

## 50-18 Overlay districts.

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### 50-18.1 Natural Resources Overlay (NR-O).

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#### A. General.

1. Purpose statement.

The purpose of this overlay is to promote, preserve and enhance the water resources and environment within the city and protect them from adverse effects caused by poorly sited or incompatible development. It is intended to implement the Minnesota Wetland Conservation Act (WCA), federal emergency management agency (FEMA) rules, and the Minnesota department of natural resources (DNR) shoreland and flood plain regulations. In accordance with this regulatory framework, wetlands, flood plains and shorelands are protected by regulating developments that would have an adverse or potentially irreversible impact on unique and fragile land, by minimizing conflicts and encouraging compatibility between environmentally sensitive lands, and by requiring detailed review standards and procedures for developments proposed for such areas, thereby achieving a balance between urban growth and development and protection of natural areas;

2. NR-O map.

The NR-O map contains data from the following sources:

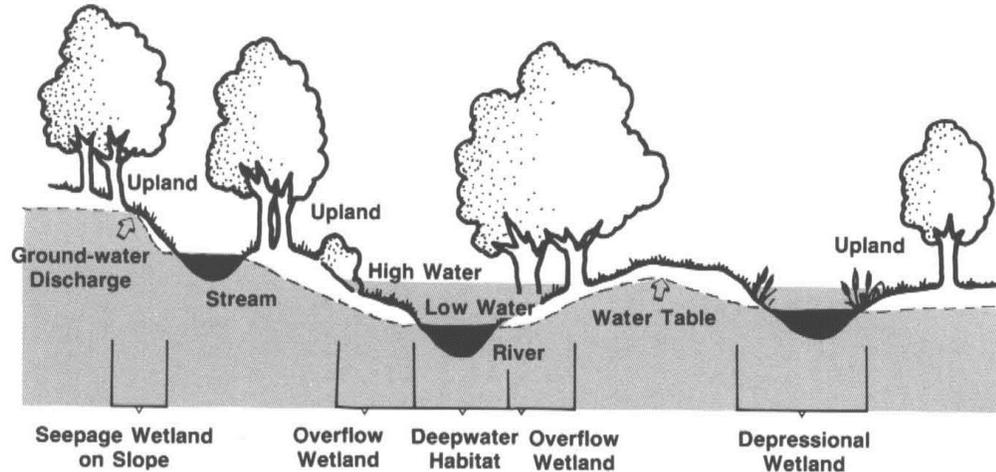
- (a) For wetlands, there is no official wetlands map. All lands in the city that meet the definition of wetlands in Article VI are considered wetlands for the purposes of this Section;
- (b) For flood plains:
  - (i) The Flood Insurance Study, City of Duluth, Minnesota, St. Louis County, dated August 1979;
  - (ii) Flood Boundary and Floodway Map panels for the City of Duluth Minnesota, dated February 1, 1980, and numbered:
    - (1) 270421 0015 C
    - (2) 270421 0025 C
    - (3) 270421 0030 C
    - (4) 270421 0035 C
    - (5) 270421 0040 C
    - (6) 270421 0045 C
  - (iii) Flood Insurance Rate Map panels for the City of Duluth, Minnesota, dated April 2, 1982, and numbered:
    - (7) 270421 0015 C
    - (8) 270421 0025 C
    - (9) 270421 0030 C
    - (10) 270421 0035 C
    - (11) 270421 0045 C
  - (iv) Flood Insurance Rate Map panel for the City of Duluth, Minnesota, numbered 270421 0040 D and dated November 4, 1992;
  - (v) Flood Insurance Rate Map panels for St. Louis County, Minnesota, unincorporated areas, numbered 270416 1475 C, 270416 1500 C, and 270416 1650 C, all dated February 19, 1992;
  - (vi) The Letter of Map Revision issued by the Federal Emergency Management Agency, Case No. 07-05-3554P, with an effective date of October 17, 2008, including all attached maps, tables and flood profiles; and
  - (vii) The Letter of Map Revision issued by the Federal Emergency Management Agency, Case No. 12-05-3211P, with an effective date of November 26, 2012, including all attached maps, tables and flood profiles.

