutrients released by septic systems can enter a wetland and impact species that are rare or sensitive to disturbance in the same way as surface water. By keeping septic systems at least 300 feet from the wetland edge (usually called a *setback* in regulations) there is a better chance that impacts from nutrients will be minimized. There is no “safe” setback, however, for septic systems if there is a direct groundwater connection (underground flow) between the septic system and the wetland. A 300-foot distance, however, will increase the chance that the nitrogen will be diluted before it reaches the wetland.

8E.3.2 Bogs (Table 7 in Appendices 8-C and 8-D)

8E.3.2.1 Width of Buffers

In both eastern and western Washington: 250 feet for proposed land uses with high impacts; 190 feet for moderate impacts; 125 feet for low impacts

Bogs are particularly sensitive to nutrient enrichment (eutrophication) from the input of nutrient-rich waters because they contain plant species that have adapted to very low nutrient levels. A vegetated buffer, therefore, is needed to remove excess nutrients before they reach the bog. The most efficient vegetated buffer, based on width-to-removal ratios, is about 197 feet for removal of nitrogen and 253 feet for phosphorus (Desbonnet et al. 1994).

A 250-foot buffer alone may not protect the bog and its species if the watershed has high nutrient loadings, and nutrients are transported into the bog in a stream.

8E.3.2.2 Other Protection Needed for Bogs

No Surface Discharges to Wetland or its Tributaries

Buffers will not adequately protect the functions of a bog if polluted waters bypass the buffer and enter the wetland via pipes, ditches, or other channels. It is necessary to limit the introduction of additional nutrients that might be transported through untreated runoff that bypasses the buffer.

8E.3.3 Category I Forested Wetlands and Category II Riparian Forest (Table 7 in Appendices 8-C and 8-D and Table 6 in Appendix 8-D)

8E.3.3.1 Width of Buffers

In both eastern and western Washington: Buffer widths for mature or old-growth forested wetlands that are Category I, or for Category II riparian forest in eastern Washington, are based on the score for habitat functions or water quality functions described in Section 8E.2.

Forested wetlands are given special consideration because they are hard to replace through compensatory mitigation. This is especially true for mature or old-growth forests which can not be replaced in a human life-time. The protection they need should be based on the functions they provide. Therefore, buffers and other measures to protect their functions should be based on how well the wetland scores for habitat or water quality functions.

8E.3.3.2 Other Protection Needed for Forested Wetlands

Protect Water Regime in Watershed

Riparian forested wetlands, whether a mature forest or not, need protection at a watershed scale. Buffers alone will not protect riparian forested wetlands because they are directly connected to the water flow and dynamics in the watershed. Changes in the water regime of the watershed that result from changes in land use can have a significant impact on all types of riparian wetlands.

8E.3.4 Alkali Wetlands (Table 7 in Appendix 8-D)

8E.3.4.1 Width of Buffers

In eastern Washington: 200 feet for proposed land uses with high impacts; 150 feet for moderate impacts; 100 feet for low impacts.

The ecological process that maintains an alkali wetland is the dynamic interaction between water inflow and evaporation. Buffers have little effect on this process. The 200-foot buffer recommended for alkali wetlands is based on their habitat functions. Alkali wetlands in eastern Washington are a major resource for migratory shorebirds and other water-dependent birds. The 200-foot buffer recommended is intended to protect these birds and minimize disturbance during migration and feeding (see Chapter 5 in Volume 1).

8E.3.4.2 Other Protection Needed for Alkali Wetlands

No Additional Surface Discharges to Wetland or its Tributaries

The routing of additional surface water into alkali wetlands will change the balance between inflow and evaporation because the incoming water will usually be less salty than that in the wetland. This may lower the alkalinity (salt content) and change the highly specialized fauna and flora that inhabit these systems. No specific information was found on the impacts this may have on the ecosystem in the alkali wetland. In the absence of direct information, we can assume that there is a risk to the ecosystem in alkali wetlands if discharges are allowed. The recommendation is that no surface discharges (e.g., stormwater, irrigation, etc.) be allowed into alkali wetlands.

