

# **ATTACHMENT A**

## **CITY COUNCIL DISCUSSION TOPICS**

### **Critical Areas Ordinance Update**

The following discussion topics provide background information regarding the review and update to Des Moines critical area regulations. Topics addressed as part of the update include: wetland classification and rating system, wetland buffers and mitigation ratios, permanent stream typing, stream buffers, fish and wildlife habitat conservation areas, geologically hazardous areas and critical aquifer recharge areas. Note that Council provided staff direction regarding the wetland classification and rating system and permanent stream typing systems at the July 27, 2006 meeting.

Following is a summary of the best available science (BAS) review and recommendations, recommendations from the Planning Agency and Council Environment Committee, and staff and consultant proposed code amendments for critical area protection. Proposed Code changes are shown in strikeout and underline form. There are highlighted areas that provide guidance regarding new sections, reorganization of Chapter sections, staff comments and areas where referencing cross checks by staff need to be made as the ordinance is revised and finalized.

Recommended amendments to DMMC 18.04 and a complete copy of proposed amendments to DMMC 18.86 are attached. Note that some but not all of the recommended changes to DMMC 18.04 are included in the discussion topics that follow.

#### ***Should wetland buffers be revised?***

**Status:** DMMC 18.86.070(2) establishes buffer requirements for wetlands based on two categories: "Significant" wetlands – 100-foot buffer and "Important" wetlands – 35-foot buffer. The current wetland buffer widths cannot meet Best Available Science (BAS) because they are based on an outdated classification system (King County three-tier system). Additionally, the buffer widths are below those recommended by Ecology.

**BAS Recommendation:** Based on the findings of the critical areas inventory, it is recommended that Ecology's Alternative 3 for buffer widths would provide the City with the most flexibility (Table 1). Buffers shown under Alternative 3 are determined based on the wetland rating, intensity of land use impacts, and functions or sensitivity of wetland to disturbance. Alternative 3 includes criteria to increase, decrease and average buffers.

#### **Planning Agency Recommendation:**

The Planning Agency recommends that City Council adopt Ecology's Alternative 3 buffer widths. Staff has modified the buffer table to simplify the table and to reflect findings from the Critical Areas Inventory (Grette, 2006) (Table 1).

**Table 1. Buffer Widths based on Wetland Category for High Intensity Land Use Areas based on Degree of Wetland Function or Special Characteristics.**

| <b>Category I Wetlands</b>   |                               |
|--|-------------------------------|
| High Habitat function (Habitat score 29-36)  | 300                           |
| Moderate Habitat function (Habitat score 20-28)  | 150                           |
| High Water Quality function and Low Habitat function or none of the above characteristics (Habitat score < 20) | 100                           |
| <b>Category II Wetlands</b>  |                               |
| High Habitat function (Habitat score 29-36 points)   | 300                           |
| Moderate Habitat function (Habitat score 20-28)  | 150                           |
| High Water Quality function and Low Habitat function or none of the above characteristics (Habitat score < 20) | 100                           |
| <b>Category III Wetlands</b>   |                               |
| Moderate Habitat function (Habitat score 20-28)  | 150                           |
| Low Habitat or not meeting above criteria (Habitat score <20)  | 80                            |
| <b>Category IV Wetlands</b>  |                               |
|  | <b>Width of Buffer (feet)</b> |
| Low functions  | 50                            |

Note: Removed information and buffers associated with the following wetlands that are not relevant to Des Moines: Category I -- Natural Heritage, bogs, estuarine, and wetlands in coastal lagoons and Category II -- Estuarine and Interdunal.

### **Council Environment Committee Discussion and Recommendation:**

The Environment committee requested information that illustrated how the City’s existing wetland buffers compare to proposed buffers, and methods and criteria for applying buffer standards that provide flexibility for property owners and developers (09/28/26 meeting).

Per the Environment Committee request, staff directed the City’s GIS consultant to map the existing and proposed wetland buffers as a means to graphically represent how they relate to surrounding properties and the underlying zoning (examples provided in Attachment B). Given that many of the wetlands in the City have not been delineated or rated, the maps are intended only as a general representation.

Staff provided the Environment Committee with information on general performance requirements and criteria to increase, decrease and average buffers and regulate small wetlands (10/26/06 meeting). The following bulleted items represent Committee members’ questions and staff comments related to the standards:

#### General Performance Standards

- There is no guidance on enforcement.  
DMMC 18.86.020 Securities and Enforcement provides the means to ensure the applicant will properly construct all structures and improvements and mitigation required by the Chapter. Reference is also made to requirements established in DMMC 18.72 Permits, Licenses and Enforcement.
- Need guidance on avoidance, minimize and mitigating impacts to critical areas.  
DMMC 18.86.020(9) and (11) address requirements related to no net loss of wetlands and mitigation of potential impacts to critical areas in the following order of importance: avoid, minimize, rectify, reduce/eliminate, compensate and monitor.

- Define “environmental information” as referenced in DMMC 18.86.070(3).  
This term is used in several places in DMMC 18.86; however, there is no specific definition given in DMMC 18.04. Where used, it typically relates the environmental information that is necessary to evaluate a proposal. A definition could be added to DMMC 18.04.
- How do we regulate artificially created wetlands (i.e., enhanced ditches, detention ponds)?  
In designating wetlands for regulatory purposes, counties and cities are required to use the definition of wetlands in RCW 36.70A.030(20) which clarifies how artificially created wetlands are regulated:  
*“Wetland” or “wetlands” means areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetlands.*
- What happens when wetland/stream enhancements inadvertently occur on private property (e.g., as part of an enhancement project)?  
Information specific to this question was not found in staff’s literature search. The response to the question above indicates it is likely these areas could be subject to CAO requirements. The reference to “unintentionally created wetlands” is specific to construction of a road, street or highway. Staff is waiting for further feedback from Ecology.

At the 11/16/06 meeting, the Environment Committee recommended carrying forward for full Council discussion the recommendation to adopt Ecology’s Alternative 3 where buffer widths are determined based on the wetland category, high intensity land use areas, and degree of wetland function or special characteristics.

## **Staff and Consultant Recommended Code Amendments**

Staff has prepared proposed code amendments for wetland regulations as shown below in strikeout and underline form. Highlighted areas provide guidance on proposed amendments related to new sections, reorganization of sections and Environment Committee and Staff recommendations:

### **Edits to DMMC 18.86**

#### **18.86.070 Wetlands – Development standards – ~~Streams and wetlands~~ – Buffers.**

If a stream or wetland is located on or contiguous to the site of a development proposal, all activities on the site shall be in compliance with the following requirements and restrictions:

- ~~(1) Streams. The following buffers of undisturbed native vegetation shall be provided:~~
- ~~(a) Significant streams: 100-foot buffer;~~
  - ~~(b) Important streams: 35-foot buffer;~~
  - ~~(c) Any stream relocated or altered as part of approved mitigation measures shall have at least the minimum buffer required for the category of stream involved;~~
  - ~~(d) All buffers shall be measured from the top of the upper bank of the stream as identified in the field.~~

(1) General Performance Requirements

(a) Activities may only be permitted in a wetland or wetland buffer if the applicant can show that the proposed activity will not degrade the functions and functional performance of the wetland.

(b) Activities and uses shall be prohibited in wetlands and wetland buffers, except as provided for in this Chapter.

(c) Category I Wetlands. Activities and uses shall be prohibited from Category I, except as provided for in the public agency and utility exception, reasonable use exception, and variance sections of this Chapter.

(d) Category II and III Wetlands. With respect to activities proposed in Category II and III wetlands, the following standards shall apply:

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

a. The basic project purpose cannot reasonably be accomplished on another site or sites in the general region while still successfully avoiding or resulting in less adverse impact on a wetland; and

b. All on-site alternative designs that would avoid or result in less adverse impact on a wetland or its buffer, such as a reduction in the size, scope, configuration or density of the project, are not feasible. Compensation for the loss of acreage and functions of wetland and buffers shall be provided under the terms established under Section 18.86.108 in this chapter.

(e) Category IV Wetlands. Activities and uses that result in unavoidable and necessary impacts may be permitted in Category IV wetlands and associated buffers in accordance with an approved special environmental study and mitigation plan, and only if the proposed activity is the only reasonable alternative that will accomplish the applicant's objectives. Compensation for the acreage and loss functions will be provided under the terms established under Section 18.86.108 in this chapter.

(2) Wetlands Buffers. The following buffers of native vegetation shall be provided: The following standard buffers shall be established from the wetland edge as delineated and marked in the field:

(a) Significant wetlands: 100-foot buffer;

(b) Important wetlands: 35-foot buffer;

(c) Any wetland relocated or altered as part of approved mitigation measures shall have at least the minimum buffer required for the category of the wetland involved;

(d) All buffers shall be measured from the edge of the wetland as identified in the field.

| <b>Category I Wetlands</b>   |            |
|--|------------|
| <u>High Habitat function (Habitat score 29-36)</u>   | <u>300</u> |
| <u>Moderate Habitat function (Habitat score 20-28)</u>   | <u>150</u> |
| <u>High Water Quality function and Low Habitat function or none of the above characteristics (Habitat score &lt; 20)</u> | <u>100</u> |
| <b>Category II Wetlands</b>  |            |
| <u>High Habitat function (Habitat score 29-36 points)</u>  | <u>300</u> |
| <u>Moderate Habitat function (Habitat score 20-28)</u>   | <u>150</u> |
| <u>High Water Quality function and Low Habitat function or none of the above characteristics (Habitat score &lt; 20)</u> | <u>100</u> |
| <b>Category III Wetlands</b>   |            |
| <u>Moderate Habitat function (Habitat score 20-28)</u>   | <u>150</u> |
| <u>Low Habitat or not meeting above criteria (Habitat score &lt;20)</u>  | <u>80</u>  |
| <b>Category IV Wetlands    Width of Buffer (feet)</b>  |            |
| <u>Low functions</u>   | <u>50</u>  |

(a) Where a legally established and constructed street transects a wetland buffer, the city manager or designee may approve a modification of the standard buffer width to the edge

of the right of way if the isolated part of the buffer does not provide additional protection of the wetland and provides insignificant biological, geological or hydrological buffer functions relating to the wetland. If the resulting buffer distance is less than 50 percent of the standard buffer for the applicable wetland category, no further reduction shall be allowed through wetland buffer reduction or averaging.

(b) Where a buffer has been previously established through City or county development review, and is permanently recorded on title or placed within a separate tract, the buffer shall be as previously established.