Copies of the above-listed documents are hereby adopted by reference and declared to be a part of this section. All documents shall be kept on file in the land use supervisor's office;

- (c) For shorelands, boundaries shall be based on (i) waters shown as protected on the map and inventory of protected waters in Duluth prepared by the DNR commissioner pursuant to Chapter 199, Laws of Minnesota, 1979, and (ii) selected waters that the city has added to the commissioner's survey as being worthy of shoreland protection. All of these waters are shown on the NR-O map as currently revised as of November 19, 2010;
- (d) Where interpretation is needed as to the exact location of any boundary as shown on an official map, the city engineer shall make the necessary interpretation based on available technical data, and, in the case of flood plains, based particularly on elevations on the regional flood profile or hydraulic modeling data;
- (e) The NR-O map may be amended in the future, and any revisions shall become effective upon adoption of the revised NR-O map as an amendment to this Chapter;

## B. Wetlands.

This Section 50-18 shall apply to all wetlands within the city. All development in the city shall comply with state statutes and regulations. In addition, any development impacting wetlands requires formal approval by the designated city wetland representative.



**Figure 50-18.1-1: Typical Inland Wetland.** Graphic taken from *Floodplain Management in the United States: An Assessment Report*, prepared for the Federal Interagency Floodplain Management Task Force 1992.

1. The building official shall require each permit applicant to specify on the permit application whether or not the proposed site contains wetlands. Regardless of the answer given, if the building official has reasonable grounds to believe the site contains wetlands, the official shall make a determination as to the existence of wetlands. In making that determination, the building official may require any of the following:
  - (a) Require the applicant to submit a complete wetland delineation as outlined in WCA and performed by a professional wetland delineator, including information such as soil analysis, surveys of vegetation and engineering or hydrological data, to aid in the determination;
  - (b) Conduct a site inspection and evaluation;
  - (c) Consult with the city engineer, St. Louis County Soil and Water Conservation District, Board of Water and Soil Resources, and other available wetland experts;
  - (d) Use any other reasonable method to determine if the site contains wetlands;

### C. Flood plains.

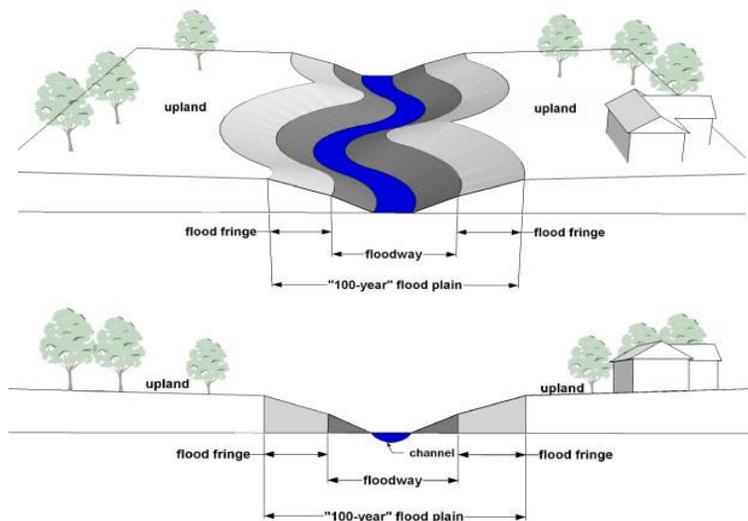
This Section shall apply to all lands within the city that are shown as flood plains on the NR-O map. For purposes of relating those districts to plats and lots within the city, the NR-O map shall be used as a working map in the administration of the flood plain controls unless it is clearly shown that there is an inconsistency between the flood insurance rate map, or the flood boundary and floodway map and said NR-O map, in which case the flood insurance rate map or flood boundary and floodway map, as applicable, shall control.