8E.3.5 Category II Vernal Pools (Tables 6 in Appendix 8-D)

8E.3.5.1 Width of Buffers

In eastern Washington: 200 feet for proposed land uses with high impacts; 150 feet for moderate impacts; 100 feet for low impacts.

As an alternative, a jurisdiction may wish to develop a regional plan to protect the most important complexes of vernal pools. If a plan is developed, buffers of vernal pools outside the protection zones can then be reduced to 80 feet for proposed land uses with high impacts, 60 feet for moderate impacts, and 40 feet for low impacts.

Vernal pools that are currently relatively undisturbed are very important for migratory waterfowl during a short period in the early spring. The review of the literature indicates that waterfowl need at least 200 feet of buffer during that short period to protect them from the disturbance that can occur from land uses with high impacts. The rest of the time the vernal pools provide little habitat for animals that require larger buffers. Because the requirement for a 200-foot buffer around a very small wetland for only a very short time may seem to be excessive, Ecology and the Washington Department of Fish and Wildlife (WDFW) strongly recommend that local jurisdictions identify the complexes of vernal pools that are the most important for waterfowl and develop a plan to protect them.

8E.3.5.2 Other Protection Needed for Vernal Pools

No recommendations are made at this time.

8E.3.6 Estuarine Wetlands and Wetlands in Coastal Lagoons (Tables 6 and 7 in Appendix 8-C)

Although wetlands in estuaries and coastal lagoons were not a focus of the synthesis of the science in Volume 1, some information about these wetlands is included because they

are included in the Washington State wetland rating systems, which have identified these aquatic resources as needing protection. Some recent scientific information on coastal and estuarine wetlands has been summarized by Ecology, WDFW, and other agencies through the Aquatic Habitat Guidelines Project (see www.wa.gov/wdfw/hab/ahg).

8E.3.6.1 Width of Buffers

In western Washington: 200 feet for proposed land uses with high impacts; 150 feet for moderate impacts; 100 feet for low impacts.

It is not possible to make recommendations on buffers that reflect an extensive review of the current scientific information since that review was not done. However, the buffers recommended in Tables 6 and 7 of Appendix 8-C for estuarine wetlands and coastal lagoons in western Washington are based on generally accepted habitat functions.

Estuarine wetlands and coastal lagoons are a major resource for migratory shorebirds and other water-dependent birds (Simenstad 1983). In estuarine systems, buffers provide a source of wood and sediment that nourish the beaches. In addition, estuaries and coastal lagoons have a high density of fish and wildlife and high species diversity, provide important breeding habitat, and serve as movement corridors (see Washington Department of Fish and Wildlife web page, <http://wdfw.wa.gov/hab/phshabs.htm>). Both types of wetlands are also a habitat that has been significantly impacted by human activities and are highly vulnerable to alteration. Therefore, the width of buffers needed to protect these wetlands will have to be based on protecting a wide range of functions. The widths of buffers recommended (150 feet, 125 feet, and 75 feet respectively for proposed land uses with different levels of impacts) are intended to protect these birds and minimize disturbance during migration and feeding (see Chapter 5 in Volume 1).

8E.3.6.2 Other Protection Needed for Estuarine Wetlands and Wetlands in Coastal Lagoons

No recommendations are made at this time.

8E.3.7 Category II Interdunal Wetlands (Table 6 in Appendix 8-C)

8E.3.7.1 Width of Buffers

In western Washington: 150 feet for proposed land uses with high impacts; 110 feet for moderate impacts; 75 feet for low impacts.

Wetlands in coastal dune systems were excluded from the synthesis of the scientific literature in Volume 1 (see Chapter 1). The recommendations, therefore, do not reflect an extensive review of the current scientific information. However, buffer recommendations in Table 6 of Appendix 8-C for interdunal wetlands in western Washington are based on generally accepted habitat functions. These wetlands are

considered to be a major resource for migratory shorebirds (Wiedemann 1984). The buffers recommended are intended to protect these birds and minimize disturbance during migration and feeding (see Chapter 5 in Volume 1 for a discussion of buffers generally needed to protect birds).