~~(c) Where wetland functions have been improved due to voluntary implementation of an approved stewardship, restoration and/or enhancement plan that is not associated with required mitigation or enforcement, the standard wetland buffer width shall be determined based on the previously established wetland category and habitat score as documented in the approved stewardship and enhancement plan. (NOTE : Environment Committee recommendation to delete.)~~

(3) ~~Additional Increased Wetland Buffers.~~ The ~~community development director~~ city manager or designee may require either additional native vegetation to achieve purposes of this chapter or increased buffer sizes when environmental information (Note: Referenced in DMMC 18.86.040) indicates the necessity for greater buffers ~~in order to achieve the purposes identified in DMMC 18.86.020~~ to protect critical area functions, values, or hazards based on site-specific conditions. This determination shall be supported by appropriate documentation showing that additional buffer width is reasonably related to protection of critical area functions and values, or protection of public health, safety and welfare. Such determination shall be attached as permit conditions. The determination shall demonstrate that at least one of the following criteria are met:

(a) There is habitat for species listed as threatened or endangered by State or Federal agencies present within the sensitive area and/or its buffer, and additional buffer is necessary to maintain a viable functional habitat; or

(b) There are conditions or features adjacent to the buffer, such as steep slopes or erosion hazard areas, which over time may pose an additional threat to the viability of the buffer or buffers, if any, associated with the conditions or feature posing the threat in addition to, or to a maximum, beyond the buffer required for the subject critical area.

## **City Council Recommendation:**

## ***Should wetland mitigation ratios be revised?***

**Status:** Wetland mitigation can be in the form of enhancement, rehabilitation or creation that is based on the condition of the affected wetland. Enhancement relates to improving an existing wetland where habitat value and/or habitat area is added to a functioning wetland (e.g., plantings to raise the function from emergent to shrub community or footprint expansion). Rehabilitation relates to restoring a degraded wetland (e.g., removing invasive species such as blackberry). Creating relates to making a new wetland where one does not exist.

The following restoration and compensation mitigation measures are required to minimize and reduce impacts to wetlands (and streams) as codified in DMMC 18.86.107 (Note: only included standards relevant to wetlands):

(1) Restoration. Restoration is required when the functions and values of critical areas have been degraded from alteration prior to development approval. All restoration shall follow an approved mitigation plan pursuant and meet the following minimum performance standards:

(a) On-site and In-kind for wetlands (and streams (ii)).

(i) For wetlands, the applicant shall create an area of wetland on site and adjacent to the wetland edge of equal to greater biological functions size, functions, and values. Unless otherwise specified by the community development director, such mitigation shall be provided pursuant to the following formulae:

Class 1 and 2 wetlands on a 2:1 type and acreage basis.

Class 3 wetlands on a 1:1 type and acreage basis.

(b) Off-site and In-kind for wetlands (and streams). When environmental information demonstrates that greater functions and values will be achieved, off-site compensation of greater size, functions, and values may be approved if the compensation project is within the same subwatershed as the wetland or stream to be altered. Unless otherwise specified by the community development director, such mitigation shall be provided pursuant to the ratios specified in subsections (1)(a)(i).

**BAS Recommendation:** Grette BAS Report, Page 19 recommends that the City define minimum acceptable mitigation ratios by wetland category. Within the built environment of a City, there may be considerations including compromised existing function and limited mitigation opportunity that preclude mitigation at the ratios recommended by Washington Department of Community Trade and Economic Development (CTED). The King County system is recommended over the CTED system given the City is far more likely to be dealing with wetland enhancement and rehabilitation than straight up creation. Providing minimum mitigation ratios by Category (e.g., 6:1 for Category I, 2:1 for Category II, and 1.5:1 for Category III and IV), provides the City with the flexibility to require smaller mitigation ratios where necessary, but also requests or requires higher mitigation ratios where appropriate for higher functioning wetlands. Table 2 below shows wetland protection standards for Des Moines (existing), CTED (recommended ratios) and King County (BAS recommendation).

**Table 2. Existing and Recommended Wetland Mitigation Ratios**

|              | Existing DMMC*<br>Based on previous<br>classification and<br>type and acreage | CTED  | King County Permanent |                |          |
|--------------|---|-------|-----------------------|----------------|----------|
|              |   |       | Enhancement           | Rehabilitation | Creation |
| Category I   | 2:1   | 6:1   | 6:1                   | 4.5:1          | 3:1      |
| Category II  | 2:1   | 3:1   | 3:1                   | 2:1            | 1.5:1    |
| Category III | 1:1   | 2:1   | 2:1                   | 1.5:1          | 1:1      |
| Category IV  | N/A   | 1.5:1 | 1.5:1                 | 1:1            | 1:1      |

Based on the findings of the Critical Area Inventory (Grette, 2006), proposed mitigation ratios related to restoration would be greater for Category I and Category III wetlands. The recommended ratios of mitigation (enhancement, rehabilitation or creation of new) provide more flexibility to staff to work with developers as they provide their wetland studies and proposals for specific projects.

**Planning Agency Recommendation:**

The Planning Agency directed staff to include in the drafting of the Critical Areas Ordinance, the mitigation ratios adopted by King County (Table 3).

**Table 3. Recommended Wetland Mitigation Ratios**

|              | King County Permanent |                |          |
|--------------|-----------------------|----------------|----------|
|              | Enhancement           | Rehabilitation | Creation |
| Category I   | 6:1                   | 4.5:1          | 3:1      |
| Category II  | 3:1                   | 2:1            | 1.5:1    |
| Category III | 2:1                   | 1.5:1          | 1:1      |
| Category IV  | 1.5:1                 | 1:1            | 1:1      |

**Council Environment Committee Discussion and Recommendation:**

The Environment Committee members had the following questions and comments (11/09/06 meeting) related to the proposed wetland mitigation ratios:

- When a portion of a wetland buffer is filled, does it count as “wetland fill”? Does the same mitigation apply?

**Volume 2: Guidance for Protecting and Managing Wetland (Ecology 2005), Section 8.3.7.3**

**Impacts to buffers**, indicates the following:

Impacts to buffers should be handled similarly as impacts to wetlands. Applicants should be required to use all available means of modifying their development proposal, as well as using existing provisions for buffer averaging, before they are allowed to build in

buffers. Where buffer impacts are unavoidable, compensation should be required in the form of wetland and/or upland restoration or enhancement.

- Which jurisdictions have adopted mitigation ratios lower than King County?

Staff provided the Committee with examples of mitigation ratios adopted by other jurisdictions (Burien, Federal Way, SeaTac and Sammamish).

**Burien CAO** establishes the following wetland mitigation ratios:

Creation or Restoration:

Category 1 and 2: 3-to-1

Category 3 and 4: 2-to-1

Enhancement:

Double the acreage required for creation or restoration.

**Federal Way** establishes the following mitigation ratios:

| Wetland Category               | Creation and Restoration | Enhancement |
|--------------------------------|--------------------------|-------------|
| <b>Category I: (all types)</b> | 6:1                      | 12:1        |
| Category II:                   |                          |             |
| Forested                       | 3:1                      | 6:1         |
| Scrub/Shrub                    | 2:1                      | 4:1         |
| Emergent                       | 2:1                      | 4:1         |
| Category III:                  |                          |             |
| Forested                       | 2:1                      | 4:1         |
| Scrub/Shrub                    | 1.5:1                    | 3:1         |
| Emergent                       | 1.25:1                   | 2.5:1       |

**SeaTac**

Creation or Restoration:

Class I and II : 2-to-1

Class III: 1-to-1

With equivalent or greater biologic functions including, but not limited to, habitat functions and with equivalent hydrologic functions, including, but not limited to, storage capacity;

Enhancement:

Minimum requirements for enhancement shall be established in the SEPA process but must maintain or improve the wetland's biologic and/or hydrologic functions.

**Sammamish CAO** establishes the following wetland mitigation ratios:

Creation or Restoration:

Category 1: 4-to-1

Category 2: 2-to-1

Category 3: 1.5-to-1

Category 4: 1.5-to-1

Enhancement: 1-to-1 if existing wetlands are significantly degraded, otherwise enhancement shall be double the acreage required for creation or restoration

As shown, the mitigation ratios vary and most represented a more prescriptive approach where the same ratio (some higher than King County's) was applied for both creation and restoration. SeaTac had the lowest ratios; however, this was supported by their BAS review and a more stringent mitigation and monitoring program.

Recommended ratios of mitigation (enhancement, rehabilitation or creation of new) provide more flexibility to staff to work with developers as they provide their wetland studies and proposals for specific projects. At the 11/30/06 meeting, the Environment Committee recommended staff provide examples of how the reasonable use criteria would be applied assuming proposed buffers and mitigation ratios for discussion at the 12/07/06 Environment Committee meeting and the 12/14/06 City Council meeting.

### **Staff and Consultant Recommended Code Amendments**

Staff has prepared proposed code amendments for wetland mitigation as shown below in strikeout and underline form. Highlighted areas provide guidance on proposed amendments related to new sections, reorganization of sections and Environment Committee and Staff recommendations:

**18.86.xxx Wetlands -- Mitigation requirements.** (Note: Recommend moving from DMMC 18.86.107 and include as subsection (8) for DMMC 18.86.070 or as a new section following.)

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

(2) Mitigation shall be required in the following order of preference:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps such as project redesign, relocation, or timing, to avoid or reduce impacts.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations.

(e) Compensating for the impact by replacing, enhancing, or providing substitute resources or environments.

(f) Monitoring the required compensation and taking remedial or corrective measures when necessary.

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

(a) The lost wetland provides minimal functions as determined by a site specific function assessment, and the proposed compensatory mitigation action(s) will provide equal or greater functions or will provide functions shown to be limiting within a watershed through a formal Washington State watershed assessment plan or protocol; or

(b) Out-of-kind replacement of wetland type or functions will best meet watershed goals formally identified by the city, such as replacement of historically diminished wetland types.

(4) Preference of mitigation actions. Methods to achieve compensation for wetland functions shall be approached in the following order of preference:

(a) Restoration (re-establishment and rehabilitation) of wetlands.

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

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

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

(a) There are no reasonable on-site or in sub-drainage basin opportunities (e.g., on-site options would require elimination of high-functioning upland habitat), or on-site and in sub-drainage basin opportunities do not have a high likelihood of success based on a determination of the capacity of the site to compensate for the impacts. Considerations should include: anticipated replacement ratios for wetland mitigation, buffer conditions and proposed widths, available water to maintain anticipated hydrogeomorphic classes of wetlands when restored, proposed flood storage capacity, and potential to mitigate riparian fish and wildlife impacts (such as connectivity);

(b) Off-site mitigation has a greater likelihood of providing equal or improved wetland functions than the impacted wetland; and

(c) Off-site locations shall be in the same sub-drainage basin unless:

(i) Established watershed goals for water quality, flood storage or conveyance, habitat, or other wetland functions have been established by the city and strongly justify location of mitigation at another site; or

(ii) Credits from a state-certified wetland mitigation bank are used as compensation and the use of credits is consistent with the terms of the bank's certification.

(d) The design for the compensatory mitigation project needs to be appropriate for its location (i.e., position in the landscape). Therefore, compensatory mitigation should not result in the creation, restoration, or enhancement of an atypical wetland. An atypical wetland refers to a compensation wetland (e.g., created or enhanced) that does not match the type of existing wetland that would be found in the geomorphic setting of the site (i.e., the water source(s) and hydroperiod proposed for the mitigation site are not typical for the geomorphic setting). Likewise, it should not provide exaggerated morphology or require a berm or other engineered structures to hold back water. For example, excavating a permanently inundated pond in an existing seasonally saturated or inundated wetland is one example of an enhancement project that could result in an atypical wetland. Another example would be excavating depressions in an existing wetland on a slope, which required the construction of berms to hold the water.