All lands within flood plains shall be divided into floodway districts, flood fringe districts, or general flood plain districts:

(a) The floodway district shall include those areas designated as floodway on the flood boundary and floodway map identified in Section 50-18.A.2.b;

(b) The flood fringe district shall include those areas designated as flood fringe on the flood boundary and floodway map;

(c) The general flood plain district shall include those areas designated as Zone A on the flood insurance rate maps identified in Section 50-18.A.2.b., and those areas designated Zone A1-A30 on the flood insurance rate maps that do not have a corresponding floodway/flood fringe delineation on the flood boundary and floodway map;



**Figure 50-18.1-2: Flood plain, floodway, and flood fringe** Graphic taken from *Floodplain Management in the United States: An Assessment Report*, prepared for the Federal Interagency Floodplain Management Task Force 1992.

#### 1. Compliance.

Within the flood plain districts, no new structure or land shall be used and no structure shall be constructed, located, extended, converted or structurally altered without full compliance with the terms of this Section 50-18.1.C. Within the floodway, flood fringe and general flood plain districts, all uses not listed as permitted uses or special uses are prohibited;

#### 2. Uses and special use permits – floodway.

##### (a) Permitted uses in floodway.

Only the following uses shall be permitted within the floodway, and only if the land use supervisor determines that (a) the use is shown as a permitted use in the underlying zone district in Table 50-19.8, (b) the use has a low flood damage potential, (c) the use will not obstruct flood flows or increase flood elevations, and (d) the use does not involve structures, fill, obstructions, excavations or storage of materials or equipment:

- (i) Agriculture;
  - (ii) Industrial, commercial and mixed use loading areas, parking areas and airport landing strips;
  - (iii) Outdoor open space, recreation, and entertainment facilities and structures;
  - (iv) Residential lawns, gardens, parking areas and play areas;
- (b) Special uses in floodway.  
The following uses involving accessory structures or fill or storage of materials or equipment may be permitted only after the issuance of a special use permit pursuant to Article V:
- (i) Structures accessory to a permitted use;
  - (ii) Mining, extraction and storage of sand, gravel and other materials;
  - (iii) Marina or yacht club or accessory residential boat dock;
  - (iv) Railroad yard or shipyard and related facilities, electric power transmission lines, major utilities or wireless communication towers and minor utilities and accessory wireless antennas attached to existing structures;
  - (v) Bulk storage not listed elsewhere;
  - (vi) Placement of fill or construction of fences;
  - (vii) Road-ready recreational vehicles either on individual lots of record or in existing or new subdivisions or commercial or condominium type campgrounds, subject to the exemptions and provisions of Section 50-20;
  - (viii) Structural works for flood control such as levees, dikes, and floodwalls constructed to any height where the intent is to protect individual structures;
- (c) Standards for special use permits in floodway.  
A special use permit for uses and structures listed in subsection (b) above shall only be issued if the following standards are met:
- (i) The proposed use or structure will not cause any increase in the stage of the 100-year or regional flood or cause an increase in flood damages in the reach or reaches affected;
  - (ii) Any fill deposited in the floodway shall be no more than the minimum amount necessary to grade or landscape, shall not in any way obstruct the flow of flood waters and shall be protected from erosion by the planting of vegetative ground cover, the use of rip rap or other method approved by the city;
  - (iii) Accessory structures:
    - Shall not be designed for human habitation;
    - Shall be constructed and placed on the building site so as to offer the minimum obstruction to the flow of flood waters;
    - Shall be constructed whenever possible with the longitudinal axis parallel to the direction of flood flow;
    - Shall be placed approximately on the same flood flow lines as those of adjoining structures; and
    - Shall be elevated on fill or floodproofed to the flood protection elevation in accordance with the FP-1 or FP-2 flood proofing classifications in the State Building Code;
  - (iv) All floodproofed accessory structures must meet the following additional standards, if the building official determines that compliance is necessary to carry out the stated purposes of this Section 50-18.1.c:
    - The structure must be adequately anchored to prevent flotation, collapse or lateral movement of the structure and shall be designed to equalize hydrostatic flood forces on exterior walls;

- Any mechanical and utility equipment in a structure must be elevated to or above the regulatory flood protection elevation or properly floodproofed;

