

**Considerations of the CAO Subcommittee on the inclusion of Channel Migration  
Zones (CMZs) in the CAO Ordinance**  
**Compiled by William A. Wheeler**

After extensive discussion and deliberation the majority of the Critical Areas Ordinance Committee elected not to include Channel Migration Zones as an element of their recommendation to the Jefferson County Planning Commission. This decision was made following presentations by both proponents of including CMZs in the report and those who felt such inclusion was inappropriate. The proponents argued passionately that CMZ are an essential part of protecting not only life and property but insuring fish and wildlife habitat protected and restored as closely as possible to pre-settlement conditions. Those opposed to including CMZs in the ordinance argued that doing so would either be a regulatory imposition on citizens that exceeds current law or because the science necessary to support their inclusion as critical fish and wildlife habitat areas does not exist. The committee also had concerns that inclusion of CMZs in the ordinance would place the county in jeopardy of having precipitated a “taking” of private property which would ultimately involve the county in expensive and unnecessary litigation.

At the outset, the committee recognized as a fundamental truth, the fact that stream and river channels may migrate across valley floors over varying periods of time and that such migration occurs naturally unless prevented by human action such as hardening of banks and building of levies. The committee further recognized that any change in the landscape associated with channel migration, whether man-made or due to natural forces, will result in changes to fish and wildlife habitat. The committee acknowledged that the 2<sup>nd</sup> settlement agreement between WEC and Jefferson County required inclusion of CMZs in the CAO, but understood that the agreement itself represented neither a scientific or regulatory requirement. More importantly, the committee recognized the fact that the Washington Forest Practices Act, which applies to a large percentage of the county, including rural residential land, does restrict activities in CMZs as fish and wildlife habitat areas. Thus the committee recognized that channel migration occurs within a definable zone and that under some circumstances they are regulated as Fish and Wildlife Conservation Areas. Their decision concerning channel migration zones was based on an assessment of both established regulatory practice and the requirement that the ordinance be based on a demonstration of Best Available Science (BAS).

The record reflects that in addition to meetings of a specially appointed CMZ subcommittee, the committee as a whole considered Channel Migration Zones at the following public meetings:

Sept 21, 2006 – vote to include CMZs in the CAO committee work plan.  
Sept 28, 2006 – CMZ subcommittee formed.  
Oct 26, 2006 – CMZ subcommittee progress report and discussion.  
Jan 4, 2007 – CMZ subcommittee reports and discussion.  
Jan 18, 2007 – CMZ discussion and deliberations.  
Jan 25, 2007 – CMZ discussion, deliberations and disposition (not to include in CAO).

Mar 22, 2007 – DCD requested list of regulations already pertaining to CMZs  
Mar 29, 2007 – CMZ discussion.  
April 5, 2007 – Motion to reconsider CMZ decision followed by discussion.  
April 12, 2007 – Discussion on CMZ reconsideration, vote affirming original decision.

## **The Regulatory Basis for CMZs**

In its considerations, the committee took into account the question of whether CMZs need to be regulated as critical areas, particularly as Fish and Wildlife Habitat Conservation Areas (FWHCAs) under existing state or federal regulations. In addition, they considered whether it had become common practice to regulate CMZs as FWHCAs as would be indicated by including them in the CAOs of the other counties in Western Washington. In their consideration of a regulatory basis for including CMZs in the CAO, the committee learned the following:

1. The Growth Management Act (RCW 36.70A) does not directly address Channel Migration Zones nor require their protection. A determination that they are intended to be protected requires that they be integral to one or more of the following:
  - Wetlands;
  - areas with a critical recharging effect on aquifers used for potable water;
  - fish and wildlife habitat conservation areas;
  - frequently flooded areas; or
  - geologically hazardous areas.

While each of these critical areas may be found to occur within a Channel Migration Zone and should therefore be covered by the CAO, it does not follow that the CMZ itself should be treated as a protected area since it is also possible for portions of a CMZ to contain none of these critical areas, just as it is possible for each of them to exist absent a CMZ. There is no reason to believe that Jefferson County has a responsibility to protect all potential critical areas as would result from providing the highest level of protection to CMZs, but rather that it must identify and protect actual critical areas as defined by the Growth Management Act.