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

The city manager or designee may authorize a one-time temporary delay in completing construction or installation of the compensatory mitigation when the applicant provides a written explanation from a qualified wetland professional as to the rationale for the delay. An appropriate rationale would include identification of the environmental conditions that could produce a high probability of failure or significant construction difficulties (e.g., project delay lapses past a fisheries window; or installing plants

should be delayed until the dormant season to ensure greater survival of installed materials). The delay shall not create or perpetuate hazardous conditions or environmental damage or degradation, and the delay shall not be injurious to the health, safety, and general welfare of the public. The request for the temporary delay must include a written justification that documents the environmental constraints that preclude implementation of the compensatory mitigation plan. The justification must be verified and approved by the city.

(7) Mitigation ratios. The following ratios shall apply to creation or restoration that is in-kind, is on-site, is the same category, is timed prior to or concurrent with alteration, and has a high probability of success. The first number specifies the acreage of replacement wetlands and the second specifies the acreage of wetlands altered.

| <b>Wetland Mitigation Ratios</b> |                    |                       |                 |
|----------------------------------|--------------------|-----------------------|-----------------|
|                                  | <b>Enhancement</b> | <b>Rehabilitation</b> | <b>Creation</b> |
| Category I                       | 6:1                | 4.5:1                 | 3:1             |
| Category II                      | 3:1                | 2:1                   | 1.5:1           |
| Category III                     | 2:1                | 1.5:1                 | 1:1             |
| Category IV                      | 1.5:1              | 1:1                   | 1:1             |

(a) The mitigation ratio is the acreage required for compensatory mitigation divided by the acreage of impact.

(b) The ratios are for a concurrent compensatory mitigation project. If the impacts to a wetland are to be mitigated by using an approved and established mitigation bank, the rules and ratios applicable to the bank should be used.

(c) The ratios are based on the assumption that the category, based on *Wetland Ratings* Section 18.04.663 DMMC of this chapter, and hydrogeomorphic (HGM) class/subclass of the wetland proposed as compensation are the same as the category and HGM class/subclass of the wetland impacts.

(d) Ratios for projects in which the category and HGM class/subclass of wetlands proposed as compensation is not the same as that of the wetland impacts will be determined on a case-by-case basis using the recommended ratios as a starting point. The ratios could be higher in such cases.

(e) The ratio for using rehabilitation as compensation is 2 times that for using re-establishment or creation (R/C) (1 acre of R/C = 2 acres of rehabilitation). The ratio for using enhancement as compensation is 4 times that for using R/C (1 acre of R/C = 4 acres of enhancement).

(f) Re-establishment or creation (R/C) can be used in combination with rehabilitation or enhancement. For example, 1 acre of impact to a Category III wetland would require two acres of R/C. If an applicant provides 1 acre of R/C (i.e. replacing the lost acreage at a 1:1 ratio), the remaining 1 acre of R/C necessary to compensate for the impact could be substituted with 2 acres of rehabilitation or 4 acres of enhancement.

(g) Generally the use of enhancement alone as compensation is discouraged. Using enhancement in combination with the replacement of wetland area at a minimum of 1:1 through re-establishment or creation is preferred.

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

(a) Acceptable uses of preservation. The preservation of at-risk, high quality wetlands and habitat may be considered as part of an acceptable mitigation plan when the following criteria are met:

(i) Preservation is used as a form of compensation only after the standard sequencing of mitigation (avoid, minimize, and then compensate). See subsection (2) of this section;

(ii) Restoration (re-establishment and rehabilitation), creation, and enhancement opportunities have also been considered, and preservation is proposed by the applicant and approved by the permitting agencies as the best compensation option;

(iii) The preservation site is determined to be under imminent threat; that is, the site has the potential to experience a high rate of undesirable ecological change due to on-site or off-site activities that are not regulated (e.g., logging of forested wetlands). This potential includes permitted, planned, or likely actions;

(iv) The area proposed for preservation is of high quality or critical for the health of the watershed or basin due to its location. Some of the following features may be indicative of high quality sites:

a. Category I or II wetland rating;

b. Rare or irreplaceable wetland type (e.g., bogs, mature forested wetlands, estuaries) or aquatic habitat that is rare or a limited resource in the area;

c. Habitat for threatened or endangered species;

d. Provides biological and/or hydrological connectivity;

e. High regional or watershed importance (e.g., listed as priority site in a watershed or basin plan);

f. Large size with high species diversity (plants and/or animals) and/or high abundance of native species;

g. A site that is continuous with the head of a watershed, or with a lake or pond in an upper watershed that significantly improves outflow hydrology and water quality.

(b) Preservation in combination with other forms of compensation. Using preservation as compensation is acceptable when done in combination with restoration, creation, or enhancement, provided that a minimum of 1:1 acreage replacement is provided by reestablishment or creation and the criteria below are met:

(i) All criteria listed in (8)(a) are met.

(ii) The impact area is small and/or impacts are occurring to a low functioning system (Category III or IV wetland);

(iii) Preservation of a high-quality system occurs in the same watershed or basin as the wetland impact;

(iv) Preservation sites include buffer areas adequate to protect the habitat and its functions from encroachment and degradation; and

(v) Mitigation ratios for preservation in combination with other forms of mitigation shall range from 10:1 to 20:1, as determined on a case-by-case basis, depending on the quality of the wetlands being impacted and the quality of the wetlands being preserved.

(c) Preservation as the sole means of compensation for wetland impacts. Preservation alone shall only be used as compensatory mitigation in exceptional circumstances. Preservation alone shall not apply if impacts are occurring to functions that must be replaced on site, such as flood storage or water quality treatment that need to be replicated by water quality measures implemented within the project limits. Preservation of at-risk, high-quality wetlands and habitat (as defined above) may be considered as the sole means of compensation for wetland impacts when the following criteria are met:

(i) All criteria listed in (8)(a) and (8)(b) are met;

(ii) There are no adverse impacts to habitat for fish and species listed as endangered and threatened;

(iii) There is no net loss of habitat functions within the watershed or basin;

(iv) Higher mitigation ratios are applied. Mitigation ratios for preservation as the sole means of mitigation shall generally start at 20:1. Specific ratios should depend upon the significance of the preservation project and the quality of the wetland resources lost.

#### (9) Wetland Mitigation Banks.

(a) Credits from a wetland mitigation bank may be approved for use as compensation for unavoidable impacts to wetlands when:

(i) The bank is certified under Chapter 173-700 WAC;

(ii) The city manager or designee determines that the wetland mitigation bank provides appropriate compensation for the authorized impacts; and

(iii) The proposed use of credits is consistent with the terms and conditions of the bank's certification.

(b) Replacement ratios for projects using bank credits shall be consistent with replacement ratios specified in the bank's certification.

(c) Credits from a certified wetland mitigation bank may be used to compensate for impacts located within the service area specified in the bank's certification. In some cases, the service area of the bank may include portions of more than one adjacent drainage basin for specific wetland functions.

(10) Mitigation Plan Requirements. When mitigation is required, the applicant shall submit for approval a mitigation plan prepared by a qualified scientist(s) following procedures set forth in the state Department of Ecology Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals, 2004, or as revised.

(11) Final Approval. The city manager or designee shall grant final approval of a completed compensation project if the final report of the project mitigation plan satisfactorily documents that the area has achieved all requirements of DMMC 18.86.107 through 18.86.109. [Ord. \_\_\_\_\_.]

### **City Council Recommendation:**

## ***Buffers and Development Standards for Streams***

**Status:** Existing stream protection provided by the DMMC is in two categories: "Significant" streams (Types 1, 2, 3) have 100-ft buffers, while "Important" streams (Type 4, 5) have 35-ft buffers. Under the Forest Practices Board stream typing system, "Significant" corresponds to stream Types S (shorelines of the state) and F (support/potential to support salmonids), and "Important" corresponds to Types Np (perennial) and Ni (seasonal/ephemeral). Mapped Type U streams are most likely non-fish bearing, and would have a 35-ft buffer (Table 4).

**Table 4. City of Des Moines streams as mapped by the State Forest Practices Board.**

| <b>Stream (North to South)</b>  | <b>Permanent DNR Stream Type</b> | <b>Current Buffer (ft)</b>            |
|---------------------------------|----------------------------------|---------------------------------------|
| <b>Des Moines Creek</b>         | F                                | 100                                   |
| <b>Massey Creek</b>             |                                  |                                       |
| Main Stem                       | F, N                             | 100 (type F reach), 35 (type N reach) |
| South Fork                      | F, N                             |                                       |
| North Fork (Barnes Creek)       | U                                | 100, 35<br>likely 35                  |
| <b>Unnamed Creek 1 (Zenith)</b> | N                                | 35                                    |
| <b>McSorley Creek</b>           |                                  |                                       |
| Main Stem                       | F                                | 100                                   |
| Small Tributaries               | N                                | 35                                    |
| South Fork                      | F                                | 100                                   |
| North Fork                      | N, U                             | 35, likely 35                         |
| <b>Unnamed Creek 2</b>          | N                                | 35                                    |
| <b>Unnamed Creek 3</b>          | N                                | 35                                    |
| <b>Woodmont Creek</b>           |                                  |                                       |
| Lower Creek                     | F                                | 100                                   |
| Upper Creek                     | N                                | 35                                    |
| <b>Unnamed Creek 4</b>          | U                                | likely 35                             |
| <b>Redondo Creek</b>            |                                  |                                       |
| Main Stem                       | F                                | 100                                   |
| Tributaries                     | N, U                             | 35, likely 35                         |
| <b>Cold Creek</b>               |                                  |                                       |
| Mainstem                        | F                                | 100                                   |
| Tributary                       | U                                | likely 35                             |

Because streams are not regulated technically as critical areas, State BAS guidance (CTED et al. 2003) does not specifically address buffer function and effective widths. However, King County reviewed this issue during their 2004 BAS review and CAO update (King County, 2004). Buffer functions considered in that document included sediment removal/erosion control, pollutant removal, large woody debris recruitment, water temperature protection, wildlife habitat, microclimate protection, organic litter production, and bank stabilization.

The buffers adopted by King County were dependent on stream type, urban vs. rural area, and whether a specific stream was considered highly functioning and therefore eligible for additional protections. King County's landscape is developed far less than the City of Des Moines', with large areas of completely undeveloped land, therefore only the urban buffer requirements are comparable to the City (Table 5). Further, according to King County critical areas maps, watersheds in the vast majority of western King County, including the entire City of Des Moines,

are not considered to be “high quality” as used in Table 5, so only the standard buffer recommendations would apply. Note that stream type O<sup>1</sup> would not be used by Des Moines as it is not part of the Forest Practices Board stream typing system.

**Table 5. King County CAO Aquatic Environments (Stream) Buffers for Urban Environments.**

| Stream Type    | Buffer, standard (ft) | Buffer, high quality (ft) |
|----------------|-----------------------|---------------------------|
| S              | 115                   | 165                       |
| F              | 115                   | 165                       |
| N              | 65                    | 65                        |
| O <sup>1</sup> | 25                    | 25                        |

<sup>1</sup> Aquatic environment with no surface water connection to fish bearing streams.