As an alternative, an accessory structure may be internally or wet floodproofed to the FP-3 or FP-4 floodproofing classifications in the State Building Code, provided the accessory structure constitutes a minimal investment, does not exceed 576 square feet in size at its largest projection, and for a detached garage, the structure must be used solely for parking of vehicles and limited storage. The structure must meet the following standards:

- To allow for the equalization of hydrostatic pressure, there must be a minimum of two “automatic” openings in the outside walls of the structure having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding; and
  - There must be openings on at least two sides of the structure and the bottom of all openings must be no higher than one foot above the lowest adjacent grade to the structure. Using human intervention to open a garage door prior to flooding will not satisfy this requirement for automatic openings;
- (v) The use will not include the storage or processing of materials that are, in time of flooding, flammable, explosive or injurious to human, animal or plant life. All materials or equipment stored shall be readily removable from the area within the time available after a flood warning;
  - (vi) Any structural works for flood control that will change the course, current, or cross-section of wetlands or public waters shall comply with the provisions of Minnesota Statutes, Chapter 103G.245;
  - (vii) Any levee, dike or floodwall constructed in the floodway shall not cause an increase to the 100-year or regional flood, based on technical analysis that assumes equal conveyance or storage loss on both sides of a waterway;
  - (viii) Within an A-O zone, there must be adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures or structure additions;
  - (ix) Dredge spoil sites and sand and gravel operations shall not be allowed in the floodway unless a long-term site development plan is submitted which includes an erosion/sedimentation prevention element;

### 3. Uses and special use permits – flood fringe.

#### (a) Permitted uses in flood fringe.

Those uses listed in Table 50-19.8 as permitted uses in the zone district where the property is located, provided that the building official determines that:

- (i) All structures, including accessory structures, shall be elevated on fill so that a structure’s lowest floor is above the regulatory flood protection elevation. The finished fill elevation for structures shall be no lower than one foot below the regulatory flood protection elevation and the fill shall extend at that elevation at least 15 feet beyond the outside limits of the structure. In A-O zones, the finished fill elevation for structures must be a minimum of two feet above the highest adjacent grade. The structure’s design and as-built condition in relation to the regulatory flood protection elevation must be certified by a professional engineer or architect licensed in Minnesota;
- (ii) Any portion of a non-residential structure below the regulatory flood protection elevation will be structurally dry floodproofed in accordance with the FP-1 or FP-2 classification found in the State Building Code;
- (iii) As an alternative to elevation, accessory structures that constitute a minimal investment and that do not exceed 576 square feet may be

- internally floodproofed in accordance with Section 50-18.1.C.2(c)(iii) and (iv) above;
  - (iv) Any placement of fill with a cumulative volume in excess of 1,000 cubic yards at any one time may only be used to elevate a structure in accordance with this subsection 3(a)(i);
  - (v) Any stored materials or equipment shall be elevated on fill to the regulatory flood protection elevation;
- (b) Special uses in flood fringe.
- The placement of more than 1,000 cubic yards of fill or other similar material, other than for the purpose of elevating a structure to the regulatory flood protection elevation, and the storage of materials and equipment below the regulatory flood protection elevation, may be permitted only after the issuance of a special use permit as provided in Article V. In addition, this use is subject to the limitations on flood plain variances in Article V and the following requirements:
- (i) Any fill deposited in the flood fringe shall be no more than the minimum amount necessary to grade or landscape, shall not in any way obstruct the flow of flood waters and shall be protected from erosion by the planting of vegetative ground cover, the use of rip rap or other method approved by the city;
  - (ii) The use must not include the storage or processing of materials that are, in time of flooding, flammable, explosive or injurious to human, animal or plant life. All materials or equipment stored shall be readily removable from the area within the time available after a flood warning;
- (c) Standards for all flood fringe uses.
- (i) All new principal structures must have vehicular access at or above an elevation not more than two feet below the regulatory flood protection elevation. If a variance to this requirement is granted, limitations on the period of use or occupancy of the structure for times of flooding may be specified;
  - (ii) Flood plain developments shall not adversely affect the hydraulic capacity of the channel and adjoining flood plain of any tributary watercourse or drainage system where a floodway or other encroachment limit has not been specified on the NR-O map;
  - (iii) Accessory land uses such as yards, railroad tracks, and parking lots may be at elevations more than two feet below the regulatory flood protection elevation. Any facility that will be used by employees or the general public must have a flood warning system that provides adequate time for evacuation if the area would be inundated by the regional flood to a depth and velocity such that when multiplying the depth (in feet) times velocity (in feet per second) the product number exceeds four;
  - (iv) Standards for recreational vehicles are contained in Section 50-20;
  - (v) All manufactured homes and those recreational vehicles not meeting the exemption criteria must be securely anchored to an adequately anchored foundation system that resists flotation, collapse and lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state or local anchoring requirements for resisting wind forces;
  - (vi) Within an A-O zone, there must be adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures or structure additions;
4. General flood plain district.
- (a) Permitted uses in general flood plain district.
    - (i) The uses listed in subsection C.2(a) above shall be permitted uses;