The committee also observes that the Growth Management Act does not require that counties or individuals restore any critical area to pre-settlement conditions, based on the literature (e.g., Brummer, 2007; Brummer et al, 2006; Naiman, 2000, Pollack and Kennard, 1998) it appears that the goal of considering CMZs Fish and Wildlife Habitat Conservation areas is primarily to restore the riverine valley to pre-settlement conditions.

The committee further noted that any area of a CMZ required protection not provided by standard riparian buffer widths protection could be designated as Habitat of Local Significance under the CAO without the necessity of including all CMZs in the CAO.

## 2. Growth Management Hearings Boards Decisions

A review of decisions made by all three of the Growth Management Hearings Boards failed to identify any case in which Channel Migration Zones, either as Geologic Hazard Areas or Fish and Wildlife Habitat Conservation Areas, were a subject of either a Compliance Order or Decision. (CPSGMHB 2007, EWGMHB 2006, WWGMHB 2006)

CTED Critical Areas Assistance Handbook. The CTED Critical Areas Assistance Handbook provides recommended guidance on development of county CAO regulations. It was developed as a resource for cities and counties to use and it “*does not create any new standards or requirements, nor does it establish any new legal authority.*”(CTED 2003) The handbook makes several recommendations regarding the inclusion of CMZs in Critical Areas Ordinances.

- a. Identified CMZs may be designated Erosion Hazard Areas under Geologic Hazards of the CAO.
- b. The CTED handbook does not include any discussion of CMZs as critical habitat areas.

## 3. Forest Practices Act (RCW 76.09).

The Forest Practices Act (RCW 76.09) directly addresses Channel Migration Zones and protects them for their habitat value. The legislation is supported by rulemaking under WAC 222, as well as technical requirements stipulating how Channel Migration Zones will be identified and delineated in Section 2 of the Forest Practices Board Manual. Under forest practices regulations CMZ identification and delineation is supported by technical personnel within the Department of Natural Resources, Department of Ecology and Department of Fish and Wildlife. The Forest Practices Act provides for compensation of forest owners who cannot harvest because of CMZ restrictions (RCW 76.09.040(3)). Compensation can be by purchasing the land directly or, if the forest owner desires, the state can acquire a 100 year easement on CMZ portions of the land.

With regard to the applicability of Forest Practices regulations on CMZs as an appropriate model for the implementation of CMZs in Jefferson County, the CAO sub-committee makes the following observations.

- The Forest Practices Regulations applies to large portions of the potential CMZs in Jefferson County and on forested land (including forested Rural Residential Land) these regulations take precedence over the CAO
- The Forest Practices Regulations include provisions for compensating the landowner for the fair market value of land and timber restricted by CMZ regulations. Though DNR has a number of voluntary programs to encourage habitat protection, the committee observed that this is the only DNR program for

direct compensation for regulatory restrictions. The committee believes that this is recognition by the state that CMZ restrictions are a taking of private land for a general public good. The committee noted that the CMZ regulation and compensation programs were passed at the same time and did not result from a court challenge. The committee does not believe that Jefferson County has the will or ability to provide such compensation should it adopt CMZ land use restrictions similar to those found in RCW 76.09.

- The committee could find no method for identifying and delineating CMZs, other than that provided in the Forest Practices Board Manual that had either undergone independent scientific review or regulatory support involving judicial review.

#### 5. Shorelines Management Act (RCW 90.58).

The Shorelines Management Act (RCW 90.58) provides for ecological protection of shorelines, including rivers and streams having mean annual flows in excess of 20 cubic feet per second. It gives special consideration to rivers of considered Shorelines of Statewide Significance, i.e. rivers having mean annual flows in excess of 1000 cubic feet per second. Jefferson county has 31 rivers and streams regulated under RCW 90.58, of which four (Bogachiel, Clearwater, Hoh, and Quinault) are classified Shorelines of Statewide Significance (WAC 173-18-200).

