



TO: LANE COUNTY PLANNING COMMISSION

CC: LANE COUNTY BOARD OF COMMISSIONERS

FROM: Public Works Department/Land Management Division

PRESENTED BY: Keir Miller, Associate Planner

AGENDA ITEM TITLE: **WORK SESSION / BACKGROUND INFORMATION AND DISCUSSION REGARDING PROPOSED AMENDMENTS TO THE FLOODPLAIN COMBINING ZONE AND DEVELOPMENT OF A DRINKING WATER PROTECTION OVERLAY ZONE**

1. **MOTION**

No motion is being proposed at this time. This is a work session discussion item only.

2. **AGENDA ITEM SUMMARY**

At the direction of the Board of Commissioners, the Land Management Division (LMD) is in the process of developing amendments to the floodplain zoning regulations of Lane Code (Lane Code Chapters 10.271 and 16.244). These amendments would implement certain higher regulatory standards, which would help protect public health and safety within the flood hazard areas, while also reducing costs associated with flood damages, flood insurance premiums and treatment of possible flood-related water contamination.

In addition, LMD is also in the process of drafting a “drinking water protection overlay zone” If adopted, this new ordinance would codify standards for the protection of drinking water source areas, including both surface waters (rivers and lakes) and certain community ground water systems. Adoption of a drinking water protection overlay zone will also likely necessitate changes to the Goal 6 policy language of the Rural Comprehensive Plan (RCP).

These two separate but related plan amendments are tentatively scheduled for public hearings before the Lane County Planning Commission (LCPC) this coming fall. This memo provides background information to the LCPC regarding these projects and summarizes general code amendment changes that are being developed by staff in consultation with a Board of Commissioners’ appointed technical advisory committee (TAC). Specific code amendment proposals and overlay zone language will be presented to the LCPC at future scheduled work sessions.

3. **DISCUSSION**

3.1 Background Information

On June 2, 2009, representatives from the Eugene Water and Electric Board (EWEB), Lane Council of Governments (LCOG) and the University of Oregon’s Community Planning Workshop (CPW) presented information to the Planning Commission regarding land use-

related threats to drinking water. That presentation focused on a review of the Lane County Development Code and land use permitting practices in riparian and flood hazard areas. The presenters opined that county codes and permitting practices have enabled ongoing development in sensitive areas that have caused adverse impacts to water quality and created possible health and safety issues. Minutes from that meeting have been included as Attachment "A" to this memo.

In comments following the presentation, members of the Planning Commission indicated their interest in seeing staff conduct a review and update of the riparian and floodplain ordinances to address the issues raised EWEB and the other presenters. Staff informed the Commission that this work would be placed on the LMD's 2010 long range work program to be prioritized by the Board of Commissioners.

On November 10, 2009, the Board approved the LMD's 2010 work program. As part of that program the Board directed LMD to work with a technical advisory committee (TAC) to develop amendments to Lane Code 10.271 and 16.244 (Floodplain Combining Zones) with the goal of mitigating flood-related threats to residents and reducing costs associated with flood damages and flood insurance. In addition, LMD was tasked with analyzing Lane Code 16.253 (Stream Riparian Regulations) to determine what improvements could be made to those regulations that would improve their effectiveness at protecting water quality.

In January 2010, LMD began working on these projects. A status report was provided to the Board on March 17. During that report staff informed the Board that attempts to substantially amend the existing riparian ordinance could potentially compel Lane County to address the revised 1996 Oregon Administrative Rules, which outline procedures and requirements for complying with Statewide Planning Goal 5¹. Further, staff informed the Board that conducting a program to achieve compliance with Goal 5 would likely be a lengthy process and would not fit within the initial project timelines for updating the riparian ordinance.

The Board directed staff to work with the Department of Land Conservation and Development (DLCD) to investigate the issue further and, if needed, develop alternative strategies to address water quality concerns without triggering the onerous Goal 5 process.

After communications with DLCDC regarding the Goal 5 issue, staff returned to the Board on April 27 and provided a status report. In that report, staff recommended that work on the riparian ordinance be postponed and as an alternative, suggested that efforts be refocused on the development of an overlay ordinance designed specifically to reduce impacts to drinking water source areas. This approach was suggested by DLCDC because, unlike riparian corridors, which are identified as "significant resources" under Goal 5, surface waters and certain ground water areas are dealt with under Statewide Planning Goal 6. This means that local jurisdictions have more latitude in developing programs to protect these resources and are not required to go through the Goal 5 inventory process prior to adopting or amending regulations to protect drinking water source areas.