- (ii) All other uses shall be subject to the floodway/flood fringe evaluation criteria below and the resulting designation shall be used in determining uses. If the property owner does not complete a floodway/flood fringe evaluation, the land is presumed to be floodway;
  - (iii) Land determined to be in the floodway pursuant to subsection 4.(b) shall have those permitted and special uses listed in Section 50-18.C.2 above;
  - (iv) Land determined to be in the flood fringe pursuant to subsection 4.(b) shall have those permitted and special uses listed in Section 50-18.C.3 above;
- (b) Procedures for floodway and flood fringe determinations within the general flood plain district:
- (i) The applicant shall submit appropriate information to a designated engineer or other expert person or agency for technical assistance in determining whether the proposed use is in the floodway or flood fringe district and to determine the regulatory flood protection elevation. Procedures consistent with Minnesota Regulations 1983, parts 6120.5000 – 6120.6200 and 44 Code of Federal Regulations Part 65 shall be followed in this expert evaluation. The designated engineer or expert is strongly encouraged to discuss the proposed technical evaluation methodology with the respective DNR Area Hydrologist prior to commencing the analysis. The designated engineer or expert shall:
    - (1) Estimate the peak discharge of the regional flood;
    - (2) Calculate the water surface profile of the regional flood based upon a hydraulic analysis of the stream channel and overbank areas;
    - (3) Compute the floodway necessary to convey or store the regional flood without increasing flood stages more than 0.5 feet. A lesser stage increase than 0.5 feet shall be required if, as a result of the additional stage increase, increased flood damages would result. An equal degree of encroachment on both sides of the stream within the reach shall be assumed in computing floodway boundaries;
  - (ii) The city engineer shall present the technical evaluation and findings to the city council. The city council must formally accept the technical evaluation and the recommended floodway and/or flood fringe district boundary and that the proposed use is allowed in the area where it is proposed, or deny the permit application. Prior to official action the city council may submit the application and all supporting data and analyses to FEMA, the DNR or the planning commission for review and comment. Once the floodway and flood fringe district boundaries have been determined, and assuming the proposed use is allowed in the area where it is proposed, the city council shall refer the matter to staff who shall process the permit application consistent with the applicable provisions of this Section 50-18.1.C;
5. Public utilities, railroads, roads and bridges.
- (a) All public utilities and facilities such as gas, electrical, sewer and water supply systems, with the exception of sumps and wet wells, to be located in the floodway or flood fringe shall be floodproofed in accordance with the State Building Code or elevated to above the regulatory flood protection elevation;
  - (b) Railroad tracks, roads and bridges to be located within the floodway or flood fringe shall comply with subsections 2 and 3 above, as applicable. Elevation to the regulatory flood protection elevation shall be provided where failure or interruption of these transportation facilities would result in danger to the public health or safety or where such facilities are essential to the orderly functioning of the area. Minor or auxiliary roads or railroads may be

constructed at a lower elevation where failure or interruption of transportation services would not endanger the public health or safety;