**BAS Recommendation:** The King County stream buffers would be reasonable for the City to adopt. The current City stream buffer widths are below or at the low-end of effective widths for various buffer functions as reviewed by King County during its Critical Areas Ordinance update (King County 2004), and below the buffer widths adopted by the County for urban areas. Grette Associates clarified that only the urban buffer requirements are applicable to the City.

In lieu of adopting the King County stream buffers, the City could evaluate their streams on a stream-by-stream and reach-by-reach basis. Another option would be to research work done in other communities to determine measures that could be adapted for the City of Des Moines. Both of these options are time and cost intensive.

**Planning Agency Recommendation:**

Planning Agency recommends that staff include in the drafting of the Critical Areas Ordinance, the standard stream buffers established in the King County Critical Area Ordinance (2004) Aquatic Environments (Stream) Buffers for Urban Environments (Table 6).

**Table 6. King County CAO Aquatic Environments Standard Stream Buffers for Urban Environments.**

| Stream Type | Buffer, standard (ft) |
|-------------|-----------------------|
| S           | 115                   |
| F           | 115                   |
| N           | 65                    |

**Council Environment Committee Discussion and Recommendation:**

Environment committee requested information that illustrated how the City’s existing stream buffers compare to proposed buffers, and methods and criteria for applying buffer standards that provide flexibility for property owners and developers. This information was provided at the 10/26/06 Environment Committee meeting; however, time did not allow for discussion of this topic.

On 11/09/06, the committee discussed the recommended buffer widths and recommended carrying forward to full Council for consideration.

## Staff and Consultant Recommended Code Amendments

Staff has prepared proposed code amendments for stream development standards as shown below in strikeout and underline form. Highlighted areas provide guidance on proposed amendments related to new sections, reorganization of sections and Environment Committee and Staff recommendations:

### Edits to DMMC 18.86

#### 18.86.XXX - Streams – Development standards.

If a stream is located on or contiguous to the site of a development proposal, all activities on the site shall be in compliance with the following requirements and restrictions: **Note: From 18.86.070 with reference to wetlands deleted.**

(1) Stream buffers. The following standard buffers shall be measured from the ordinary high water mark or from the top of the bank if the ordinary high water mark cannot be identified:

| <u>Stream Type</u>    | <u>Buffer Width (feet)</u> |
|-----------------------|----------------------------|
| <u>Types S or F</u>   | <u>115</u>                 |
| <u>Types Np or Ns</u> | <u>65</u>                  |

Type S: streams inventoried as “shorelines of the state” under the City’s shoreline master program. None of these are currently present within the City.

Type F: streams that are salmonids bearing or have the potential to support salmonids.

Type Np: streams that are perennial during a year of normal rainfall and do not have the potential to support salmonids use.

Type Ns: streams that are seasonal or ephemeral during a year of normal rainfall and do not have the potential to support salmonids use.

(a) Where a legally established and constructed street transects a stream buffer, the department may approve a modification of the standard buffer width to the edge of the street if the isolated part of the buffer does not provide additional protection of the stream and provides insignificant biological, geological or hydrological buffer functions relating to the stream. If the resulting buffer distance is less than 50 percent of the standard buffer, no further reduction shall be allowed.

(b) Where a buffer has been previously established through City or county development review, and is permanently recorded on title or placed within a separate tract, the buffer shall be as previously established, provided it is at least 50 percent of the required standard buffer distance.

(c) Any stream relocated or altered as part of approved mitigation measures shall have at least the minimum buffer required for the category of stream involved;

(d) If the stream buffer includes a steep slope hazard area or landslide hazard area, the stream buffer width is the greater of either the stream buffer in this section or twenty-five feet beyond the top of the hazard area. **Note: ORIGINAL TEXT from DMMC 18.86.070(1)(d): All buffers shall be measured from the top of the upper bank of the stream as identified in the field.)**

(e) Any stream adjoined by a riparian wetland or other contiguous critical area shall have the buffer required for the stream type involved or the buffer that applies to the wetland or other critical area, whichever is greater.

(2) Increased stream buffer. The city manager or designee shall require increased buffer widths in accordance with the recommendations of a qualified biologist and the best available science on a case-by-case basis when a larger buffer is necessary to protect stream functions and values based on site-specific characteristics.

This determination shall be based on one or more of the following criteria:

(a) A larger buffer is needed to protect other critical areas;

(b) The buffer or adjacent uplands has a slope greater than thirty percent (30%) or is susceptible to erosion and standard erosion-control measures will not prevent adverse impacts to the wetland.

(c) In cases where additional buffers are not feasible, the city manager or designee may require the applicant to undertake alternative on-site or off-site mitigation measures, including but not limited to a financial contribution to projects or programs which seek to improve environmental quality within the same watershed.

(3) Pursuant to RCW 35.21.180, the King County, Washington "Surface Water Design Manual," including all subsequent revisions, is adopted by reference as the "Surface Water Design Manual for the City of Des Moines (DMMC 18.86.130)."

(4) Building Setback Lines. A building setback line of 10 feet is required from the edge of any stream buffer. Minor structural intrusions into the area of the building setback line may be allowed if the city manager or designee determines that such intrusions will not negatively impact the critical area. [Ord. \_\_\_\_\_; Ord. 925 § 18, 1992; Ord. 853 § 7(a), 1990.] [NOTE: From 18.86.070(4) removed reference to wetland buffers].

#### **18.86.102 Stream crossings. [Note: Recommend consolidating stream standards into one or consecutive sections.]**

Stream crossings, whether for access or utility purposes, shall be avoided to the extent possible. The ~~community development director~~ city manager or designee may approve stream crossings only when he/she determines that there are no practicable or reasonable alternatives, and when the proposal complies with all of the following criteria:

(1) Bridges are required for streams which support salmonid; and

(2) All crossings using culverts shall use superspan or oversize culverts; and

(3) All construction and installation crossings shall comply with timing restrictions set by federal and state permit processes, generally during summer low flow; be constructed and installed during summer low flow between June 15th and September 15th; and

(4) Crossings shall not occur in salmonid spawning areas unless no other feasible crossing site exists; and

(5) Bridge piers or abutments shall not be placed in either the floodway or between the ordinary high water marks unless no other feasible alternative placement exists; and

(6) Crossings shall not diminish flood-carrying capacity; and

(7) Crossings shall provide for maintenance of culverts, bridges, and utilities; and

(8) Crossings shall serve multiple properties whenever possible; and

(9) Crossings shall comply with all applicable local, state, and federal laws. [Ord. \_\_\_\_\_; Ord. 925 § 24, 1992; Ord. 853 § 9(f), 1990.]

#### **18.86.103 Stream relocation and dredging.**

Stream relocation and dredging are strongly discouraged and shall only occur to improve hydrologic, hydraulic, and fish and wildlife habitat functions. The ~~community development director~~ city manager or designee may approve stream relocation and dredging only when he/she determines that there are no practicable or reasonable alternatives, and when the proposal complies with all of the following criteria:

- (1) Relocation and dredging shall follow all applicable local, state, and federal laws and receive approvals from the agencies administering such laws;
- (2) Dredging of any stream shall follow the standards for dredging set forth in the shoreline master program;
- (3) A mitigation plan with a contingency plan shall be prepared by a licensed professional pursuant to section **18.86.xxx (Streams -- Mitigation Requirements)** and shall include the following provisions:
  - (a) Identification of long-term goals (25 years) and objectives for restoration of the stream channel and riparian areas;
  - (b) A three-year to five-year monitoring program to measure success of the restoration;
  - (c) Mitigation shall be designed to accommodate a 100-year storm event. [Ord. \_\_\_\_\_: Ord. 925 § 25, 1992: Ord. 853 § 9(g), 1990.]

**18.86.104 Stream channel, stream bank, bluff, or shore stabilization.**

The ~~community development director~~ city manager or designee may approve stabilization of stream channels, stream banks, bluffs, or shorelines when he/she determines that the proposed stabilization complies with Washington Department of Fish and Wildlife *Integrated Streambank Protection Guidelines (2003)* and the following criteria as applicable:

- (1) Naturally occurring movement threatens existing structures, public improvements, unique natural resources, or the only feasible access to property.
- (2) In the case of streams, stabilization results in improved fish and wildlife habitat, flood control, and improved water quality.
- (3) The preferred methodology for stream channel and bank stabilization is bioengineering or some combination of bioengineering and more traditional structural solutions. Bioengineering involves use of plant materials to stabilize eroding stream channels and banks.
- (4) The preferred methodology for bluff and shore stabilization is naturalistic shoreline protection measures such as creation of beaches that absorb and dissipate wave energy. Bluff and shore stabilization shall follow the standards of the shoreline master program for the construction of any stabilization device.
- (5) Relocation and dredging shall follow all applicable local, state, and federal laws and receive approvals from the agencies administering such laws. [Ord. \_\_\_\_\_: Ord. 925 § 26, 1992: Ord. 853 § 9(h), 1990.]

**18.86.107 Streams – Mitigation requirements.**

~~(1) Compensatory mitigation for alterations to streams shall achieve equivalent or greater biologic functions. For any allowable development exception provided under this section the associated impacts will be considered adverse and unavoidable. The following restoration and compensation mitigation measures to minimize and reduce impacts shall be required:~~

~~(1) Restoration. Restoration is required when the functions and values of environmentally sensitive areas have been degraded from alteration prior to development approval. All restoration shall follow an approved mitigation plan pursuant to subsection (3) of this section and meet the following minimum performance standards:~~

~~(a) On-site and In-kind for Wetlands and Streams. (i) For wetlands, the applicant shall create an area of wetland on site and adjacent to the wetland edge of equal to greater biological functions size, functions, and values. Unless otherwise specified by the community development director, such mitigation shall be provided pursuant to the following formulae:~~

~~Class 1 and 2 wetlands on a 2:1 type and acreage basis.~~

~~Class 3 wetlands on a 1:1 type and acreage basis.~~

~~(ii) For streams, the applicant shall maintain or improve stream channel dimensions, including depth, length, and gradient; restore or improve native vegetation and fish and wildlife habitat; and create an equivalent or improved channel bed, biofiltration, and meandering. Unless otherwise specified by the community development director city manager or designee, such mitigation to replace and enhance stream elements such as pools, riffles, and spawning gravel shall be provided on a relative 2:1 basis.~~

(b) Off-site and In-kind for ~~Wetlands and Streams~~. When environmental information demonstrates that greater functions and values will be achieved, off-site compensation of greater size, functions, and values may be approved if the compensation project is within the same subwatershed as the wetland or stream to be altered. Unless otherwise specified by the ~~community development director~~ city manager or designee, such mitigation shall be provided pursuant to the ratios specified in subsections (1)(a)(i) and (1)(a)(ii) of this section.

