

**Pierce County Channel Migration Zone Citizen Advisory Committee  
Final Report to Pierce County Council  
Completed August 5<sup>th</sup>, 2009**

**EXECUTIVE SUMMARY**

The Pierce County Channel Migration Zone Citizen Advisory Committee (CMZ CAC) has developed the following recommendations to the County Council on the management of channel migration zones in Pierce County:

**MAPPING OF CMZ HAZARDS**

- M1: Any mapping of CMZs should be done with consideration to fairness, cost-benefit, public expectation and feasibility of alternative solutions.
- M2: Those areas currently mapped as “Severe” CMZ hazards should be remapped to take into account the protection provided by existing levee and revetment systems. Areas with a levee or revetment should be mapped as “Active” on the riverward side and “Potential” on the landward side of the levee. Areas currently within the “Severe” designation but without a levee or revetment should be mapped as “Active.”
- M3: Levees should be evaluated to determine which can NOT be reasonably expected to perform as a barrier to migration and therefore, should not be mapped as described in M2 above.

**DEVELOPMENT STANDARDS**

- D1: Within “Active” CMZs, development standards should allow some fill and new development, including construction of non-residential structures. Regulations should also allow additional flexibility concerning improvement and replacement of existing structures.
- D2: Within “Potential” CMZs, development standards should allow all new development, with the possible exception of critical (e.g., essential infrastructure) and population-dense (e.g., hotels) facilities.

**NOTIFICATION**

- N1: It is essential that Pierce County directly notify property owners of any regulatory actions which have the potential to impact their property value or future ability to build on their property. Property owners should be directly notified by mail when a CMZ study is initiated, completed and adopted, and when new regulations are developed and become effective.
- N2: All other methods of notification should be conducted via effective methods, such as television and radio ads, notices in popular newspapers, inclusion in twice-yearly Pierce County tax postcards, or other methods. Public notification should be conducted early in the CMZ process.

- N3: Channel migration hazards should somehow be noted on a property's permanent record, but should be done so in such a way that it does not affect property values.

## **OTHER RELATED ISSUES**

- Q1: Pierce County should conduct gravel removal operations in mainstem rivers to control flooding.
- Q2: Pierce County should develop a funding strategy for assuring that existing levees are maintained in the future.
- Q3: The South Prairie Creek and Upper Nisqually River CMZ studies should be adopted by the Pierce County Council, provided that all of the recommendations contained in this report are implemented.
- Q4: CMZs can be most effectively managed in Pierce County by a combination of level of service improvements and risk advisories.
- Q5: Pierce County should coordinate with cities and others to comprehensively examine all flood hazard management issues and practices in a transparent way.

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The Channel Migration Zone Citizen Advisory Committee (CMZ CAC) was formed in April 2008 to evaluate and provide recommendations to Pierce County Council regarding the management of channel migration zones (CMZs) in unincorporated Pierce County. Members of the CMZ CAC have met monthly over the course of the last year to address the issues identified in Pierce County Resolution R2008-55. These issues include: 1) the process and methodology for mapping channel migration hazards; 2) development standards that should apply within mapped CMZs; 3) the process for notifying property owners of natural hazards; and 4) other related issues. Pierce County Surface Water Management staff provided key information about the technical and regulatory aspects of channel migration zone management, as well as coordination support for the CMZ CAC process.

This report contains our final conclusions and recommendations, which are organized according to the four topics in the original Pierce County resolution establishing the CMZ CAC (R2008-55). These recommendations reflect perspectives generally held by the majority of the group. Other opinions, perspectives and ideas are represented under the “Alternative Discussion” heading.

It is the intent of the CMZ CAC that these recommendations be applied by the Pierce County Council to all channel migration zones in unincorporated Pierce County.

## **MAPPING OF CMZ HAZARDS**

Discussion of CMZ mapping issues centered around the process and methodology used in the Puyallup/Carbon/White River (adopted in 2003) and the South Prairie Creek and Upper Nisqually River studies (completed in 2005 and 2007 respectively, and accepted but not yet adopted). We conclude the following about the current process:

- The definition and use of historical channel occupancy tract (HCOT) is reasonable as a starting point for studying and mapping CMZ hazard areas.
- The decision to map varying levels of channel migration risk (e.g., original designations of “severe,” “moderate” and “low” risk) was a reasonable and necessary distinction. Different levels of risk should come with different levels of regulations and restrictions.
- Mapping of CMZs should acknowledge some level of service (i.e., level of protection) as currently provided by Pierce County’s levee systems.