The committee observes that RCW 90.58 provides authority for counties to include the 100 year floodplain in the Shoreline Master Plan. Jurisdiction under RCW 90.58 extends 200 feet landward from the ordinary high water mark or the edge of the floodway and contiguous floodplain when one is present. (RCW 90.58.030(2)(f)).

The General Master Program (WAC 173-26-221) provides guidance for implementation of the Shoreline Master Program in accordance with RCW 90.58. The Shoreline master program includes a requirement to identify and protect Channel Migration Zones as Critical Freshwater Habitats (WAC 173-2-221(2)(b)(iv)(A)).

The committee observes that Channel Migration Zones are mandated under the Shoreline Master Program but not under the Growth Management Act. The committee therefore concludes that where CMZs require protection they should be regulated under the Shoreline Master Plan and not the CAO.

#### 6. Hydraulic Code (WAC 220-110)

The Washington Department of Fish and Wildlife is charged with responsibility for protecting fish and endangered species. One of the tools that they have to do that is the Hydraulic code (WAC 222-110) which provides regulation of projects which would, use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state. The committee notes that WAC 222-110 provides significant

regulation of work within the stream or its bank which may effect channel migration but does not regulate activities beyond the ordinary high water mark except as they may impinge upon the stream or its bank.

#### 7. State Environmental Policy Act (SEPA) Rules (WAC 197-11)

WAC 197-11 established uniform requirements under the State Environmental Policy Act (RCW 43.21C). These regulations require that any project which has potential environmental impact must undergo a formal review process including a determination of how a proposed project would affect environmentally sensitive areas including habitat and floodplains. The committee makes the observation that the SEPA process already used by the county can provide protection of development in environmentally sensitive areas to include CMZs where appropriate, and does not require including CMZs in the CAO.

#### 8. Flood Control Act (RCW 86.09).

RCW 86.09 deals specifically with problems cited as rational for CMZ protection. The provisions of RCW 86.09 include provisions for creating Flood control districts, for the protection of life and property, the preservation of the public health and the conservation and development of the natural resources of the state of Washington. Under RCW 86.09 Flood Control Districts have the power to exercise Eminent domain to acquire property necessary to carry out its protection function (RCW 86.09.202). In Jefferson County five flood control districts have been established i.e., Flood Control Zone No. 1 (Dosewallips), Flood Control Zone No. 2 (Big Quilcene), Flood Control Zone No. 3 (Little Quilcene), Brinnon Flood Control Subzone, and Quilcene Flood Control Subzone. The committee makes the observation that if it is appropriate to protect CMZs either to protect life and property, or natural resources the way to do that would not be through the CAO, which has no powers of Eminent Domain, but through a Flood Control District which does.

RCW 86.09 also provides that counties may levy a tax on property for the purpose of river improvement to protect life, property, preserve public health and the conservation of natural resources (RCW 86.12.010). Counties may, under the RCW exercise the Eminent Domain to achieve these objectives (RCW 86.12.030). The committee observes that if the county determines that protection of CMZs is in the best public interest it should do so under authority of RCW 86.09 (Flood Control Act) which provides for both taxing the citizens of the entire county and for compensating affected landowner for loss of rights to use their land rather than under RCW 36.70 (Growth Management Act) which does not have such provisions. The committee therefore believes that if the county desires to protect CMZs for a public purpose it should do so under a Flood Control Ordinance, not the Critical Areas Ordinance.

## Channel Migration Zone Regulation in Western Washington Counties

As part of its deliberations, the committee looked to the way that the other counties in Western Washington have dealt with CMZs. Where draft/ or proposed changes to county CAO's as a result of update efforts exists, that information was considered as well as the present ordinance that each county has in place. In reviewing regulations from other counties the committee considered two questions:

1. Does the county include Channel Migration Zones in their Critical Areas Regulations? If so, were they regulated as habitat conservation areas or for some other purpose?
2. How does the county determine the existence of a CMZ including its limits?