¹ OAR 660-23-000 which outlines the procedures and requirements for complying with Statewide Planning Goal 5 was revised in September 1996. Under the revised rules, cities and counties throughout Oregon are obligated to compile inventories of "significant" wetlands and riparian corridors. As a second step, cities and counties are required to examine existing local ordinances and adopt or update their regulatory programs to address protection of significant wetlands and riparian corridors. Cities and counties are required to address the revised Statewide Planning Goal 5 rules when conducting periodic review and when amending comprehensive plans and related Goal 5 land use regulations. As with any local revision to land use regulations, DLCDC must approve the proposed revisions.

The Board was supportive of this recommendation and directed staff to continue efforts on the floodplain ordinance but to also work with the technical advisory committee to develop a drinking water protection overlay zone.

3.2 Process Overview

Updates to the existing floodplain regulations and the development of a drinking water protection overlay zone have been proposed to help achieve related objectives - including the enhancement and preservation of floodplains and drinking water source areas to help protect and maintain water quality and to help protect public health and safety. For this reason, an integrated process has evolved to develop and vet proposed amendments.

This process is comprised of three phases:

Phase 1 (January – March '09) The first phase of this process was an issue identification and consensus feasibility assessment. To carry out this work the Eugene Water and Electric Board agreed to contract the services of the Oregon Consensus (OC) group. OC is Oregon's official program for public policy consensus building. OC provides assessments, consensus building facilitation, mediation and other alternative dispute resolution services to public entities and their stakeholders throughout Oregon. OC is a program of the National Policy Consensus Center in Portland State University's Hatfield School of Government. OC's mission is to promote effective and collaborative approaches for public decision-making in the state. OC offers state agencies, local governments and the public a neutral forum and neutral services in support of collaborative governance.

OC was the primary facilitator involved in the recent West Eugene Collaborative (WEC) effort and was selected to carry out this phase of the project at the direction of the Board of Commissioners.

The OC assessment was completed in late February and a summary report of their findings and recommendations was provided in March. The report, which is included as Attachment "B" to this memo, articulated key stakeholder issues, ideas, and concerns regarding possible measures that the county could take to protect drinking water source areas and floodplains. The assessment also outlined possible strategies to address these issues through a consensus process, if the Board of Commissioners elected to choose such an approach.

Phase 2 (March – August '09) The second phase of this process involves the actual development and review of ordinance language. For this phase of the process staff was directed to work with a Technical Advisory Committee identified by the Board of Commissioners. The TAC includes representatives from the following agencies and organizations:

- Oregon Department of Environmental Quality
- Lane Council of Governments
- Springfield Utility Board
- Eugene Water and Electric Board
- University of Oregon
- The McKenzie Watershed Council
- The Middle Fork Willamette Watershed Council
- The McKenzie River Trust

It is important to note that while some TAC members were included in the original Oregon Consensus stakeholder assessment process, the TAC does not represent a true cross-section of stakeholder interests. Nor are the comments and recommendations of the TAC necessarily developed through a consensus-based process. Rather, the TAC provides ideas, recommendations and technical expertise for LMD staff to use and consider in the development of code language.

In addition to comments and ideas provided by the TAC, other sources of information are being drawn upon to develop the code amendment language including;

- Language provided in the 2010 Department of Land Conservation and Development Oregon Model Flood Ordinance
- Language found in the Oregon Department of Environmental Quality's Drinking Water Protection Overlay District Model Code
- Comments provided during the Oregon Consensus process
- Issues, threats and identified ordinance deficiencies related to floodplains and riparian areas identified by staff and listed in the table provided as Attachment "C" to this memo
- Guidance found within the FEMA technical bulletin: CRS Credit for Higher Regulatory Standards
- Research developed by EWEB and the University of Oregon's Community Planning Workshop and presented in their report: EWEB Source Water Protection Project: Best Management Practices and Model Ordinance Review

At the date of this memo, the TAC had reviewed draft revisions to the floodplain ordinance and provided comments to staff. A draft of the drinking water protection overlay zone is still in development. Specific code amendment proposals and overlay zone language will be presented to the Planning Commission at future work sessions scheduled as follows.

- July 20, 2010: Review of specific amendments to Lane Code 10.271 and 16.244
- August 3, 2010: Overview of the proposed drinking water protection overlay zone
- August 17, 2010: Review of draft water protection overlay language (Lane Code 16.298)

Phase 3 (August – November '09) The final phase of this effort encompasses the Post Acknowledgment Plan Amendment process including; a 45 day notice to DLCD, Ballot Measure 56 notification to landowners and public hearings with the Board of Commissioners and Planning Commission. As currently designed, the PAPA processes for both floodplain and drinking water protection overlay zone work would occur along parallel tracks and will likely be heard at the same meetings dates but will be presented as separate ordinances for the Planning Commission and Board to take action on.