8E.3.7.2 Other Protection Needed for Interdunal Wetlands

No recommendations are made at this time.

References

- Castelle, A.J., C. Conolly, M. Emers, E.D. Metz, S. Meyer, M. Witter, S. Mauermann, M. Bentley, D. Sheldon, and D. Dole. 1992. Wetland Mitigation Replacement Ratios: Defining Equivalency. Publication # 92-08. Washington Department of Ecology, Olympia, WA.
- Desbonnet, A., P. Pogue, V. Lee, and N. Wolff. 1994. Vegetated Buffers in the Coastal Zone: A Summary Review and Bibliography. Coastal Resources Center Technical Report No. 2064. University of Rhode Island. 72pp.
- Sheldon, D., T. Hraby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale. 2005. Freshwater Wetlands in Washington State, Volume 1: A Synthesis of the Science. Publication #05-06-006. Washington State Department of Ecology, Olympia, Washington.
- Simenstad, C.A. 1983. The Ecology of Estuarine Channels of the Pacific Northwest coast: A Community Profile. U.S. Fish and Wildlife Service FWS/OBS-83/05.
- Wiedemann, A.M. 1984. The Ecology of Pacific Northwest Coastal Sand Dunes: A Community Profile. U.S. Fish and Wildlife Service FWS/OBS-84/04.

Appendix 8-F

Rationale for the Guidance on Recommended Ratios for Compensatory Mitigation

8F.1 Introduction and Background on Mitigation Ratios

This appendix provides some background information on ratios for compensatory mitigation (mitigation ratios), and the rationale and assumptions used in establishing ratios based on the Washington State wetland rating systems in Appendices 8-C and 8-D. The reader should become familiar with Appendices 8-C and 8-D before reading the rationale in this appendix.

The acreage of creation, restoration (re-establishment or rehabilitation), and enhancement that is required by regulatory agencies, including local governments, to compensate for impacts to wetlands is usually greater than the acreage of impact. This difference is expressed as a ratio (a mitigation ratio) of the area required for compensation vs. the area of impact. For example, a ratio of 3:1 means that 3 acres of compensatory mitigation are required for every acre of impact to a wetland.

See Appendices 8-C or 8-D for definitions of creation, re-establishment, rehabilitation, and enhancement as types of compensatory mitigation.

There are two major reasons why the ratios are greater than 1:1. The first is based on the risk of failure of a project designed to compensate for impacts to wetlands (hereafter called *mitigation project*), and the second is based on the loss or reduction of functions during the time it takes a mitigation project to achieve the targeted level of performance for all of its functions (called “temporal loss”).

First, all of the studies of compensatory mitigation summarized in Volume 1 (see Chapter 6) indicate that a fairly large percentage of mitigation projects do not successfully replace all the functions lost. The result is an overall net loss of wetlands and their functions. Thus, at a programmatic level, more wetland area should be created or restored than is impacted to ensure that wetland functions and area are adequately replaced.

Secondly, the studies reviewed in Volume 1 also indicate that functions in wetlands may take decades, if not centuries, to develop fully. By requiring a ratio greater than 1:1, the temporal loss of functioning is addressed by providing more acreage of wetland that may not be performing as well as the impacted wetland. The trade-off is that a smaller wetland with a higher level of functioning is replaced with a larger wetland that does not function as well for many years.

Therefore, higher ratios should be set if there is an increasing risk of not adequately compensating for the functions lost, and as the time needed to establish the lost functions increases. If, however, compensatory mitigation is done in advance of impacts and is fully successful, it is reasonable to reduce the ratios to as low as 1:1.