(c) Conditions Preceding ~~Wetlands and Stream Alteration~~. In the case of the exceptions of DMMC 18.86.094(3), the following conditions shall precede any ~~wetland or stream alteration~~ approved pursuant to this section:

(i) A mitigation plan for the compensation project shall be submitted by the applicant and approved by the ~~community development director~~ city manager or designee;

(ii) The compensation project shall be fully implemented following the requirements of the approved mitigation plan; and

(iii) A final report shall be submitted following the specified growing seasons documenting that all requirements of a mitigation plan have been fully achieved. The city may postpone or limit development, require bonds pursuant to DMMC 18.86.120, or use other appropriate techniques to ensure the success of the mitigation plan.

(d) The ~~community development director~~ city manager or designee may postpone the issuance of development permits for one or more growing seasons until the success or viability of the approved mitigation measures can be demonstrated by the applicant.

(e) Substitute Fees. In cases where the applicant demonstrates to the satisfaction of the ~~community development director~~ city manager or designee that a suitable compensation site does not exist, the ~~community development director~~ city manager or designee may allow the applicant to make a financial contribution to a water quality project or program performing critical areas enhancement, restoration, or mitigation. The project or program must improve environmental quality within the same watershed as the altered wetland or stream. The amount of the fee shall be determined by the ~~community development director~~ city manager or designee and shall be equal to the cost of mitigating the impact of the wetland or stream alteration.

(2) Deleted by amendment by Ord. 925.

(3) Mitigation Plans. All restoration and compensation projects shall follow a mitigation plan prepared by qualified scientists containing the following components:

(a) Baseline Information. Quantitative data shall be collected and synthesized for both the impacted critical area and the proposed mitigation site, if different from the impacted critical area, following procedures set forth by the ~~community development director~~ city manager or designee.

(b) Environmental Goals and Objectives. Goals and objectives describing the purposes of the mitigation measures shall be provided, including a description of site selection criteria, identification of target evaluation species and resource functions.

(c) Performance Standards. Specific criteria for fulfilling environmental goals and objectives, and for beginning remedial action or contingency measures shall be provided, including water quality standards, species richness and diversity targets, habitat diversity indices, or other ecological, geological, or hydrological criteria.

(d) Detailed Construction Plan. Written specifications and descriptions of mitigation techniques shall be provided, including the proposed construction sequence, accompanied by detailed site diagrams and blueprints that are an integral requirement of any development proposal.

(e) Monitoring Program. A program outlining the approach for assessing a completed project shall be provided, including descriptions of proposed experimental and control site survey or sampling techniques. A protocol shall be included outlining how the monitoring data will be evaluated by agencies that are tracking the progress of the mitigation project. A report shall be submitted at least twice yearly documenting milestones, successes, problems, and contingency actions of the restoration or compensation project. The ~~community development director~~ city manager or designee shall require that the applicant monitor the compensation or restoration project for a minimum of five years.

(f) Contingency Plan. A plan shall be provided fully identifying potential courses of action, and any corrective measures to be taken when monitoring or evaluation indicates project performance standards are not being met.

(g) Performance and Maintenance Securities. Securities ensuring fulfillment of the mitigation project, monitoring program, and any contingency measures shall be posted pursuant to DMMC 18.86.120.

(4) Final Approval. The ~~community development director~~ city manager or designee shall grant final approval of a completed restoration or compensation project if the final report of the project mitigation plan satisfactorily documents that the area has achieved all requirements of DMMC 18.86.092 through 18.86.107. [Ord. \_\_\_\_\_; Ord. 925 § 27, 1992; Ord. 853 § 9(k), 1990.]

### **City Council Recommendation:**

***Should fish and wildlife habitat conservation areas, buffers and disturbance limitations and map be established?***

**Status:** During Spring 2006, Staff completed a review of critical areas regulations that included review of the Development standards – Fish and wildlife habitat conservation areas (FWHCAs) – Buffers and disturbance limitations (DMMC 18.86.085) and recommendations from the Best Available Science (BAS) review by Grette Associates (Grette). The following Code amendments related to FWHCAs were made:

- Added provisions to DMMC 18.86.020 that listed data sources for identifying and mapping critical fish and wildlife habitats.
- Added provisions to DMMC 18.86.085 that lists requirements for critical areas studies.

The City currently does not have a map of fish and wildlife conservations areas, but the definition suggests that at a minimum, FWHCAs will include all polygons and habitat points in the WDFW Priority Habitats and Species (PHS) maps. The critical areas inventory completed for the City (September 2006) indicates that these areas include:

**City of Des Moines non-shoreline FWHCA as mapped by the WDFW PHS program**

| <b>Drainage Basin</b> | <b>PHS Type</b>                   | <b>Description</b>                                     | <b>General Description</b>   |
|-----------------------|-----------------------------------|--|--|
| Des Moines            | Priority Wildlife Heritage Point  | Great Blue Heron Colony                                | 7 Nests in big-leaf maple on edge of Des Moines Beach Park, about 15 feet from a garage of 5th Ave S, off 222nd. One incubating, one standing in nest. |
| Des Moines            | Urban Natural Open Space          | City/County Parks (South Seattle)                      | Parks in the Burien/Des Moines Area. Most areas of semi-forested and provide habitats for more common species.   |
| Des Moines            | Urban Natural Open Space          | City/County Parks (South Seattle)                      | Parks in the Burien/Des Moines Area. Most areas of semi-forested and provide habitats for more common species.   |
| Des Moines            | Priority Anadromous Fish Presence | Fall Chum  |  |
| Des Moines            | Priority Anadromous Fish Presence | Coho Salmon  |  |
| Des Moines            | Priority Resident Fish Presence   | Resident Cutthroat                                     |  |
| Massey                | None                              | Presence of PHS is unknown or the area was not mapped. |  |
| Massey                | Priority Resident Fish Presence   | Resident Cutthroat                                     |  |
| McSorley              | Priority Seabird Colony           | Poverty Bay (Saltwater State Park)                     | 7 breeding Pigeon Guillemot  |

| <b>Drainage Basin</b> | <b>PHS Type</b>                   | <b>Description</b>                                     | <b>General Description</b>  |
|-----------------------|-----------------------------------|--|---|
| McSorley              | Urban Natural Open Space          | Dash Point/Poverty Bay Open Space Areas                | Steep slopes and drainage ravines along Puget Sound   |
| McSorley              | Urban Natural Open Space          | SW King County/Northwest Pierce County                 | Parkland areas in King and Pierce Counties. Some of these area are relatively undeveloped and provide excellent refugia and disperian [sic] habitat for a broad array of spp. |
| McSorley              | Urban Natural Open Space          | Dash Point/Poverty Bay Open Space Areas                | Steep slopes and drainage ravines along Puget Sound   |
| Woodmont              | Urban Natural Open Space          | Dash Point/Poverty Bay Open Space Areas                | Steep slopes and drainage ravines along Puget Sound   |
| Woodmont              | None                              | Presence of PHS is unknown or the area was not mapped. |   |
| Woodmont              | Wetlands                          | Redondo area wetlands, SW King County.                 | Several isolated wetlands along coastal SW King County.   |
| Redondo               | Wetlands                          | Redondo area wetlands, SW King County.                 | Several isolated wetlands along coastal SW King County.   |
| Redondo               | Urban Natural Open Space          | Dash Point/Poverty Bay Open Space Areas                | Steep slopes and drainage ravines along Puget Sound   |
| Redondo               | None                              | Presence of PHS is unknown or the area was not mapped. |   |
| Cold Creek            | Urban Natural Open Space          | Dash Point/Poverty Bay Open Space Areas                | Steep slopes and drainage ravines along Puget Sound   |
| Cold Creek            | Priority Anadromous Fish Presence | Coho Salmon  |   |
| Cold Creek            | Priority Resident Fish Presence   | Resident Cutthroat                                     |   |

Source: *City of Des Moines Critical Areas Inventory – Wetland, Stream and Habitat Elements* (Grette Associates, September 2006)

The draft maps associated with current draft Shoreline Master Program also indicate nearly continuous eelgrass areas along the shoreline (DNR ShoreZone data).

Natural resource information in the basin and stormwater plans used by the City also indicate presence of rabbit, chipmunk, squirrel, weasel, raccoon, red fox, river otter, skunk, muskrat, various small mammals, songbirds, wading birds, bald eagles, kingfishers, various small

amphibians, pumpkin seed sunfish, largemouth bass, and various sculpin (Massey Creek, Normandy Park, Des Moines Creek, North Fork McSorley).

Staff directed the City's GIS consultant to prepare a critical areas map denoting FWHCAs. This information will likely be combined with mapped information showing wetlands and streams.

#### *BAS Recommendation:*

- Add development standards that codify protections for particularly important habitat areas. For instance, specific FWHCA designations under subsection (2) of DMMC 18.86.085 might be appropriate to ensure conservation of open space wildlife corridors.
- Consider assigning FWHCA status to those areas identified in the *City of Des Moines Critical Areas Inventory – Wetland, Stream and Habitat Elements* (Grette Associates, September 2006).
- Create a map of all FWHCA documented within the City, and accompanying narrative documentation. A GIS-based map should include properties that can be queried at least including habitat type, associated species, and date and source of information and location of source data if it is in a published report.
- Consider conducting or encouraging WDFW to conduct spawning surveys in City streams, at least Massey Creek.

#### **Planning Agency Recommendation:**

The Planning Agency commented on whether proposed development standards for FWHCAs would make it more problematic for developers. Staff clarified that the proposed development standards are intended to implement protection measures established through state law and guidelines. Including the information in the Code helps to provide clarity and predictability for developers.

The Planning Agency recommends to Council that staff include in the drafting of the Critical Areas Ordinance, the designation of fish and wildlife habitat conservation areas (FWHCAs) status to the areas within the city as identified in the *City of Des Moines Critical Areas Inventory – Wetland, Stream and Habitat Elements* (Grette Associates, September 2006). Staff clarified that this recommendation would include development standards related to protection of FWHCAs.

#### **Council Environment Committee Discussion and Recommendation:**

At the November 30, 2006 meeting, the Environment Committee directed staff to clarify whether Federal or State law pre-empts the City's local authority to apply reasonable use exceptions. Staff is awaiting input from WDFW staff.

#### **Staff and Consultant Recommended Code Amendments:**

The following recommended code amendments are based on the BAS recommendations identified above, feedback from the Planning Agency, staff and consultants AHBL and Grette Associates and include requirements for specific habitats related to endangered, threatened, and sensitive species, bald eagles and anadromous fish:

## **Edits to DMMC 18.04**

### **18.04.287 Fish and wildlife habitat conservation areas.**

“Fish and wildlife habitat conservation” means land management for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created. Fish and wildlife habitat conservation areas include:

- (1) Areas with which state or federally designated endangered, threatened, and sensitive species have a primary association;
- (2) State priority habitats and areas associated with state priority species;
- (3) Habitats and species of local importance;
- ~~(4) All public and private tidelands or bedlands suitable for commercial or recreational shellfish harvest;~~ Commercial and recreational shellfish areas;
- ~~(45)~~ Kelp and eelgrass beds identified by the Washington Department of Natural Resources;
- ~~(56)~~ Herring and smelt spawning areas as outlined in chapter 220-110 WAC and the Puget Sound Environmental Atlas as presently constituted or as may be subsequently amended;
- ~~(67)~~ Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat;
- ~~(78)~~ Waters of the state as defined in Title 222 WAC;
- ~~(89)~~ Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity; ~~and~~
- ~~(910)~~ State natural area preserves and natural resource conservation areas as defined, established, and managed by the Washington Department of Natural Resources;
- (11) Areas of rare plant species and high quality ecosystems as identified by the Washington State Department of Natural Resources through the Natural Heritage Program; and
- (12) Land useful or essential for preserving connections between habitat blocks and open spaces as determined by the community development director. [Ord. : Ord.925 § 8, 1992.]