3.3 Process Timelines

The originally proposed timelines for completion of this work are shown on the calendar included as Attachment "D" to this memo. However, it is very likely that meeting dates provided on that calendar will need to be adjusted to reflect possible changes in LCPC scheduling needed to accommodate the work of the Lane County Land Use Task Force.

3.4 Overview of LMD's Floodplain Management Program

A. Understanding the Flood Problem in Lane County

Within Lane County there are several major rivers and smaller tributaries and streams that are susceptible to annual flooding events. The flooding of these waterways threatens life and safety and can cause significant property damage. Large rivers susceptible to flooding include the Willamette (Main Stem, Middle and Coast Forks) the McKenzie (including the South Fork), the Siuslaw (including the North Fork) the Row River and Lake Creek. Smaller streams and tributaries susceptible to frequent flooding include the Mohawk, Cedar Creek, Long Tom, Fall Creek, Little Fall Creek, Camp Creek, Horse Creek, Coyote Creek, Mosby Creek, Poodle Creek, Deadwood Creek, Siltcoos River, Tenmile River and others.

Lane County has nearly 140,000 acres of land in the floodplain. This is equivalent to well over 200 square miles. According to a survey of Lane County's geographic information system, over 12,000 individual parcels are partially or entirely located within the floodplain. Statewide, Lane County has more river miles of floodplain than any other county.

Recent Flooding Events

While some type of seasonal flood-related damage occurs nearly every year, the flooding and associated landslide events of February and November 1996 represent the most recent significant flooding. In February 1996, prolonged precipitation accompanied by an early snowmelt caused many rivers and creeks throughout Lane County to rise to 100-year flood levels. Flooding was particularly severe along the Siuslaw and Mohawk Rivers. Damage to Lane County businesses, residences and infrastructure was estimated to be roughly \$19 million.

Although the floods of 1996 represented a large-scale disaster, they are not unprecedented within the recent past. The Christmas Flood of 1964 caused \$157 million in damage statewide, and 20 Oregonians lost their lives. In addition to the '96 and '64 floods, Lane County has experienced several other significant floods since records have been kept. In 1972, flooding along the Siuslaw River caused extensive damage within the community of Mapleton. The floods of 1945, 1942 and 1927 caused severe damage to the City of Eugene and the surrounding areas. Early records indicate that the Southern Willamette Valley flooded often in the mid to late 1800's, with major flooding occurring in 1850-51, 1861, 1881 and 1890. While the 1996 events were devastating to the entire region, the floods of 1861, 1890, and 1964 exceeded the 1996 event in terms of velocity and volume of water. All three floods are estimated to have exceeded the so-called "100-year flood," or Base Flood in Lane County, and all within a time frame of about 100 years.

Causes of Flooding in Lane County

Flooding occurs when climate, geology, and hydrology combine to create conditions where river and stream waters flow outside of their usual course and "overspill" beyond their banks. In Lane County, the combination of these factors, augmented by ongoing development, create chronic seasonal flooding conditions. Lane County spans a wide range of climatic and geologic regions from the Pacific coast to the high Cascades. This diversity results in considerable variation in precipitation. The average annual precipitation ranges from less than 40 inches in the Willamette Valley to over 100 inches in the coast range and along the west slope of the Cascades. Snowmelt from the central cascades provides a continuous water source throughout the year, and can contribute significantly to flooding.

Flooding is most common from October through April, when storms from the Pacific Ocean bring intense rainfall to the area. Larger floods result from heavy rains that continue over the course of several days, augmented by snowmelt at a time when the soil is near saturation from previous rains.

Flood Control Efforts

The Army Corps of Engineers operates 13 multi-purpose water projects (also known as dams) in the Willamette Valley with nine of those projects situated in Lane County. The primary purpose of these dams is flood control - although they only provide flood control to 50% of the tributaries in the Willamette Basin. Reservoirs behind the dams are drained every November to create storage capacity for water from heavy winter and spring rains. Therefore, most flooding in Lane County occurs on tributaries that do not feed these reservoirs or along rivers with no flood control devices, such as the Siuslaw.

It is important to recognize that flooding along rivers downstream of these dams is still possible. During prolonged and intense flood events reservoirs can fill up. In these situations, the Army Corps must release flood waters from the reservoirs. In addition, other situations can occur which render flood control dams inoperable. In fact, the Army Corps of Engineers is currently in the process of conducting major emergency repairs to the floodgates of several dams located in Lane County. These repairs will require that heavy flows be allowed to pass through these dams in the fall and winter of 2010. This will severely reduce the capacity of these dams to prevent flooding and will increase the likelihood that areas outside of mapped floodplains may be inundated by flood waters.