Kusler (2003) has summarized some of the factors that should be considered in evaluating the risks of success or failure of compensatory mitigation and temporal loss and thereby establishing an appropriate mitigation ratio:

1. **The functions present in the impacted wetland and those proposed for the “replacement” wetland.** Larger ratios are justified where a replacement wetland will have fewer functions and values or perform the functions at a lower level. The net loss of function per acre of wetland has to be compensated by increasing the area of compensation required.
2. **The overall ecological conditions of the impacted wetland and the “replacement” wetland.** Larger ratios are justified where a “replacement” wetland will be less persistent, diverse, or has less ecological integrity than the original wetland. The risk of losing “ecological integrity” has to be compensated by increasing the area of mitigation required.
3. **The probable success for wetlands of the type proposed as “replacement.”** Larger ratios are justified for wetland types that have proven to be difficult to restore or create, thereby increasing the risk of failure.
4. **The expertise and experience of the agency or consultant proposing to carry out the project.** Larger ratios are justified for proponents who are less expert and less experienced. Lack of experience increases the risk that the project will not be successful.
5. **Threats to the “replacement” site.** Larger ratios are justified where there are threats to the site such as possible changes to the water regime, sedimentation, or pollution. These threats increase the risk that functions will be impaired in the future (See Chapters 3 and 4 in Volume 1).
6. **Whether the site will be susceptible to “mid-course” corrections.** Larger ratios are justified when there is little capability for correcting problems as they develop, and smaller ratios are justified where that capability exists. Projects where problems have been corrected tend to be more successful than those that have not (See Chapter 6 in Volume 1).

The ratios discussed in this appendix were developed to provide a starting point for further discussions with each proponent of compensatory mitigation. The ratios provided as guidance are based on the factors discussed in this appendix including the likelihood of success of compensatory mitigation, the amount of temporal loss, and the risk at a programmatic level. They DO NOT address the specific considerations and risks of any particular individual project.

8F.2 Assumptions Used in Establishing the Recommended Ratios

8F.2.1 Baseline Ratios for Creation and Re-establishment

Creation and re-establishment both lead to the formation of wetlands in areas that are currently not wetlands. As a result, there can be a no net loss of wetland area if the area of compensatory mitigation is at least as large as the area of impact. However, the study by Johnson et al. (2002), summarized in Chapter 6 of Volume 1, found that only about half of the mitigation projects in Washington State that created or re-established wetlands were “moderately successful” or “successful” at replacing the functions lost. This means that overall there is about a 50 percent risk of failure. Other studies of the success of mitigation projects, summarized in Chapter 6 of Volume 1, suggest the risk of failure is even higher. These data suggest that a minimum ratio of 2:1 is needed to ensure no net loss of functions at a programmatic level.

As previously mentioned, this ratio also needs to be adjusted to account for the temporal loss of functions. There are no scientific studies that have quantified the temporal loss in terms of how many acres of additional wetlands are required. Trying to quantify this experimentally is not possible because the data are not compatible; one cannot equate time with area.

As a result, the additional area required to compensate for the temporal loss of functions is a value judgment. *How highly do we value the loss of some functions for 5 to 10 years, some for 30 years, and others for 100 years or more?* As a starting point for discussion, it is suggested that the compensation for the temporal loss of functions be equal to the area of impact. Thus, the basic 2:1 ratio proposed to compensate for the risk of failure should be increased to 3:1 to account for the temporal loss of functions.

Thus, one-third of the ratio is assigned to the temporal loss of function. In the case of temporal losses of functions due to conversion of vegetation, however, we recommend a ratio for temporal losses of functions that is one-quarter that of creation or re-establishment (e.g., in the construction of pipelines – see section 8C.2.4 or 8D.2.4). The ratios recommended are different because in the case of creation or re-establishment, most of the functions (e.g., improving water quality and hydrologic) will also take some time to develop. In the case of a pipeline construction and conversion of forest to emergent, we do not expect to have a temporal loss of these other functions because the wetland already exists.

The basic 2:1 ratio proposed to compensate for the risk of failure should be increased to 3:1 to account for the temporal loss of functions.