## **Edits to DMMC 18.86**

### **18.86.085 Fish and wildlife habitat conservation areas – Development standards– Fish and wildlife habitat conservation areas – Buffers and disturbance limitations.**

(1) Buffers and disturbance limitations. If a fish and/or wildlife habitat conservation area is located on or adjacent to a development site, the following provisions shall apply:

(a) A habitat conservation area may be altered only if the proposed alteration of the habitat or the mitigation proposed does not degrade the quantitative and qualitative functions and values of the habitat.

~~(1)(b)~~ The ~~community development director~~ city manager or designee may require native vegetation buffer areas when special environmental studies indicate the necessity for such buffers in order to achieve the purposes identified in DMMC 18.86.020.

~~(2)(c)~~ In cases where the ~~community development director~~ city manager or designee determines that adequate buffers are not feasible, and that the impact upon the habitat conservation area may be severe, the ~~community development director~~ city manager or designee may prohibit development of the subject habitat conservation and buffer area.

~~(3)(d)~~ In cases where the ~~community development director~~ city manager or designee determines that adequate buffers are not feasible, but that the environmental impacts associated with the proposal would not be so severe as to warrant a prohibition of all development, the applicant shall undertake alternative on-site or off-site mitigation measures specified by the ~~community development director~~ city manager or designee. Alternative mitigation measures include, but are not limited to, a financial contribution to projects or programs which seek to improve environmental quality within the same fish and wildlife habitat conservation area. Such financial contribution shall be of an amount sufficient to fund mitigation measures commensurate with the adverse impact being mitigated.

(e) Any approval of alterations or impacts to a habitat conservation area shall be supported by the best available science such as the Washington Department of Fish and Wildlife management recommendations for Priority Habitats and Species.

~~(4) In order to minimize adverse impacts related to noise, fish and wildlife habitat conservation areas shall be protected from exterior noise exposure levels that exceed 55 Ldn (dBA), or the Ldn in existence on April 24, 1995, whichever is greater. A reduction in the exterior noise level (greater than 55 Ldn) that existed as of April 24, 1995 shall become the new maximum exterior noise level. (Deleted per Environment Committee Recommendation).~~

~~(5)(f)~~ When appropriate due to the type of habitat or species present or the project area conditions, the ~~community development director~~ city manager or designee may require a critical areas study. If the habitat conservation area is also classified as a stream, lake, pond or a wetland, then the stream, lake, pond or wetland protection standards shall apply and habitat management shall be addressed as part of the stream, lake, pond or wetland review, provided that the City may impose additional requirements when necessary to provide for protection of the habitat conservation areas consistent with this chapter. The ~~community development director~~ city manager or designee may require the following site and proposal related information with the critical areas study:

~~(a)~~(i) Identification of any federal or state listed endangered, threatened, sensitive or candidate species that have a primary association with habitat on or adjacent to the project area, and an assessment of potential project impacts to the species;

~~(b)~~(ii) A discussion of any federal or state management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the project area;

~~(c)~~(iii) A discussion of any ongoing management practices that will protect habitat after the project site has been developed, including any proposed monitoring, maintenance, and adaptive management programs; and

~~(d)~~(iv) When appropriate due to the type of habitat or species present or the project area conditions, the ~~community development director~~ city manager or designee may also require the habitat management plan to include an evaluation by the state Department of Fish and Wildlife, local Native American Indian Tribe, or other qualified professional regarding the applicant's analysis and the effectiveness of any proposed mitigating measures or programs, to include any recommendations as appropriate.

(2) Specific habitats. If a use, activity or development is within, adjacent to, or likely to affect one or more specific fish and/or wildlife habitat conservation areas, the following provisions shall apply (Note: this and following subsections could stand as a separate section following DMMC 18.86.085):

(a) Endangered, threatened, and sensitive species.

(i) No development shall be allowed within a habitat conservation area or buffer with which state or federally endangered, threatened, or sensitive species have a primary association, except that which is provided for by a management plan established by the Washington Department of Fish and Wildlife or applicable state or federal agency.

(ii) Whenever activities are proposed adjacent to a habitat conservation area with which state or federally endangered, threatened, or sensitive species have a primary association, such area shall be protected through the application of protection measures in accordance with a special environmental study prepared by a qualified professional and approved by the city. Approval for alteration of land adjacent to the habitat conservation area or its buffer shall not occur prior to consultation with the Washington Department of Fish and Wildlife for animal species, the Washington State Department of Natural Resources for plant species, and other appropriate federal or state agencies.

(iii) Bald eagle habitat shall be protected pursuant to the Washington State Bald Eagle Protection Rules (WAC 232-12-292).

(b) Anadromous fish.

(i) All activities, uses, and alterations proposed to be located in water bodies used by anadromous fish or in areas that affect such water bodies shall give special consideration to the

preservation and enhancement of anadromous fish habitat, including, but not limited to, adhering to the following standards:

a. Activities shall be timed to occur only during the allowable work window as designated by the Washington Department of Fish and Wildlife for the applicable species;

b. An alternative alignment or location for the activity is not feasible;

c. The activity is designed so that it will not degrade the functions or values of the fish habitat or other critical areas;

d. Shoreline erosion control measures shall be designed to use bioengineering methods or soft armoring techniques, according to an approved special environmental study, and

e. Any impacts to the functions or values of the habitat conservation area are mitigated in accordance with an approved special environmental study.

(ii) Structures that prevent the migration of salmonids shall not be allowed in the portion of water bodies currently or historically used by anadromous fish. Fish bypass facilities shall be provided that allow migrating downstream from being trapped or harmed.

(iii) Filling of aquatic habitats, when authorized by the City of Des Moines Shoreline Master Program shall not adversely impact anadromous fish or habitat or shall mitigate any unavoidable impacts and shall only be allowed for a water-dependent use. [Ord. \_\_\_\_\_; Ord. 1378, §17, 2006; Ord. 1164 § 1 (part), 1996; Ord. 1160 § 3 (part), 1995; Ord. 1130 § 5, 1995; Ord. 925 § 21, 1992.]

## **City Council Recommendation:**

## ***Should development standards for geologically hazardous areas be expanded?***

***BAS Recommendation: Development standards (DMMC 18.86.077, 18.86.078, 18.86.079, 18.86.080)***

*DMMC 18.86.077 Hillsides of 15 percent slope and greater. AESI BAS Report, Page 6* recommends that a section be added that discusses drainage and control of site runoff in order to maintain the stability of the slope.

*DMMC 18.86.078 Seismic hazard areas.* This section discusses development on slopes adjacent to seismic hazard areas but does not discuss development within seismic hazard areas that are prone to liquefaction, which are the seismic hazard areas shown on the hazard inventory map (Geologically Hazardous Areas, Figure 4-5). AESI BAS Report recommends that a section be added to discuss development requirements in liquefaction prone areas.

*DMMC 18.86.079 Landslide hazard areas.* This section discusses what conditions must be met to allow construction on or near a landslide hazard area but does not provide prescriptive buffer widths from the top and bottom of landslide hazard areas. AESI BAS Report recommends that a section be added that prescribes top and bottom of slope set back limits from landslide hazard areas and under what conditions these set backs may be reduced from the prescriptive values.

*DMMC 18.86.080 Erosion Hazard Areas.* This section indicates that land filling, grading and clearing activities in erosion hazard areas shall be limited to occurring between April 1st and October 31st. AESI BAS Report recommends that this section be expanded to include additional key elements. These key elements would regard: temporary erosion and sediment control plans; drainage requirements; allowance for a dry season grading extension if the site meets certain conditions, and perhaps others.

### **Planning Agency Recommendation:**

Planning Agency directed staff to include in the drafting of the Critical Areas Ordinance, modifications to development standards for geologically hazardous areas, consistent with recommendations provided in the *Best Available Science Review of Critical Aquifer Recharge, Geologic Hazard and Special Flood Hazard Areas* report prepared by Associated Earth Sciences, Inc. (AESI, 2005).

### **Council Environment Committee Recommendation:**

At the November 30, 2006 meeting, the Environment Committee recommended carrying forward for full Council discussion the recommended code amendments related to geologically hazardous areas.

### **Staff and Consultant Recommended Code Amendments**

Staff has prepared proposed code amendments for stream development standards as shown below in strikeout and underline form. Highlighted areas provide guidance on proposed amendments related to new sections, reorganization of sections and Environment Committee and Staff recommendations:

## **Edits to DMMC 18.04**

### **18.04.XXX Erosion hazard areas.**

“Erosion hazard areas” means at least those areas identified by the U.S. Department of Agriculture’s Natural Resources Conservation Service as having a “moderate to severe,” “severe,” or “very severe” rill and inter-rill erosion hazard. Erosion hazard areas are also those areas impacted by shore land and/or stream bank erosion and those areas within a river’s channel migration zone.

### **18.04.xxx Geologically hazardous areas.**

“Geologically hazardous areas” (GHA) means areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of citizens when incompatible development is sited in areas of significant hazard. Such incompatible development may not only place itself at risk, but also may increase the hazard to surrounding development and use. Areas susceptible to one or more of the following types of hazards shall be designated as a geologically hazardous area.

- (1) Erosion hazard;
- (2) Landslide hazard;
- (3) Seismic hazard; and
- (4) Other geological events including tsunamis, mass wasting, debris flows, rock falls, and differential settlement.

See also 18.04.XXX (Erosion hazard areas), 18.04.363, and 18.04.557 DMMC. [Ord. ]

### **18.04.363 Landslide hazard areas.**

“Landslide hazard areas” are those areas of the city ~~subject to a severe risk of landslide.~~ potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors. Example of these may include, but are not limited to the following:

(1) Areas of historic failures, such as:

\_\_\_\_\_ (a) Those areas delineated by the U.S. Department of Agriculture’s Natural Resources Conservation Service as having a “severe” limitation for building site development;

\_\_\_\_\_ (b) Those areas mapped by the Washington State Department of Ecology (Coastal Zone Atlas) or the Washington State Department of Natural Resources (slope stability mapping) as unstable (U or class 3), unstable old slides (UOS or class 4), or unstable recent slides (URS or class 5); or

\_\_\_\_\_ (c) Areas designated as quaternary slumps, earthflows, mudflows, lahars, or landslides on maps published by the U.S. Geological Survey or Washington State Department of Natural Resources;

The following areas are considered to be subject to landslide hazard:

- (1) Any area with a combination of:
  - (a) Slopes greater than 15 percent;
  - (b) Impermeable soils (usually silt and clay) frequently interbedded with granular permeable soils (usually sand and gravel); and
  - (c) Springs or ground water seepage.
- (2) Any area which has shown movement during the Holocene epoch (from 10,000 years ago to present) or which is underlain by mass wastage debris of that age.
- (3) Any area potentially unstable as a result of rapid stream incision, stream bank erosion, or undercutting by wave action.
- (4) Any area designated as Class III landslide hazard area by the “Map Showing Relative Slope Stability in Part of West-Central King County, Washington, Map I-852-A, U.S., Geological Survey Miscellaneous Geologic Investigations” as presently constituted or as may be subsequently amended.