B. History of Regulatory Framework for Flood Hazard Areas in Lane County

In 1968, Congress passed the National Flood Insurance Act based on findings that: "(1) a program of flood insurance can promote the public interest by providing appropriate protection against the perils of flood losses and encouraging sound land use by minimizing exposure of property to flood losses; and (2) the objectives of a flood insurance program should be integrally related to a unified national program for floodplain management."

The Flood Insurance Act is administered through the National Flood Insurance Program, (NFIP). The NFIP is a voluntary program that is based upon cooperative agreements between the federal government and local participating communities. The NFIP enables property owners within participating communities to purchase flood insurance at a reasonable cost and helps to provide an insurance alternative to the rising costs of federal flood disaster relief. In return, participating communities must properly manage their floodplains by adopting and enforcing floodplain ordinances aimed at reducing the likelihood of future flood damage to new construction.

Since 1970, Lane County has regulated development within known flood hazard areas and in doing so participated on a limited basis in the National Flood Insurance Program. On December 18, 1985, the County became a fully participating member of the NFIP by adopting a countywide Flood Insurance Study and associated set of official Flood Rate Insurance Maps (FIRMs). The County's flood insurance study and FIRMs went through a major revision and update process in the late 1990s and on June 2, 1999, a new study and set of FIRMs was issued. These documents were adopted under Order No. 99-6-30-7 and are referenced in Lane Manual 11.020. They remain in effect today.

Corresponding floodplain management ordinances have been adopted by the county and are updated periodically over the years to reflect changes required through the NFIP and to ensure consistency with Oregon specialty building codes. These regulations are based

primarily off of requirements found in the United States Code of Federal Regulations (CFR) Title 44, Chapter 1, §59 and §60 and also in the Department of Land Conservation and Development's Oregon Model Flood Damage Prevention Ordinance These regulations are found in Lane Code 16.244 (applicable to areas outside of an urban growth boundary and governed by the Rural Comprehensive Plan) and also in Lane Code Chapter 10.271 (applicable within the urban growth areas of small cities).

C. Lane County's Participation in the NFIP Community Rating System

In 1990, the National Flood Insurance Program's Community Rating System (CRS) was implemented. The CRS is a sub-program within the NFIP that recognizes and encourages community floodplain management practices that exceed the minimum NFIP standards.

Under the CRS, flood insurance premium rates are lowered to reflect the reduced flood risk resulting from community activities that meet the objectives of the CRS: Those objectives are:

- (1) Reduce flood losses, i.e.;
 - protect public health and safety,
 - reduce damage to buildings and contents,
 - prevent increases in flood damage from new construction,
 - reduce the risk of erosion damage, and
 - protect natural and beneficial floodplain functions.
- (2) Facilitate accurate insurance rating; and
- (3) Promote the awareness of flood insurance.

In September of 2006, the Board of Commissioners adopted Lane County's Natural Hazards Mitigation Plan (NHMP) under Resolution & Order No.06-9-20-3. The NHMP is a broad, non-regulatory, document that: (1) provides a foundation for collaboration around hazard mitigation measures; (2) serves as a prioritization tool for future mitigation activities; and (3) helps meet necessary federal planning requirements to enable Lane County to qualify for certain disaster assistance programs.

As a component of the NHMP, a series of specific "action items" were developed. These action items are organized around each of the different types of hazards that Lane County is susceptible to, and if carried out, they are intended to improve the county's overall disaster resiliency. Under Flood Mitigation Action Item #6, the Land Management Division was identified as the coordinating division tasked with bringing Lane County into the Community Rating System.

As part of the Land Management Division's 2007 Long Range Planning Work Program, LMD was formally directed to take actions necessary for the county to gain admittance into the CRS.

On March 3, 2008, LMD submitted a CRS application and accompanying documentation to FEMA² for formal review. After a lengthy application review and verification process, Lane County received official notification of admission into the CRS on July 2, 2009.

² The Federal Emergency Management Agency (FEMA), under the auspices of the Department of Homeland Security, is the agency responsible for overseeing the NFIP and the CRS. Lane County works with both the FEMA Region X office and also with the Oregon Department of Land Conservation and Development's Hazard Mitigation Program, which serves as the NFIP coordinating agency for Oregon communities.

Economic Benefits of CRS Participation

In addition to preventing flood losses, the floodplain management program administered by LMD qualifies rural Lane County flood insurance policy holders to a discount on their insurance premiums. The actual discount provided is based on a 1-10 “Class rating” scale, which FEMA assigns after reviewing and scoring CRS application documentation and conducting a verification visit. The class that is assigned is based upon the number of credit points earned for floodplain management activities that exceed the minimum NFIP standards. The correlation between credit points earned, classification awarded, and premium reductions given for communities in the NFIP-CRS are shown in Table 1., below.