## **RECOMMENDATIONS**

The CMZ CAC developed the following recommendations to modify the process for mapping channel migration zones:

**M1: Any mapping of CMZs should be done with consideration to fairness, cost-benefit, public expectation and feasibility of alternative solutions.**

It is very important that mapping of channel migration zone hazards take into account the needs, structure and expectations of the local community. CMZ mapping has a great potential to impact property values, community development and infrastructure, and so should be accurate and sensitive to local needs. “One-size-fits-all” solutions are not acceptable and a broad-brush, uniform approach to mapping (like that utilized by King County on some of its rivers) is not appropriate. Coordination between Pierce County and other affected jurisdictions is necessary to achieve this recommendation.

Alternative Discussion: Some members of our committee agreed that mapping of channel migration hazards should be science based<sup>1</sup> and not policy-driven. These members asserted that the regulations that are applied within a mapped CMZ are more important than simply where the line is drawn. In some cases, a conflict may exist between mapping based on a scientific method and wishing to keep a particular parcel out of the CMZ for purposes of fairness.

**M2: Those areas currently mapped as “Severe” CMZ hazards should be remapped to take into account the protection provided by existing levee and revetment systems. Areas with a levee or revetment should be mapped as “Active” on the riverward side and “Potential” on the landward side of the levee. Areas currently within the “Severe” designation but without a levee or revetment should be mapped as “Active.”<sup>2</sup>**

Pierce County’s original mapping of channel migration zones did not give enough consideration to the presence of existing levees and their ability to control our rivers. In areas where Pierce County has built and is maintaining levees, the boundaries for “severe” hazard areas should end at the levee. We assert that levees can and have been built to prevent channel migration and can be expected to provide sufficient protection against property losses.

It may be unreasonable to assume that levee systems will prevent all property loss and damage by channel migration and flooding. However, levees can be assumed to provide sufficient protection against channel migration and, in the case a levee is breached, should be rebuilt in the original location. If a channel migration event were to result in new river channel on the landward side of a levee, we do not expect that the river be “put back” into its original channel.

Those areas currently mapped as “Moderate” or “Low” hazard areas should remain unchanged and should be treated as one zone.

Alternative Discussion: None

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<sup>1</sup> Note that the term “science” is here used broadly to mean the various scientific approaches which can provide information about how the mapping of channel migration zones could impact a community. This includes, but is not limited to, hydraulics, hydrology, geomorphology, geology and economics.

<sup>2</sup> Unless otherwise noted, our recommended mapping designations (i.e., “active” and “potential”) will be used throughout the rest of this document.

**M3: Levees should be evaluated to determine which can NOT be reasonably expected to perform as a barrier to migration and therefore, should not be mapped as described in M2 above.**

For the most part, levees that are being properly maintained by Pierce County are assumed by this committee to be strong enough to hold the river to its original channel. In areas where the levees are weak, or where the natural forces of the river are particularly strong, it may not be appropriate to hold the “Potential” CMZ line at the levee itself.

Alternative Discussion: The criteria for evaluating existing levees are still to be determined, but could include construction and maintenance records, incidence of repeat loss or damage, performance over time or other related factors. Such criteria would ideally be developed and applied with input from an advisory committee similar to the CMZ CAC. Additional evaluation may also be needed to determine how levees should be constructed and maintained in the future (see recommendation O2).

## **DEVELOPMENT STANDARDS**

Currently, channel migration zones in unincorporated Pierce County are regulated under Pierce County Code Title 18E.70 as a floodway. Although some exceptions do exist, “severe” channel migration hazard areas are generally regulated as “no build” areas and new development is not allowed. Restrictions on the improvement and replacement of existing structures also apply. The CMZ CAC concludes that:

- The current regulations (particularly “no build” restrictions) are too stringent and should be relaxed.
- Additional land use regulations beyond the “active” CMZ are not necessary if the levees are properly constructed to prevent channel migration and maintained to that level by Pierce County.
- “One-size-fits-all” regulations are not appropriate to all CMZs. Instead, land-use rules should be developed on a community-by-community basis with help from the citizens.