The following table reflects the answers to those questions:

COUNTY	YES	NO	GEOLOGIC HAZARD	FISH AND WILDLIFE HABITAT	CMZ OUTER EDGE	CMZ Plus RIPARIAN	Less than CMZ Outer Edge	FOREST PRACTICES MANUAL	DOE GUIDELINES	OTHER	UNSPECIFIED
Clallam (1)		X	X								
Clark (2)		X		X			X				
Cowlitz (1)		X	X								
Grays Harbor		X									
Island		X									
King	X		X	X	X					X	
Kitsap	X			X		X					X
Lewis		X									
Mason	X			X		X					X
Pacific		X									
Pierce	X		X			X					X
San Juan		X									
Skagit		X									
Snohomish (3)	X		X					X			
Thurston		X									
Wahkiakum		X									
Whatcom	X		X			X					X
RCW 76.09	NA	NA		X		X		X			

(1) Stream bank erosion is included as a Geologic Hazard.

(2) Habit buffers measured from edge of 100 year flood plane.

(3) Draft Ordinance

Grays Harbor, Island Lewis, Pacific, San Juan, Skagit, Thurston, and Wahkiakum Counties have not included CMZs or a reasonable equivalent in their Critical Areas Ordinance. All of these counties, with the possible exception of Island and San Juan County, contain large rivers and streams that flow through relatively flat terrain and so are therefore likely to have channel migration zones.

Based on the way that other counties in western Washington have dealt with CMZs the committee could not conclude that there is regulatory consensus about whether they should be regulated as part of a critical areas ordinance, whether they should be regulated

as geologic hazard areas, fish and wildlife habitat conservation areas, or both, or when they are regulated how they should be identified and delineated. The committee makes the observation that only King County regulates CMZs as both geologic hazard and fish and wildlife habitat conservation areas. They also observe that counties which include CMZs in their CAO and have rivers comparable in size with what Jefferson County have also included extensive development standards in the CAO which allows both present use and future development within the CMZ. The committee also observes that these counties have also developed extensive technical resources specifically for the purpose of assisting landowners with CMZ issues.

### **The Delineation of CMZs**

Several methods for determining the location and extent of CMZs have been developed. The Channel Migration Zone Study, Jefferson County, Washington (Klawon, 2004) used a method developed by Rapp and Abbe (2003) and published by Washington Department of Ecology as guidelines for Channel Migration Zones. When published, the DOE guidelines carried the disclaimer: *“Ecology acknowledges the approach and methods outlined in this document need to be tested with a case study and updated accordingly.”* Since the Jefferson County CMZ study was done shortly after the DOE guidelines were published the committee assumed that the Jefferson County study represented that test. This assumption was confirmed by personal correspondence between Jefferson County DCD staff and DOE (Wheeler, 2007). In the same conversation DOE indicated that they were working on new methods. The committee notes that since the Jefferson County CMZ study did not make any comparison between the DOE Guidelines or validate the results through some other means it could not have been a “test” of the accuracy of the method, though it may have been a demonstration that the mechanics of the method could be followed. This interpretation that the study was not a “test” was verified by contacting Susan Perkins, the author of the risk assessment that accompanied the study (Perkins, 2006). The committee observes that the DOE Guidelines, though claiming to have been peer reviewed, have yet to be verified as scientifically accurate. The committee observes that to be meaningful for regulatory purposes “Best Available Science” should not only be “theoretically” useful but should have been tested to insure that the results will be valid.

In addition to the DOE Framework for delineating CMZs, the Forest Practices Manual also provides technical guidance on how CMZs should be identified and delineated. The Forest Practices method is similar in general concept to the DOE Framework in that both approaches use a combination of indicators to identify the extent of the CMZ. The major difference between the two is probably related to their intended purpose. The DOE Framework is intended to identify the CMZ over large portions of the river as part of an attempt to understand and manage the watershed. The Forest Practices manual is used to identify the extent of a CMZ in a specific area where a timber harvest is planned. As a result, the method used by DOE can focus on remote sensing (e.g., LIDARS) to identify potential CMZs. Forest Practices uses a two step approach which begins by first determining whether a CMZ is likely through examination of the historical record and

remote sensing data. If a CMZ is indicated the Forest Practices method proceeds to detailed delineation, including field evaluation and marking of the CMZ in the harvest area.