(6) Slopes that are parallel or subparallel to planes of weakness (such as bedding planes, joint systems, and fault planes) in subsurface materials;

(7) Slopes having gradients steeper than eighty percent (80%) subject to rock fall during seismic shaking;

(8) Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding; and

(9) Any area with a slope of forty percent (40%) or steeper and with a vertical relief of ten (10) or more feet except areas composed of consolidated rock. A slope is delineated by establishing its toe and top and is measured by averaging the inclination over at least ten (10) feet of vertical relief. [Ord.]

**18.04.557 Seismic hazard areas.**

“Seismic hazard areas” means those areas subject to severe risk of earthquake damage as a result of seismically induced ground shaking, slope failure, settlement, or soil liquefaction, lateral spreading, or surface faulting. One indicator of potential for future earthquake damage is a record of earthquake damage in the past. Ground shaking is the primary cause of earthquake damage in Washington. The strength of ground shaking is affected primarily by:

- (1) The magnitude of an earthquake;
- (2) The distance from the source of an earthquake;
- (3) The type of thickness of geologic materials at the surface; and
- (4) The type of subsurface geologic structure.

~~These conditions~~Settlement and soil liquefaction conditions occur in areas underlain by cohesionless, loose, or soft-saturated soils of low density usually in association with a shallow ground water table. Known seismic hazard areas are mapped in the Washington State Department of Natural Resources, Geologic Map GM-41, Liquefaction Susceptibility for the Des Moines and Renton 7.5-minute Quadrangles, Washington, and Washington State Department of Natural Resources, Geologic Map GM-43, Liquefaction Susceptibility for the Auburn and Poverty Bay 7.5-minute Quadrangles, Washington. [Ord.]

**18.04.561.2 Slope.**

“Slope” means an inclined ground surface, the inclination of which is expressed as a ratio (percentage) of vertical distance to horizontal distance by the following formula:

$$\frac{\text{vertical distance}}{\text{horizontal distance}} \times 100 = \% \text{ slope}$$

Another method of measuring the inclination of the land surface is by measuring the angle, expressed in degrees, of the surface above a horizontal plane. The following chart shows the equivalents between these two methods of measurement for several slopes:

| <u>Slope in Percent</u> | <u>Angle in Degrees</u> |
|-------------------------|-------------------------|
| 8.7                     | 5.0                     |
| 15.0                    | 8.5                     |
| 25.0                    | 14.0                    |
| 30.0                    | 16.7                    |
| 40.0                    | 21.8                    |
| 50.0                    | 26.6                    |
| 100.0                   | 45.0                    |

| Percent Slope | Angle of Inclination |
|---------------|----------------------|
| 8.7%          | 5.0°                 |
| 15.0%         | 8.5°                 |
| 25.0%         | 14.0°                |
| 30.0%         | 16.7°                |
| 40.0%         | 21.8°                |
| 50.0%         | 26.6°                |
| 100.0%        | 45.0°                |

[Ord. ; Ord. 853 § 3(y), 1990.]

## **Edits to DMMC 18.86**

### **18.86.xxx Geologically Hazardous Areas – Development Standards.**

Development within all geologically hazardous areas shall comply with the following general performance requirements:

(1) Alterations of geologically hazardous areas or associated buffers may only occur for activities that:

(a) Will not increase the threat of the geological hazard to adjacent properties beyond pre development conditions;

(b) Will not adversely impact other critical areas;

(c) Are designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than pre-development conditions;

(d) Are designed and constructed in accordance with the surface water design manual; and

(e) Are certified as safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the state of Washington.

(2) Critical Facilities Prohibited. Critical facilities shall not be sited within geologically hazardous areas unless there is no other practical alternative. [Ord. .]

### **18.86.076 Ravine sidewalls and bluffs – Development standards—~~Ravine sidewalls and bluffs.~~**

Activities on ravine sidewalls and bluffs shall meet the general performance requirements of Development Standards – Geologically Hazardous Areas **DMMC 18.86.xxx** **[Note: new section Geologically Hazardous Areas]** and the specific following requirements:

(1) Buffers. A 50-foot undisturbed buffer of native vegetation shall be established from the top, toe, and sides of all ravine sidewalls and bluffs.

(2) Buffer Reduction. The ~~community development director~~ city manager or designee may approve a reduction in the width of the required buffer, to a minimum width of 10 feet, when special environmental studies are provided that demonstrate all of the following:

(a) A licensed engineer specializing in geotechnical analysis or a licensed engineering geologist, after review of the geologic conditions of the site, the proposed development plans, and all mitigation measures proposed or required, concludes in a written statement that the development proposal will result in minimal risk of soil instability; and

(b) Special mitigation measures regarding design, construction, and maintenance can reasonably be employed to minimize adverse environmental impacts associated with the proposal; and

(c) The proposal represents minimal disruption of existing native vegetation.

(3) Additional Buffers. The ~~community development director~~ city manager or designee may require increased buffers if environmental studies indicate such increases are necessary to mitigate landslide, seismic and erosion hazards, or as otherwise necessary to protect the public health, safety, and welfare.

(4) Building Setback Lines. A building setback line of 10 feet is required from the edge of any buffer of a ravine sidewall or bluff. Minor structural intrusions into the area of the building setback line may be allowed if the ~~community development director~~ city manager or designee determines that such intrusions will not negatively impact the critical area.

(5) All buffers shall be measured from the top, toe, and sides of all ravine sidewalls or bluffs. [Ord. \_\_\_\_\_; Ord. 925 § 19(part), 1992; Ord. 853 § 7(b)(1), 1990.]

**18.86.077 Hillside of 15 percent slope and greater —Development standards—~~Hillsides of 15 percent slope and greater—Disturbance limitations.~~**

Development on hillsides shall comply with the general performance requirements of Development Standards – Geologically Hazardous Areas 18.86.XXX DMMC and the following requirements regarding disturbance limitations, development location, development design, construction techniques, and landscaping.

(1) Amount of Disturbance Allowed. The following chart sets forth the maximum slope disturbance allowed on a development site:

| Slope  | Amount of Slope Which Can Be Disturbed | Factor |
|--------|--|--------|
| 0 -15% | 100%                                   | 1.00   |
| 15-25% | 60%                                    | .60    |
| 25-40% | 45%                                    | .45    |
| 40% +  | 30%                                    | .30    |

The overall amount of disturbance allowed on development sites which have any combination of the above slope categories shall be determined by the following formula:

$$\begin{aligned}
 &(\text{Square Footage of Site having 0-15\% slopes}) \times 1.00 + \\
 &(\text{Square Footage of Site having 15-25\% slopes}) \times 0.60 + \\
 &(\text{Square Footage of Site having 25-40\% slopes}) \times 0.45 + \\
 &(\text{Square Footage of Site having 40\% + slopes}) \times 0.30 = \\
 &\text{Total Amount of Allowable Site Disturbance.}
 \end{aligned}$$

(2) Development Location.

(a) Structures and improvements shall be clustered to retain as much open space as possible and the natural topographic character of the slope; and

(b) Structures and improvements shall conform to the natural contour of the slope, foundations must be tiered to generally conform to the existing topography of the site; and

(c) Structures and improvements shall be located to preserve the most sensitive portion of the site and its natural landforms and vegetation.

(3) Development Design.

(a) The footprint of buildings and other disturbed areas shall be minimized. The least number of buildings is desirable in order to consolidate the development; and

(b) Standard prepared building pads (slab on grade) resulting in grading more than 10 feet outside the building footprint area are prohibited; and

(c) Use of common access drives and utility corridors is required where feasible; and

(d) Impervious lot coverage shall be minimized. With the exception of detached single-family structures, understructure parking and multilevel structures shall be incorporated where feasible; and

(e) Roads, walkways, and parking areas shall be designed to parallel the natural contours of the steep slope hazard areas while maintaining consolidated areas of natural topography and vegetation. Access shall be located in the least sensitive area feasible; and

(f) Use of retaining walls which allow the maintenance of existing natural slope areas is preferred over graded artificial slopes.

(4) Construction Techniques.

(a) Use of foundation walls as retaining walls is preferable to rock or concrete walls built separately and away from the building. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation; and

(b) Use of pole-type construction which conforms to the existing topography is desirable where feasible; and

(c) Structures shall be tiered to conform to existing topography and to minimize topographic modification. Piled deck support structures are preferred for parking or garages over fill-based construction types.

(5) Landscaping. The disturbed area of a development site not used for buildings and other improvements shall be landscaped according to a landscape design which will achieve a minimum 40 percent coverage by the canopy of trees and shrubs within 10 years to provide habitat desirable to native western Washington birds. The trees and shrubs shall be a mix of shade, flowering, and coniferous and broad-leaf evergreens that are either native to the Puget Sound region or are valuable to western Washington birds. The Department of Wildlife "Plants for Wildlife in Western Washington" shall be used as a general guide.

(a) Trees shall be the following size at time of planting and shall conform to the "American Standard for Nursery Stock":

(i) Single-stem shade and flowering trees shall be a minimum one-inch caliper trunk as measured six inches above the ground.

(ii) Multistem shade and flowering trees shall be a minimum height of eight feet as measured from the ground level to the average uppermost point of growth of the plant.

(iii) Coniferous evergreen trees (Types 4, 5, and 6) shall be a minimum height of six feet as measured from the ground to the midpoint between the uppermost whorl and the tip of the leader. For species of trees without whorls, minimum height shall be measured to the uppermost side growth. The ratio of height to spread shall not be less than 5:3.

(iv) Broad-leaf evergreen trees (Types 4 and 5) shall be a minimum height of four feet as measured from the ground level to where the main part of the plant ends, not to the tip of a thin shoot.

(b) Shrubs shall be of the following size at time of planting and shall conform to the "American Standard for Nursery Stock":

(i) Dwarf and semi-dwarf deciduous shrubs shall be a minimum height of two to two and one-half feet above grade, and either a #3 container size for container-grown plants, 10-inch diameter root ball for balled and burlapped plants, or 11-inch root spread for bare-root plants.

(ii) Strong-growing deciduous shrubs shall be a minimum height of two to three feet above grade, and either a #3 container size for container-grown plants, 10-inch diameter root ball for balled and burlapped plants, or 11-inch root spread for bare-root plants.

(iii) Coniferous and broad-leaf evergreen shrubs (Types 1, 2, and 3) shall be a minimum height of two to two and one-half feet spread or height, and either a minimum #3 container size for container-grown plants or 12-inch diameter root ball for balled and burlapped plants. [Ord. \_\_\_\_\_: Ord. 853 § 7(b)(2), 1990.]