## **RECOMMENDATIONS**

The CMZ CAC identified the following development standards as appropriate to apply within mapped channel migration hazard areas. Please note that CMZ hazard area terminology is drawn from recommendation M2 above. More information about our perspective on this issue is included in the Development Standards matrix, found on page 12 of this report.

**D1: Within “Active” CMZs, development standards should allow some fill and new development, including construction of non-residential structures. Regulations should also allow additional flexibility concerning improvement and replacement of existing structures beyond what is currently allowed.<sup>3</sup>**

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<sup>3</sup> Please see the Development Standards matrix on page 11 for specifics.

This recommendation is proposed to apply to areas between the active river channel and an existing levee system. We believe that allowing improvements greater than Substantial Improvement thresholds and the expansion of the footprint of current structures is a reasonable use of property within the CMZ.

We do, however, recognize that many areas in the “Active” CMZ are also in the floodplain and so are subject to floodplain regulations in addition to the current CMZ rules. Development and uses in the floodplain which are not currently overlaid by CMZ regulations, but which may be in the future due to additional studies, should have access to a variance process that will allow property owners more flexibility.

Alternative Discussion: It was also suggested that it might be desirable to exempt current landowners from CMZ restrictions. This would allow current property owners greater flexibility to build on or use their property without being subject to another regulatory layer. Such “grandfathering” could end when the property changed ownership and the CMZ regulations became effective.

It may also be necessary to evaluate public and private infrastructure located within the “active” CMZ to determine whether steps should be taken to increase the level of protection against channel migration. Infrastructure such as roads, railroads, bridges, water systems and utilities should be evaluated on the basis of: 1) cost of repairs over 10 years; 2) frequency of repairs over 10 years; 3) availability of feasible alternatives; and 4) potential economic impact of damage. After this evaluation is done, funding should be made available for any actions that would further protect “at-risk” infrastructure. Possible actions could include levee construction or improvement, use of alternative armoring techniques (e.g., engineered log jams), relocation or redesign of existing infrastructure. It is also important to adequately protect infrastructure that needs to be located within “active” CMZs, such as water supply intakes and outfalls for wastewater treatment facilities.

**D2: Within “Potential” CMZs, development standards should allow all new development, with the exception of critical facilities and population-dense (e.g., hotels) facilities.**

Because “potential” CMZs are protected by an evaluated levee<sup>4</sup>, development should not be heavily restricted. The protection provided by levees is substantial enough to justify easing restrictions on development. However, development which is considered essential to public access or safety, or which serves a very large number of people at any one time should be kept out of “Potential” CMZ areas when possible.

The committee believes that outside of “Active” and “Potential” CMZs, the county should continue its current policy, which is to impose no CMZ related development restrictions. (Requirements to elevate structures in floodplains should also continue to apply.) Further restrictions on land-use in those areas outside of the “Active” and “Potential” CMZ would not serve to reduce property losses and are not necessary.

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<sup>4</sup> See recommendation M3.

Alternative Discussion: There may be some uncertainty as to exactly how the line between “Potential” and “Active” channel migration hazard areas should be drawn under the new mapping guidelines described in M2.

## **NOTIFICATION**

We discussed notification related to two aspects of channel migration zone management: 1) notification during the CMZ mapping process and associated change in regulations; and 2) notification of existing and future property owners of mapped channel migration hazards. Currently, Pierce County’s process for completing and adopting CMZ studies and for enacting associated regulations includes notification in local papers of record and via County Council and Planning Commission meetings. Direct notification to all affected property owners of regulatory changes is not included in this process, nor is it a current practice for notification of channel migration hazards.

It is important to note that the members of our committee felt very strongly that adequate notification of property owners is critically important to channel migration zone management in Pierce County. In addition, we think that our evaluation and recommendations should be broadly applied to all critical areas and regulatory issues.