CREDIT POINTS	CLASS	PREMIUM REDUCTION SFHA*	PREMIUM REDUCTION NON-SFHA**
4,500+	1	45%	10%
4,000 – 4,499	2	40%	10%
3,500 – 3,999	3	35%	10%
3,000 – 3,499	4	30%	10%
2,500 – 2,999	5	25%	10%
2,000 – 2,499	6	20%	10%
1,500 – 1,999	7	15%	5%
1,000 – 1,499	8	10%	5%
500 – 999	9	5%	5%
0 – 499	10	0	0

*Special Flood Hazard Area
 **Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage. The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies. The CRS credit for AR and A99 Zones are based on non-Special Flood Hazard Areas (non-SFHAs) (B, C, and X Zones). Credits are: classes 1-6, 10% and classes 7-9, 5%. Premium reductions are subject to change.

Table 1. CRS Flood Insurance Premium Reduction Schedule, Source: www.fema.gov

All NFIP communities start out with a Class 10 rating (which provides no discount). Class 10 identifies a community that does not apply for the CRS, or does not obtain a minimum number of credit points and receives no discount. Class 1 requires the most credit points and gives the greatest premium discount. There are 18 activities recognized as measures for eliminating exposure to floods. Credit points are assigned to each activity. The activities are organized under four main categories: Public Information, Mapping and Regulation, Flood Damage Reduction, and Flood Preparedness.

Based upon the review of LMD’s floodplain management practices, 1777 credit points were awarded, translating into a class rating of “7” for Lane County. This rating earned residents living within the regulated 100-year floodplain a 15% reduction in insurance premiums. In

addition, a 5% reduction in premiums was been awarded to flood insurance policy holders living outside of the regulated floodplain.

A recent NFIP Insurance Report for Lane County shows that there are 1,686 policies for structures located in regulated 100-year floodplain and 826 policies for structures outside the regulated floodplain. Approximately \$1,400,000 was paid out in premiums for structures in the regulated floodplain from July 2008 – July 2009. With a 15% discount in premiums, it's estimated that these policy holders will realize a total savings of roughly \$210,000. During this same 12 month period, approximately \$285,000 was also paid out for structures located outside the regulated floodplain³. A 5% discount was awarded on these policies, which translates into an annual savings of approximately \$14,000. Based on these figures, the total combined savings that flood insurance policy holders will realize from Lane County's participation in the CRS is estimated at nearly \$225,000 annually.

D. Understanding Current Floodplain Regulations

Lane County regulates development within the so called "100-year floodplain", commonly (and more accurately) referred to as the Special Flood Hazard Area (SFHA). The SFHA are the areas within the floodplain that FEMA has determined to have a 1% annual chance of flooding. These areas are depicted on the Flood Rate Insurance Maps.

As a participating member of the NFIP, Lane County must review all construction plans and determine if proposed development falls within a SFHA. If new construction or substantial improvements⁴ to existing structures are proposed within the SFHA, they must be protected from flood damage. This protection is typically achieved by elevating the lowest level of the structure above the designated Base Flood Elevation (BFE). Structures built within the SFHA must also be anchored to prevent lateral movement or floatation in the case of flooding. Structures may also be built on compacted fill material so that they are located completely outside of the SFHA.

The elevation of the lowest floor of all structures built within the SFHA must be documented on an official FEMA Elevation Certificate, which is typically filled out by a surveyor or engineer.

In addition to elevating a structure, other "flood-proofing" techniques are also allowed and used in limited circumstances for non residential structures. These techniques involve either constructing watertight structures known as "dry flood-proofing" or constructing buildings to be "wet flood-proofed". Wet flood-proofed structures are made of flood resistant materials and have adequate venting and other design features incorporated into their construction to allow flood waters to pass through and drain away quickly.

³ The total amount of insurance premiums paid by Lane County residents in a 12 month period was \$1,685,109. The breakdown of premiums paid between policies held for structures within the 100-year floodplain and for those outside the 100-year floodplain (referred to as "Preferred Risk Policies") is an estimate based on known discounts to Preferred Risk Policies.

⁴ Substantial improvements are currently defined as any repair, reconstruction or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either, (a) before the improvement or repair is started, or (b) if the structure has been damaged, and is being restored, before the damage occurred. For the purpose of this definition "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include either (1) any project or improvement of a structure to comply with existing state or local health, sanitary or safety code specifications which are solely necessary to assure safe living conditions, or (2) any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

The SFHA is divided into different flood zones. Within these zones different regulations apply. In Lane County, the primary flood zones that have been mapped are **A Zones**, **AE Zones**, **AE Zones with a Regulated Floodway**, and **AO Zones**. Attachment “E” to this memo depicts these flood zones in the vicinity of Mapleton. General descriptions for these zones, including the major requirements for each zone, are summarized, below.