8F.2.2 Baseline Ratios for Rehabilitation and Enhancement

Rehabilitation and enhancement of existing wetlands (see Appendices 8-C or 8-D for definitions) are also used in compensatory mitigation. Rehabilitation and enhancement activities are conducted on an existing wetland, therefore if either of these types is used as the only form of compensation, there will always be a net loss of wetland area. Thus the ratios for these two types of compensatory mitigation will need to be higher than for creation or re-establishment since a net loss of wetland area will result.

Furthermore, the information on the risks associated with enhancement indicates this type of compensatory mitigation has even a lower rate of success than creation or re-establishment. Only about 10% of the enhancement projects analyzed in Washington State were even moderately successful at replacing the functions lost (Johnson et al. 2002). No data were available on the success of rehabilitation.

The recommended ratio for using rehabilitation as compensation is two times that for using re-establishment or creation based on the need to compensate for the loss of wetland area. Thus, two acres of rehabilitation are equivalent to one acre of re-establishment or creation in determining the acreage needed to replace an impacted wetland.

The recommended ratio for using enhancement alone as compensation is four times that for using re-establishment or creation based on the need to compensate for the loss of wetland area and the fact that enhancement tends to be even less effective at replacing the functions lost. This means that four acres of enhancement are equivalent to one acre of re-establishment or creation in determining the acreage needed to replace an impacted wetland.

The ratio for rehabilitation is less than that for enhancement alone because the former often focuses on restoring environmental or hydrologic processes that have been disturbed or altered by previous or ongoing human activity. These actions are more likely to replace a full suite of wetland functions than enhancement. Enhancement typically involves actions that provide gains in only one or a few functions and can lead to a decline in other functions.

The recommended ratios for rehabilitation or enhancement are based on a multiplication factor that is applied to the ratio for creation or re-establishment (2x for rehabilitation and 4x for enhancement). This applies to all the different ratios for creation and rehabilitation recommended in Tables 8C-9 and 8D-9.

8F.2.3 Adapting the Ratios Based on the Wetland Functions

The baseline ratios for each type of compensatory mitigation described above can be applied to or modified based on the four categories in the rating systems for Washington State (Hruby 2004 a,b). It is assumed, first, that the basic ratios described above apply to mitigation projects where the proposed compensatory mitigation site is the same category as the affected wetland (e.g., impacts to a wetland rated Category II for its functions are compensated by creating, re-establishing, rehabilitating or enhancing a wetland that will become a Category II wetland based on its score for functions). Second, it is assumed that the hydrogeomorphic (HGM) class or subclass of the wetland proposed as compensation is the same as the category and class or subclass of the wetland being altered (e.g., impacts to a Category II riverine wetland are compensated by a Category II riverine, wetland). This is considered to be the *average condition*.

The studies of compensatory mitigation by Johnson et al. (2002) found that the highest rating that could usually be expected in a compensatory project was a Category II when the wetland was rated based on its functions, and this category was chosen as the average from which to develop the ratios for other categories.

The basic ratios may be modified if the conditions for the proposed mitigation project are different from the average condition. For example, the ratios recommended for compensating impacts to Category III wetlands (based on the score for functions) in Tables 8C-9 and 8D-9 are lower (2:1 instead of 3:1). The ratios are lower because it is assumed that the risks are lower with mitigating impacts to a Category III wetland. First, it is assumed that there is a better chance for a successful creation or re-establishment of a Category III wetland than a Category II wetland because the wetland does not have to function at the same level. Second, Category III wetlands usually have simpler structure, and it may take less time to establish the required level of functions (i.e., temporal losses of functions are reduced). The ratios for rehabilitation and enhancement only are also lower because they are based on the lower ratio for creation and re-establishment. At present, however, these are assumptions that need to be validated by more thorough monitoring.

The recommended ratio to compensate for impacts to Category IV wetlands is even lower (1.5:1 rather than 3:1) because it is assumed that the risks and temporal losses are less than with creation or restoration of a Category III wetland.