The CMZ CAC concluded the following about Pierce County’s notification process:

- Property owners should be notified about any action or hazard designation (including the mapping of CMZs or other critical areas) that has the potential to impact their property value or their ability to develop their property.
- Public notification is essential to effective CMZ management.
- Pierce County’s current process for notification is inadequate and should be expanded.
- The public should be involved in the development of channel migration zone maps and land-use regulations.

## RECOMMENDATIONS

The CMZ CAC identified the following recommendations to modify the notification process for channel migration zones:

**N1: It is essential that Pierce County directly notify property owners of any regulatory actions which have the potential to impact their property value or future ability to build on their property. Property owners should be directly notified by mail when a CMZ study is initiated, completed and adopted, and when new regulations are being developed and become effective.**

Postcards and other mailings are the most effective way to achieve this recommendation. Early notification should provide the property owner with information about how to be involved in the process and should enable him/her to access additional information in the future. Although cost is a significant barrier, Pierce County should place a high priority on direct mailings and should

seek out opportunities to offset costs (e.g., an “opt-in” program to raise funds). There was strong support for direct notification, both by members of the CMZ CAC and by members of the general public attending CMZ CAC meetings.

Alternative Discussion: There was no consensus as to who exactly was impacted by CMZ issues and therefore, who should be notified. Some members favored direct notification of only owners of property in the “Severe” or “Active” CMZ, as they felt that those people were the only ones affected by CMZ regulation. Others advocated for a broader approach that would include all mapped CMZ areas and/or all Pierce County tax payers.

**N2: All methods of notification should be used to inform the public. Mass media methods, such as television and radio ads, notices in popular newspapers, inclusion in Pierce County tax postcards, or other methods of public notification should be conducted early in the CMZ process.**

Public notification must be conducted in a proactive and visible way, on a timeline that will allow for people to participate adequately in the process. Information about current and upcoming projects should be made easily accessible to the public via websites and other communication tools.

Alternative Discussion: Opinions on when public notification is best conducted were widely varied. Recommendations ranged from very specific points in the process (e.g., when any public funds are spent on a CMZ study) to very general outreach strategies (e.g., throughout the process when it’s meaningful).

**N3: Channel migration hazards should somehow be noted on a property’s permanent record, but should be done so in such a way that it does not affect property values.**

We feel strongly that notification of channel migration hazards should not affect property values and/or a property owner’s ability to sell or otherwise profit from an existing parcel now or in the future. The exact mechanism for achieving this is still to be determined. It may be necessary to work with a property attorney or other expert to develop this notification tool. Suggestions included notice on title, disclosure by property owners at the time of sale and notice of flood hazards on the Pierce County Assessor-Treasure website. Because a neutral affect on property value is desirable, additional evaluation should be done to determine which tool is most appropriate for achieving this recommendation.

Alternative Discussion: Although preservation of property values was the predominant concern, there was also some discussion about the need to warn property owners and potential buyers of the real erosion hazards that may exist on their parcel. Our committee acknowledges that there are differences of opinion as to what level of detail is necessary when disclosing information about CMZ risks (i.e., some people may want to know more or less). This issue was unresolved by the CMZ CAC and more evaluation by the Council will be needed.

## **OTHER RELATED ISSUES**

The CMZ CAC also discussed a number of additional topics related to channel migration zone management. Some of these issues were discussed but not fully addressed by the group, including fair compensation of property owners for lost value and takings, levee construction and evaluation standards, and criteria for rebuilding infrastructure in high risk channel migration hazard areas. Other issues generated sufficient interest and support as to produce the following recommendations:

### **O1: Pierce County should conduct gravel removal operations in mainstem rivers to control flooding.**

We believe that most of the flooding problems experienced over the last twenty years are due to the lack of gravel removal operations. Dredging and gravel bar scalping are effective flood control tools, as well as a good source of revenue for private industry. Gravel removal should be restarted, even if only in a pilot project format. Regular removal of large woody debris from river systems is also recommended. Such activities should be done with priority given to protection of populated areas.

The need to restart gravel removal projects is a popular perspective with strong support from many members of the public. A number of the public comments we received were in favor of this recommendation.