A Zones are flood hazard areas where the specific elevations of 100-year flood events, or BFE, have not been studied and mapped. A Zones are common on small to medium sized streams throughout Lane County where flood velocities and intensities are thought to be less severe. In these areas the general contour and topography of the drainage basin was used to estimate flood inundation areas.

Impact of A Zone on Development: Because exact flood levels are not known within these areas, the lowest floor of new construction or substantial improvements generally need to be elevated at least two feet above the existing (undisturbed) grade.

AE Zones occur on all major rivers in the county. In these zones studies have been done to calculate the specific elevations that flooding will occur. These base flood elevations are depicted as feet above mean sea level on the Flood Rate Insurance Maps.

Impact of AE Zone on Development: New construction and substantial improvements within AE zones generally need to be constructed with the lowest finished floor of the structure at least one foot above the BFE.

AE Zones with a Regulated Floodway The Regulated Floodway is the actual 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 a designated height. In Lane County this height is 1 foot above the water surface elevation. Special regulations have been adopted to ensure that floodways are kept open and not obstructed in order to prevent flood flows from backing up or being diverted onto adjacent properties.

Impact of Floodway on Development: Construction inside of the floodway is highly regulated. Floodways pose higher risks because waters can move through them with significant velocity. In addition, floodways must be kept unobstructed to allow waters to pass through them. An engineer must review any proposed development inside a floodway. Hydrologic and hydraulic analysis must demonstrate that the proposed development would not increase flood levels within a community during a base flood event. This is known as a no-rise analysis and usually contains two separate studies – a step-back water analysis and a conveyance computation calculation.

AO Zones – are areas of relatively shallow flooding within the SFHA. No Base Flood Elevations have been established, but a depth of flooding from one to three feet has been determined. It is anticipated that AO Flood Zones within Lane County could flood up to two feet in depth during a 100-year flood event.

Impact of Floodway on Development: There are only a few acres of land mapped as AO Zones on the FIRM in Lane County. Due to an apparent oversight, current regulations do not include any provisions for this zone.

A copy of the complete floodplain regulations (Lane Code 16.244) has been included as Attachment “F” to this memo. The floodplain regulations contained in Lane Code 10.271

have not been provided because they mirror LC 16.244. A flowchart of the LMD's general floodplain permitting process has also been included for reference as Attachment "G".

Higher Regulatory Standards

With one notable exception, LMD's existing floodplain regulations meet only the minimum standards required under the NFIP⁵. However, the NFIP strongly encourages local communities to adopt more stringent floodplain regulations. This is because even with strict adherence to minimum floodplain regulations, severe and dangerous flooding may still occur for several reasons including:

- Inaccuracies in existing flood mapping and studies
- Floods in excess of the predicted 100-year magnitude
- Failure of flood control levees or dams
- Rising flood levels due to 1) increased development or encroachment into natural areas that have historically functioned to store and flood waters, 2) ground subsidence and 3) sea level change

There are a variety of good practices and higher regulatory standards in use by other communities around the county, which Lane County could choose to enact. More stringent floodplain regulations would help protect public health and safety and would also help lower flood insurance premiums through the NFIP Community Rating System.

Under the CRS, Lane County currently receives 659 credit points for existing regulations; however, up to 2,110 total points are available. Additional points for higher regulatory standards could further reduce flood insurance premiums by an additional 5%-20%.

Finally, in addition to protecting public health and safety within the floodplain and reducing costs associated with flood damages and flood insurance premiums, there are other significant reasons *to protect floodplains from development*. Floodplains perform important natural functions, including temporary storage of floodwaters, moderation of peak flows, maintenance of water quality, groundwater recharge, and prevention of erosion. Floodplains also provide habitat for wildlife, recreational opportunities, and aesthetic benefits.

E. Proposed Changes to the Floodplain Ordinance

As discussed above, staff has been working with a technical advisory committee to develop specific amendments to the floodplain ordinance. For the most part, all amendments being considered are not mandated under the NFIP. However, minor revisions are required to include missing criteria related to AO flood zones, to ensure consistency with the most recent Oregon specialty building codes and to address other minor deficiencies. In addition to these required changes, several other revisions have been proposed and are under consideration. All proposed changes are listed in Table 2, below.