On the other hand, the ratio for impacts to a Category I wetland are higher (4:1 rather than 3:1) for the opposite reasons. First, it is assumed that there is a reduced chance for successful creation or restoration of a Category I wetland than a Category II wetland because the wetland has to function at the highest levels. The data from existing studies (see Chapter 6 in Volume 1) indicates that creation or re-establishment to these levels rarely, if ever, happens. Second, Category I wetlands usually have a more complex structure, and it may take more time to establish these structures and the resulting functions (i.e., temporal losses are increased).

8F.2.4 Adapting the Ratios Based on Special Characteristics Defined in the Rating System

8F.2.4.1 Ratios for Category I Forested Wetlands

Studies of mitigation projects (see Chapter 6 in Volume 1) have shown that forested wetlands may take over 100 years to become established (the studies didn't specifically state if the forests were mature or old-growth). The recommended ratio (6:1) is designed to compensate for the additional temporal loss of the functions of a Category I mature or old-growth forested wetland during the long time it takes to establish this type of wetland.

8F.2.4.2 Ratios for Wetlands that are Difficult to Create (Natural Heritage, Bogs, Alkali Wetlands, Estuarine Wetlands, Wetlands in Coastal Lagoons)

No data are available for mitigation projects that involved creating Natural Heritage wetlands, alkali wetlands, estuarine wetlands, or wetlands in coastal lagoons from uplands. Bogs are the only type of wetland for which studies on compensation through creation have been attempted. This information indicates that it is not possible to re-create the necessary physical, hydrologic, and chemical conditions needed to replace a bog through compensatory mitigation (see Chapter 6 in Volume 1).

Until more data are available, the authors of Volume 2 assume that, in addition to bogs, it is not possible to create Natural Heritage wetlands, alkali wetlands, estuarine wetlands, or wetlands in coastal lagoons from uplands or to enhance wetlands of other types to reproduce their special characteristics and functions. We do not fully understand the hydrologic and biological conditions that lead to the formation of these wetlands, so we cannot assume that it is possible to create them without this understanding.

As a result, the authors of Volume 2 recommend that compensation for impacts to these types of wetlands should involve the rehabilitation of degraded wetlands of a similar type, rather than creation or enhancement. Rehabilitation has proven to be successful for estuarine wetlands (Simenstad and Thom 1992), and it is assumed that rehabilitation of the other types is also feasible. It is more feasible, at least, than attempting to create these wetlands or enhance a wetland of another type in order to try to recreate the necessary ecological conditions.

In the absence of any definitive information on the success of such rehabilitation, the recommended ratio for rehabilitation is 6:1 to be consistent with the other ratios. Mitigation projects that propose enhancement as compensation for impacts to these wetlands will have to be evaluated on a case-by-case basis. Enhancement would involve a net loss of acreage as well as an extremely high risk that the functions represented by these wetland types will not be replaced.

References

- (Hruby, T. 2004a) Hruby, T. 2004. Washington State Wetland Rating System for Eastern Washington – Revised. Washington State Department of Ecology Publication #04-06-015. Olympia, WA.
- (Hruby, T. 2004b) Hruby, T. 2004. Washington State Wetland Rating System for Western Washington – Revised. Washington State Department of Ecology Publication #04-06-025. Olympia, WA.
- Johnson, P., D.L. Mock, A. McMillan, L. Driscoll, and T. Hruby. 2002. Washington State Wetland Mitigation Evaluation Study Phase 2: Evaluating Success. Washington State Department of Ecology. Publication #02-06-009. Olympia, WA.
- Kusler, J. 2003. Integrating Wetland Assessment into Regulatory Permitting. Final Report 3: Wetland Assessment for Regulatory Purposes. Institute for Wetland Science and Public Policy, Association of State Wetland Managers.
- Simenstad, C. A., and R. M. Thom. 1992. Restoring wetland habitats in urbanized Pacific Northwest estuaries. Pp. 423-472 in G. W. Thayer (ed.), Restoring the Nation's Marine Environment, Maryland Sea Grant, College Park, Maryland. 716 pp.