Alternative Discussion: Some members of our committee do not agree that recent flooding was caused by a stop in gravel removal operations. These members acknowledge that there are a number of causes of flooding besides the build-up of gravel in the river. There was also disagreement about whether gravel removal is an effective tool for avoiding floods. Some members of our committee were concerned that gravel removal is not an effective flood management tool and advocated for the use of other tools which might have less impact on the environment, need less maintenance and have a lower cost overall.

### **O2: Pierce County should develop a funding strategy for assuring that existing levees are maintained in the future.**

There is an implicit assumption by property owners living behind levees that those levees will be constructed, maintained and repaired to such a level as to prevent channel migration in perpetuity. Funding should be sufficient and secure enough to guarantee that construction and maintenance activities will occur. Short of this, property owners cannot be assured the safety of their property or developments.

The development of such a funding strategy should be coordinated with an evaluation of how levees are constructed and maintained in Pierce County. Science alone should not dictate how much money is spent on our levee systems. Careful analysis of cost-benefit ratios, biological impacts, needs of local communities and other factors should be conducted to assure that communities are not unfairly affected by levee management.

Alternative Discussion: None

**O3: The South Prairie Creek and Upper Nisqually River CMZ studies should be adopted by the Pierce County Council, provided that all of the recommendations contained in this report are implemented.**

The South Prairie Creek and Upper Nisqually River areas present an excellent opportunity for Pierce County to implement our committee's recommendations, conduct pilot projects with local communities and employ a collaborative approach to CMZ management. Property owners should be notified when these studies are adopted and the associated regulations take effect.

The Pierce County Council should not adopt the South Prairie Creek and Upper Nisqually River CMZ studies unless all of our recommendations are implemented.

Alternative Discussion: None

**O4: CMZs can be most effectively managed in Pierce County by a combination of level of service improvements and risk advisories.<sup>5</sup>**

Capital improvements, gravel removal and levee construction and maintenance are very effective tools to reduce property losses due to channel migration. Advisories on tax statements are equally effective, as they enable property owners to assess and accept a level of risk on the basis of personal comfort level. Other tools (including regulation) should also be employed, but are less effective.

As with gravel removal, there is strong public support for building, maintaining and improving our levee systems. Many people – both in and outside of our committee – believe that Pierce County should focus on controlling the river, rather than on regulating floodplains. More specific information about our perspective on this issue can be found on page 13 of this report.

Alternative Discussion: There was a range of opinions about the effectiveness of the different types of flood hazard management tools. Our committee was sometimes divided on whether or not a particular tool could achieve Pierce County's goal for managing channel migration risks.

Although it was not fully discussed by our group, direct compensation of property owners was identified as another tool needed to manage channel migration zones. Such compensation could buy out affected parcels (i.e., fee simple acquisitions) or be used to compensate for the loss of property value due to an inability to develop under strict CMZ regulations. In either case, Pierce County should compensate property owners for fair market value *prior* to the CMZ regulations coming into effect. Potential funding sources for these payouts include local river improvement funds, as well as Federal and other sources.

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<sup>5</sup> Our discussion of this item was focused mostly on CMZs in unincorporated Pierce County, but this recommendation also generally applies to all cities and towns affected by channel migration hazards.

**O5: Pierce County should coordinate with cities and others to comprehensively examine all flood hazard management issues and practices in a transparent way.**

Flood issues are very complex and it is important to consider issues of fairness between communities. Because of these factors, a comprehensive examination of flood management practices is needed to develop a plan for flood management in Pierce County. This process should involve cities, tribes and other organizations with an interest in flood issues and should be accessible to the public.

Alternative Discussion: None

Respectfully submitted by Don Hawkins, CMZ CAC Chair, August \_\_\_\_\_, 2009.