⁵ Current floodplain regulations exceed FEMA minimum standards in one area - existing regulations require that development within the SFHA be elevated at least one foot above the identified Base Flood Elevation (BFE) in flood zones identified as "AE" on the Flood Rate Insurance Map and at least two above existing grade in known flood areas where elevation have not been determined (A Zones). This additional margin of safety above the BFE is known as "freeboard". Freeboard is an extra amount of elevation that is added for an extra measure of protection. It helps account for uncertainties such as floods greater than the 100-year flood, errors in measurement, sea level rise, and subsidence, and it lends additional protection to structures.

1	Remove definitions for: Existing Manufactured Home Park or Subdivision, Expansion to an Existing Manufactured Home Park or Subdivision (required)
2	Update standards regarding manufactured home parks in the FP (required)
3	Include missing standards regarding “AO” flood zones added (required)
4	Eliminated references to AH and numbered A zones (required)
5	Require temporary encroachments in floodway to meet standards specified in FEMA guidance document (required)
6	Update substantial improvement definition to limit/discourage incremental development in the FP (A.K.A. cumulative improvement clause)
7	Revise duties and responsibilities of Floodplain Administer based on model language
8	Require critical facilities to be sited outside the FP
9	Prohibit Hazardous facilities in the FP
10	Prohibited development within the floodway for most uses unless this standard would deny any reasonable use of the property
12	Prohibit land divisions in the floodway unless a development site is identified outside of the floodway on newly proposed parcel
13	Prohibit new fencing in the Floodway unless it is built to breakaway or pass through standards
15	Prohibit development within the floodway for most uses unless this standard would deny any reasonable use of the property – then minimize development
16	Include additional freeboard requirements
17	Require septic systems to be setback from the FP where feasible
18	Update soil pressure foundation requirement from 1000 psf to 1500 psf
19	Require the location of the floodplain to be shown on all recorded final plat documents for land divisions.
20	Add standards for the “wet flood-proofing” of accessory structures
21	Add standards for the placement and use of fill in the FP
22	Add standards for the alteration of a watercourse (including provisions for bridges and culverts)
23	Modify variance standard to eliminate option for a variance in the floodway for residential purposes.
24	Add/modify definitions for: Area of Special Flood Hazard, Breakaway Wall, Development, Critical Facility, Datum, Elevated Building, Digital FIRM, Encroachment, Floodway, Freeboard, Hazardous Facility, Highest Adjacent Grade, Letter of Map Change, Lowest Floor, Manufactured Dwelling, Market Value, Mean Sea Level, Natural Elevation, New Construction, Start of Construction, Substantial Damage
25	Consider prohibiting all development within the floodplain (possible M49 issue)
26	Consider requiring setbacks from flood sources (possible M49 issue)

Table 2. Proposed Changes to Floodplain Ordinance 6/21/10

Additional information regarding these changes will be provided during staff presentations and in packet materials for upcoming work sessions.

3.5 Overview of Drinking Water Protection Ordinances

A drinking water protection ordinance is a regulatory tool implemented by city or county governments to address proposed and/or existing development and its potential impact on water quality. These ordinances typically define the resource (as a mapped overlay area) and enact specific requirements for land uses and development within these boundaries. Ordinances applying to sites that pose a risk to water quality within the overlay area may include some or all of the following:

- a prohibition on various land uses (such as landfills or underground fuel storage tanks)
- requirements that buildings and septic systems be setback from sensitive areas
- requirements that existing septic systems within sensitive areas be inspected and, if needed, serviced at the time of property sale
- rules preserving the bank stability and filtering functions provided by a healthy vegetated streamside area
- special permitting or siting requirements (i.e. placing limitations on the use of toxic and hazardous materials, pesticides, salts)
- performance standards (i.e. requiring secondary containment for petroleum or chemical storage over a certain volume)

The ordinance may be applied to the whole drinking water protection area or different restrictions could be applied to specific zones of sensitivity. For example, standards to protect surface waters, such as vegetation buffers, might not be effective or appropriate for the protection ground water source areas.

As an initial step in the development of the proposed drinking water overlay zone, staff is working on a series of draft source area protection maps. The maps are based on data compiled by the Oregon Department of Environmental Quality (DEQ) and the Department of Human Services (DHS) as a component of their statewide Source Water Assessment reports. At this time the draft maps are under review by members of the TAC, who will make recommendations on the extent and coverage of the source water protection areas.

Preliminary working maps have been uploaded and are available for review on the county FTP server:

<ftp://ftp.lanecounty.org/gis/outgoing/DraftSourceWaterProtectionZone/>

In addition to developing source water assessments, DEQ has also developed a useful fact sheet and model surface water protection ordinance language. The ordinance was designed to be used in its entirety or it can be modified by local jurisdictions to fit specific needs. The factsheet and ordinance is included as Attachment "H" to this memo.

At this time staff is using the State's model ordinance as a template. However, several changes to this template language need to be made to incorporate requirements for the protection for groundwater sources areas and also to simplify the ordinance, wherever possible.