**18.86.078 Seismic hazard areas – Development standards – ~~Seismic hazard areas.~~**

Development in seismic hazard areas shall be in accordance with the standards for earthquake design and seismic motion as established in the Des Moines Building and Construction Code (Title 14, DMMC). ~~Hillsides containing or adjacent to~~ Seismic hazard areas shall be altered only when the ~~community development director~~ city manager or designee concludes, based on environmental information, the following:

(1) There is no actual hazard based on a lack of seismic activity in the past in the area of the development proposal, and a quantitative analysis of potential for seismic activity indicates no significant risk to the development proposal; or

(2) The development proposal can be designed so that it will be as safe from any earthquake damage as a similar development not located in a seismic hazard area. [Ord. \_\_\_\_\_; Ord. 853 § 7(b)(3), 1990.]

### **18.86.079 Development standards – Erosion and Landslide hazard areas -- Development standards.**

~~Development on hillsides containing or adjacent to erosion or landslide hazard areas shall be altered only when the community development director concludes, based on environmental information, meet the general performance requirements of Development Standards – Geologically Hazardous Areas DMMC 18.86.xxx (Note: new section Geologically Hazardous Areas) and the following:~~

~~(1) There will be no increase in surface water discharge or sedimentation to adjacent properties;~~

~~(2) There will be no decrease in slope stability on adjacent properties; and~~

~~(3) Either:~~

~~(a) There is no hazard as proven by evidence of no landslide activity in the past in the vicinity of the proposed development and a quantitative analysis of slope stability indicates no significant risk to the development proposal and adjacent properties; or~~

~~(b) The landslide hazard area can be modified or the development proposal can be designed so that the landslide hazard is eliminated or mitigated so that the site is as safe as a site without a landslide hazard; or~~

~~(c) The alteration is so minor as not to pose a threat. [Ord. 853 § 7(b)(4), 1990.]~~

**(1) Buffer Requirement.** A buffer shall be established from all edges of landslide hazard areas. The size of the buffer shall be determined by the city manager or designee to eliminate or minimize the risk of property damage, death, or injury resulting from landslides caused in whole or part by the development, based upon review of and concurrence with a special environmental study prepared by a qualified professional.

**(a) Minimum Buffer.** The minimum buffer shall be equal to the height of the slope or fifty (50) feet, whichever is greater. [Note: Similar to requirements for Ravine Sidewalls – DMMC 18.86.076.]

**(b) Increased Buffer.** The buffer may be increased where the city manager or designee determines a larger buffer is necessary to prevent risk of damage to proposed and existing development;

**(c) Buffer Reduction.** The buffer may be reduced to a minimum of ten (10) feet when a qualified professional demonstrates to the city manager or designee's satisfaction that the reduction will adequately protect the proposed development, adjacent developments, and uses and the subject critical area. [Note: Similar to requirements for Ravine Sidewalls – DMMC 18.86.076.]

**(2) Alterations.** Alterations of an erosion or landslide hazard area and/or buffer may only occur for activities for which a hazards analysis is submitted and certifies that:

**(a) The development will not increase surface water discharge or sedimentation to adjacent properties beyond pre-development conditions;**

**(b) The development will not decrease slope stability on adjacent properties; and**

**(c) Such alterations will not adversely impact other critical areas;**

**(3) Design Standards.** Development within an erosion or landslide hazard area and/or buffer shall be designed to meet the following basic requirements unless it can be demonstrated that an alternative design that deviates from one or more of these standards provides greater long-term slope stability while meeting all other provisions of this Chapter. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function. The basic development design standards are:

**(a) The proposed development shall not decrease the factor of safety for landslide occurrences below the limits of 1.5 for static conditions and 1.2 for dynamic conditions. Analysis of dynamic conditions shall be based on a minimum horizontal acceleration as established by the current version of the Uniform Building Code;**

(b) Structures and improvements shall be clustered to avoid geologically hazardous areas and other critical areas;

(c) Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;

(d) Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;

(e) The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties;

(f) The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes; and

(g) Development shall be designed to minimize impervious lot coverage;

(4) Vegetation Retention. Unless otherwise provided or as part of an approved alteration, removal of vegetation from an erosion or landslide hazard area or related buffer shall be prohibited;

(5) Seasonal Restriction. Land clearing, grading, or filling shall be limited to the period between April 1st and October 1<sup>st</sup>. [Note: From DNMC 18.86.080] provided that the city may extend or shorten the dry season on a case-by-case basis depending on actual weather conditions;

(6) Utility Lines and Pipes. Utility lines and pipes shall be permitted in erosion and landslide hazard areas only when the applicant demonstrates that no other practical alternative is available. The line or pipe shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide. Stormwater conveyance shall be allowed only through a high-density polyethylene pipe with fuse-welded joints, or similar product that is technically equal or superior;

(7) Point Discharges. Point discharges from surface water facilities and roof drains onto or upstream from an erosion or landslide hazard area shall be prohibited except as follows:

(a) Conveyed via continuous storm pipe down slope to a point where there are no erosion hazard areas downstream from the discharge;

(b) Discharged at flow durations matching predeveloped conditions, with adequate energy dissipation, into existing channels that previously conveyed stormwater runoff in the predeveloped state; or

(c) Dispersed discharge upslope of the steep slope onto a low-gradient undisturbed buffer demonstrated to be adequate to infiltrate all surface and stormwater runoff, and where it can be demonstrated that such discharge will not increase the saturation of the slope;

(8) Subdivisions. The division of land in landslide hazard areas and associated buffers is subject to the following:

(a) Land that is located wholly within a landslide hazard area or its buffer may not be subdivided. Land that is located partially within a landslide hazard area or its buffer may be divided provided that each resulting lot has sufficient buildable area outside of, and will not affect, the landslide hazard or its buffer.

(b) Access roads and utilities may be permitted within the landslide hazard area and associated buffers if the city determines that no other feasible alternative exists; and

(9) Prohibited Development. On-site sewage disposal systems, including drain fields, shall be prohibited within erosion and landslide hazard areas and related buffers. [Ord. \_\_\_\_\_]

18.86.080 — Development standards — Erosion hazard areas.

Hillsides containing erosion hazard areas shall have land clearing, grading, or filling limited to the period between April 1st and October 1st. [Ord. 853 § 7(b)(5), 1990.] [Note: Combined with DNMC 18.86.079, as modified]

## **City Council Recommendation:**

## ***Critical Aquifer Recharge Areas.***

**Status:** Critical aquifer recharge areas are established and managed by Water District 54, Highline Water District and Lakehaven Utility District. The Washington State Department of Ecology and/or the Seattle-King County Department of Public Health (KC DOH) provide guidance on the means and methods to identify critical aquifer recharge areas (CARAs) and on how to define a wellhead protection zone.

*DMMC 18.86.083 Development Standards -- Aquifer Recharge Areas.* This section states that all development on or adjacent to a CARA shall be in compliance with all development and land use restrictions and provisions recommended by various federal, state and county agencies and utilizing best management practices. The section also indicates that development requirements may rely on recommendations presented in a special environmental study.

**BAS Recommendation:** Associated Earth Sciences Inc. (AESI) BAS Report, Page 3 recommends that DMMC 18.04.212 (definitions) be revised to clarify that Ecology and KCC DOH do not identify CARAs. AESI also noted that cities are responsible for identifying CARAs within their jurisdictional boundaries.

AESI BAS Report, Page 6 recommends that *DMMC 18.86.083 Development Standards -- Aquifer Recharge Areas* be expanded to include the requirements of the special environmental study, who can perform such a study, what types of development cannot occur within critical aquifer recharge areas and possibly others.

### **Planning Agency Recommendation:**

Planning Agency directed staff to include in the drafting of the Critical Areas Ordinance, modifications to development standards for Critical Aquifer Recharge Areas, consistent with recommendations provided in the *Best Available Science Review of Critical Aquifer Recharge, Geologic Hazard and Special Flood Hazard Areas* report prepared by Associated Earth Sciences, Inc. (AESI, 2005).

With this recommendation, the Planning Agency requested clarification on the following questions at their September 11, 2006 meeting.

- Who is ultimately responsible for mapping CARAs?
- How can the City be assured water districts accurately identify CARAs?
- What happens if there is a lawsuit regarding impacts to a CARA?
- Does the requirement for special studies create an undue hardship for developers?

Staff response to these questions was presented at the October 2 and November 6, 2006 Planning Agency meeting:

- City is responsible for identifying and mapping CARAs.
- Code needs to clarify City is not a purveyor of water and relies on information from entities with the expertise to identify (water districts, King County DOH, Ecology guidance).
- It is in the water districts' best interest to ensure wellhead protection and aquifer recharge areas are accurately identified.

- As with other regulations, the City is responsible for enforcement of protection measures (avoid risk of impacts).
- Ecology MTCA liability based on ownership or pollutant generator.
- Studies would be required if there is a potential risk of impacting a CARA.

The approach for updating the mapping is for the City to coordinate with the Ecology, US Geologic Service, King County and other sources (i.e., water districts) to confirm data as currently mapped is accurate, and update as necessary. It should be noted that the geologic conditions should remain static. Future updates will be made as necessary if geologic mapping changes or if a water district/s designate a new wellhead protection zone/s within Des Moines.

### **Council Environment Committee Recommendation:**

The Environment Committee feels it is the responsibility of the water districts to determine and map the CARAs (August 2006). At the November 30, 2006 meeting committee members questioned whether the wellhead protection plans represented Best Available Science (BAS) and advocated that the City wait for the water districts to contact the City about what areas they want the City to protect.

Staff contacted Department of Ecology staff (Laurie Morgan, Water Quality Program) to discuss state requirements for aquifer protection. Ecology indicated that the wellhead protection plans are reviewed and approved by Ecology and are the basis for identifying the aquifer recharge areas. The BAS review of critical aquifer recharge, geologic hazard and special flood hazard areas that was completed for Des Moines by Associated Earth Sciences, Inc. (July 2005) concluded that the mapping of CARAs was complete.

Ecology clarified that the local jurisdictions are responsible for local control of the federal and state regulations regarding aquifer protection. While the water districts can inspect and maintain their facilities, they do not have the regulatory authority to control land use.

Protection measures for CARAs would apply to both existing and new uses. New development would be conditioned in accordance to the adopted CARA standards. For existing uses, contamination problems could be linked to a use where polluted water/other substances are being illegally discharged on a site (e.g., dry cleaners, repair shops). Enforcement of regulations are typically handled by coordination with business community and implementation of an inspection program (Ecology staff noted that the Cities of Vancouver and Redmond have successful programs). Staff has also contacted King County's groundwater protection program to determine whether they have an inspection program in place and how it is administered.

At the December 7, 2006 meeting, the Committee directed staff to prepare a letter from the City Manager to Water District 54, Highline Water District and Lakehaven Utility District informing them of the City's work on the CAO update, and requesting input from the Districts' regarding proposed development standards for CARAs, provisions for ongoing inspection and monitoring programs, and financial aspects of such programs. Further discussion or recommendations related to CARAs is deferred until staff receives input from the water districts.