Members of the CMZ CAC:

Jeff Barney - CMZ property owner (Nisqually); recreational user; conservation community  
Shelly Butterfield - CMZ property owner (Puyallup)  
Mike Fenimore - CMZ property owner (Puyallup); agriculture  
Jerry Harnish - Citizen; Business Owner (Nisqually)  
Kathleen Hatcher - CMZ property owner (Nisqually)  
Don Hawkins - CMZ property owner (Puyallup); recreational user  
Ted Hill - CMZ property owner (Nisqually); construction/engineering  
Thomas Magnan - Citizen; construction/engineering  
Hal Michael - Watershed council (CCWC); floodplain management professional  
Karen Willard - CMZ property owner (South Prairie)  
Valerie Wilson - CMZ property owner (Puyallup and Carbon); agriculture  
Betty Zenkner - CMZ property owner (Nisqually)

**CMZ CAC Suggested Discussion Framework: Regulation Standards in Pierce County CMZ Hazard Areas**

*How should development standards and regulations reflect differences in: 1) Type of development; and 2) CMZ hazard severity?*

<b>Development/CMZ Hazard</b>	<b>“Active” (Areas where no levee exists - Severe)</b>	<b>“Potential” (Previously severe areas behind levees - Moderate)</b>	<b>“Everything Else” (Areas currently mapped as Moderate or Low and that are not currently regulated)</b>
<p><b>New Development</b> – Vacant land with an intent to build; lots may be existing or subdividable; new structures on already-developed lots would also fall into this category (e.g., garages, tool sheds, etc.)</p>	<p><i>e.g., Not allowable</i>                      Not allowed?                      Agricultural &amp; Recreational development should be allowed (some <i>is</i> currently allowed)                      Allow: - non-permanent structures                      - Water-related structures                      - Some filling</p>	<p><i>e.g., Allowable if conditions X, Y and Z are met</i>                      Include all “Active” activities, plus:                      New construction                      No critical facilities                      Consider density restrictions</p>	<p><i>e.g., Unrestricted</i>                      No restrictions</p>
<p><b>Improvement</b> – Substantial improvements to existing structures include any remodels or modifications that increase the structure’s value by 50% or more over a five-year period; may or may not increase the footprint of the structure; designated Historic Places and correction of code violations are not included in this category (<b>see Title 18E.20.070</b>)</p>	<p>Allow: - 2<sup>nd</sup> story additions                      - Enlargement of footprint                      - Some filling                      Garages, carports and other non-residential structures should be allowed as improvement (vs. “new development”)                      Improvement of historic structures should be addressed through the variance process</p>	<p>No restrictions</p>	<p>No restrictions</p>
<p><b>Replacement</b> – Repair, rebuilding or replacement of an existing structure after it has been damaged; Damage may be sustained by channel migration, flooding, or other causes (e.g., fire, earthquake, landslide, etc.)</p>	<p>Allow fill to the previous (pre-flood) grade if it washes away                      Replacement should be allowed if damage is due to fire or other non-water related event?                      Replacement of historic structures should be addressed through the variance process</p>	<p>No restrictions</p>	<p>No restrictions</p>

## Evaluation of CMZ Management Tools – CAC Responses During Discussion (10)

This matrix was used by the CMZ CAC to evaluate the effectiveness of the following tools for managing CMZs. CAC members were asked to place an "X" in the box that best describes the perceived ability of the given tool to achieve the goals that Pierce County has set for managing CMZs (described below).

**GOAL:** The purpose of CMZ regulations is to prevent damage from occurring due to channel migration. The standards are intended to minimize public and private losses from erosion related to rivers migrating laterally and to provide special criteria necessary for regulated activities located within flood hazard areas in unincorporated Pierce County.

Tools	Very Ineffective	Somewhat Ineffective	Neutral	Somewhat Effective	Very Effective
<b>Land Use</b> <u>Including:</u> Zoning and Zoning Overlay		X	X	XXXXXX XXX	
<b>Current CMZ Regulations</b> Floodway CMZ	X	XXXXXX XX	X	X	
<b>Other Regulations</b> <u>Including:</u> Floodway FEMA, Floodway Deep and/or Fast Flowing Water, Shorelines, Wetlands, HPA (State), Section 404 permit (Federal)		XXXXXX X	X	XX	X
<b>Advisory</b> Tax Statement Notice & Website			X	XXXXXX X	XXX
<b>Level Of Service Improvements</b> <u>Including:</u> Capital improvements, setback levee construction, gravel removal, floodplain acquisition, operations and maintenance (i.e., O & M)				XXXX	XXXXXX X