The committee makes the observation that it may be appropriate for the county to develop maps indicating possible CMZs for all 31 streams and rivers regulated under the Shorelines Master Program using any method it chooses, but that it ought to use the Forest Practices or other site specific method for delineating CMZs for regulatory purposes.

### **Channel Migration Zone Habitat Best Available Science.**

The committee conducted an extensive search of the scientific literature in an effort to determine a scientific basis for considering channel migration zones as habitat areas necessitating special protection. This search was unable to identify a body of scientific literature which addressed this issue. While the lack of such literature does not mean that no scientific basis exists for protecting CMZs as habitat areas, it does suggest that scientific consensus has not ripened to the point where a case for “Best Available Science” has been established. Logic and experience dictates that “Best Available Science” should not be based on single or even a few reports in the literature as more thorough examination often proves these early results wrong. The committee observes that the papers used to support CMZs at the present time are almost exclusively based on untested assumptions and deductive logic about the impact of waterways and their associated riparian zones as they meander across the landscape.

The committee did observe that a few papers have been published on CMZ habitat association. Much of this work was published by several authors associated with the Center for Streamside Studies at the University of Washington. The committee was not able to obtain copies of these papers but notes from the citations that, as is quite common with papers emanating from a single research center, they appear to be based on mutually reinforcing work by the same set of authors, and may represent different presentations of essentially the same data. While the committee could make no judgment on the quality of what may be leading edge science, it makes that observation that the local availability of these scientists and their work with DOE may explain why linking CMZs to habitat protection is prevalent in Washington but not found in other states.

### **Landowner Compensation for Regulation of CMZs as a Public Benefit**

Channel Migration Zones can represent considerable portions of an individual’s property. Depending on how they are regulated they can represent a significant loss in both the value and use of the property to the owner. The Forest Practices Act, which prohibits timber harvest within a CMZ, recognizes that though reimbursement of the landowner for the value of the timber and if the owner desires will purchase the land. Other regulations such as the Flood Control Regulations recognize the same issue and authorize counties to



use Eminent domain with compensation to the landowner, for the loss of property resulting from protection of the flood plain.

The committee observes that if CMZs are included in the CAO the county ought to be very careful about the development standards that are applied to them in order to avoid establishing a “taking” of private property for public benefit (McKenna, 2006). In its review of the CMZ sections of CAOs in other counties it was obvious that most take great care in crafting performance standards, exemptions, and alternative approaches, to avoid that problem. While the issue did not enter into the decision of the committee not to include CMZs in the CAO, it was noted that areas that would be affected by CMZ regulations are among the most productive and valuable in the county.

## **Summary**

The CAO committee spent large portions of 10 meetings considering whether Channel Migration Zones should be included in the Critical Areas Ordinance. It was probably the most difficult decision that we made. After two rounds of voting, the majority of the committee decided that CMZs did not require special protection under the CAO. This decision was based on recognition that other elements of the CAO or other regulations were a more appropriate way to handle protection of areas within the CMZ that required such protection without the necessity of treating all areas of the CMZ as a critical area. Part of this decision was based on a feeling that the science supporting CMZs, particularly as Fish and Wildlife Habitat Conservation Areas has simply not been established. The committee felt that if an area of CMZ required protection but did not fall into one of the other sections of the CAO, such areas could be protected under as a “Habitat of Local Importance” section of the ordinance. The committee felt uncomfortable with the fact that CMZ identification and delineation is based on geomorphology but do not include a habitat assessment. The committee also felt that even if channel migration is an important factor in protecting future fish and wildlife, protecting CMZs as a critical area is not necessary to ensure that the stream is allowed to function normally as it meanders across the plain. This can be and is accomplished through other regulatory measure dealing with stream bank hardening and the building of structures such as levies to contain the stream within a specific area. The committee also recognized that a large proportion of CMZs in the county involve forested areas that are already protected under the Forest Practices Regulations, and that in the event a landowner wants to develop those forest lands a Forest Practice IV-Special will provide the same level of protection against harvest in the CMZ.

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