In addition to reviewing the State's model ordinance, staff and members of the Technical Advisory Committee have also conducted a review of other drinking water protection ordinances that are in use in Oregon and elsewhere. These ordinances are listed below, along with a link to the actual documents.

Federal Model Ordinance Language

U.S. Environmental Protection Agency: Provides model ordinance language for both groundwater and surface water, with examples from around the country.

<http://www.epa.gov/owow/nps/ordinance/sourcewater.htm>

Examples of City Ordinances

City of Springfield, OR: This ordinance restricts or prohibits activities within the wellhead protection area and sets standards for storage, use, handling, treating and production of hazardous materials. A Drinking Water Protection Overlay District Development Application is required for development or other activities.

<http://www.ci.springfield.or.us/dsd/Planning/Springfield%20Develoment%20Code/SDCART17.pdf>

Cave Junction, OR: This ordinance prohibits certain uses and provides performance standards for others within the groundwater and surface water drinking water protection areas for the City of Cave Junction.

<http://www.deq.state.or.us/WQ/dwp/docs/sw/cavejunction.pdf>

The Columbia South Shore Wellhead Protection Program, OR: The cities of Portland, Gresham and Fairview have all adopted ordinances which specify what chemicals are regulated and why. These ordinances also set requirements for chemical handling and containment, and outline provisions for reporting, inspection and enforcement within the drinking water protection area. <http://www.portlandonline.com/water/index.cfm?c=cijja>

Examples of County Ordinances

Wallowa County, OR: Within the City of Enterprise's municipal water source area, this county ordinance places restrictions on domestic livestock, storage of crops, chemical applications, fuel storage, chemical storage, solid waste disposal, septic tanks and other commercial, industrial and residential uses.

http://www.epa.gov/safewater/sourcewater/pubs/techguide_ord_or_wallowa_wpa.pdf

Cowlitz County, WA: This ordinance requires permits for development activities and describes regulated activities for aquifer recharge areas. It also describes optional incentives for non-development of critical areas, such as property tax reductions, conservation easements, transfer of density for residential units, and land exchanges.

<http://www.co.cowlitz.wa.us/buildplan/planning/critical.html>

Spokane County, WA: Uses within critical aquifer recharge areas are regulated based on type of use and an aquifer susceptibility rating. This ordinance contains performance standards for agricultural practices, wastewater disposal, stormwater disposal, mining, landfills and critical materials storage, handling, generating or use.

<http://ordlink.com/codes/spokaneco/ DATA/TITLE11/Chapter 11 20 CRITICAL AREAS/1 20 075 Critical aquifer rec.html>

Other Selected Ordinances From Around the Country

Salt Lake City, UT: Deals with both surface water and groundwater.

(http://cfpub.epa.gov/safewater/sourcewater/sourcewater.cfm?action=Case_Studies&view=specificresults&casestudy=70).

Baltimore County, MD: Buffer Protection and Management Ordinance. This ordinance details the criteria required of the vegetated buffer strips in Baltimore County in forested, residential, and industrial areas.

<http://www.epa.gov/owow/nps/ordinance/documents/A2a-Baltimore.pdf>

Exeter, NH: The ordinance includes a number of ground water and surface water use conditions and restrictions.

<http://town.exeter.nh.us/ZBA/zoneord.pdf>

State of New Hampshire Model Ordinance: The ordinance contains a set of performance standards, prohibitions and required setbacks.

<http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-06-41.pdf>

Tahoe Regional Planning Agency Source Water Protection Ordinance:

<http://www.trpa.org/documents/docdownlds/ordinances/COCh83.pdf>

Once the draft drinking water protection overlay zone language and source area maps are completed and reviewed by the TAC, staff will present them to the Planning Commission for their review. Work sessions with the Planning Commission to review this material are tentatively scheduled for August 3 and 17.

4. TIMING/IMPLEMENTATION

Unless otherwise modified, staff will carry out this work according to the timelines provided on the calendar included as Attachment "D".

5. FOLLOW UP/NEXT STEPS

A second work session with the LCPC to discuss specific code changes to the floodplain combining zone is scheduled for July 20.

The draft drinking water protection overlay zone will be presented to the Planning Commission during August work sessions.

6. ATTACHMENTS

- A. June 2, 2009, LCPC Meeting Minutes
- B. Oregon Consensus Drinking Water Protection Assessment Report
- C. Issues Summary Matrix
- D. Project Calendar
- E. Sample Flood Zone Map
- F. Existing Floodplain Regulations (Lane Code 16.244)
- G. Simplified Floodplain Permit Review Process Flow Chart
- H. DEQ Model Drinking Protection Ordinance