- (c) On-site water supply and sewage treatment systems: Where public utilities are not provided: 1) on-site water supply systems must be designed to minimize or eliminate infiltration of flood waters into the systems; and 2) new or replacement on-site sewage treatment systems must be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and they shall not be subject to impairment or contamination during times of flooding. Any sewage treatment system designed in accordance with the state's current statewide standards for on-site sewage treatment systems shall be determined to be in compliance with this Section;

6. Subdivisions.

New subdivisions in the flood plain area shall meet the following requirements:

- (a) No land shall be subdivided which is unsuitable for reasons of flooding or inadequate drainage, water supply, or sewage treatment facilities. Manufactured home parks and recreational vehicle parks or campgrounds are considered subdivisions under this Section;
- (b) All lots within the flood plain districts shall be able to contain a building site outside of the floodway district at or above the regulatory flood protection elevation;
- (c) All subdivisions shall have water and sewage treatment facilities that comply with the provisions of this Chapter;
- (d) All subdivisions shall have road access both to the subdivision and to the individual building sites no lower than two feet below the regulatory flood protection elevation, unless a flood warning emergency plan for the safe evacuation of all vehicles and people during the regional flood has been approved by the city council. The plan shall be prepared by a registered engineer or other qualified individual, and shall demonstrate that adequate time and personnel exist to carry out the evacuation;
- (e) The floodway and flood fringe district boundaries, the regulatory flood protection elevation and the required elevation of all access roads shall be clearly labeled on all required subdivision drawings and platting documents;
- (f) In the general flood plain district, applicants shall provide the information required in section 15-18.C.4(b) to determine the regional flood elevation, the floodway and flood fringe district boundaries, and the regulatory flood protection elevation for the subdivision site;

7. Amendments.

- (a) The flood plain designation on the official zoning map shall not be removed from flood plain areas unless it can be shown that the designation is in error or that the area has been filled to or above the elevation of the regulatory flood protection elevation and is contiguous to lands outside the flood plain. Special exceptions to this requirement may be permitted by the commissioner of the department of natural resources (DNR) if the commissioner determines that, through other measures, lands are adequately protected for the intended use;
- (b) All amendments to Section 50.18.1.C, including flood plain designation amendments to the official zoning map, must be submitted to and approved by the commissioner of the department of natural resources (DNR) prior to adoption. Changes in the official zoning map must meet the federal emergency management Agency's (FEMA) technical conditions and criteria and must receive prior FEMA approval before adoption. The commissioner of the DNR must approve the amendment prior to community approval;

**D. Shorelands.**

In furtherance of the policies declared by the state legislature, waters in the city have been classified as general development waters (GD), natural environment waters (NE) or coldwater rivers (CW). The shoreland overlay applies to lands within 1,000 feet of Lake Superior or within 300 feet of rivers, creeks, streams and tributaries and floodplains, as designated on the NR-O map. If a parcel or development lies only partially within a shoreland area, only the portion of the property within the shoreland is subject to these provisions;

1. Shoreland permit required.

The following activities and structures require a shoreland permit if located within a shoreland:

- (a) All structures;
- (b) All grading, filling and excavating;
- (c) All construction of impervious surfaces, including roads, driveways, parking areas and trails;
- (d) All removal of natural vegetation;
- (e) Any construction activity that removes or disturbs natural beach grasses on Park Point;

2. Standards for shoreland permit.

- (a) Erosion and sediment control measures shall be required for any land disturbing activity;
- (b) Grading and filling of more than 250 square feet or placement of more than ten cubic yards of material within the shore impact zone shall only be permitted if a plan for erosion control, stormwater management and shoreline buffer restoration is approved by the city and effectively implemented;
- (c) Impervious surfaces shall be designed and constructed to minimize and control runoff and erosion into the regulated waters;
- (d) Any removal of natural vegetation shall be designed to prevent erosion into regulated waters and to preserve shoreland aesthetics;
- (e) Removal of trees or shrubs in a contiguous patch, strip, row or block is prohibited in shore impact zones;
- (f) The project does not result in the proposed building being located in a shore or bluff impact zone;
- (g) Natural vegetation buffers shall be restored to the extent feasible after any project is complete;

3. Dimensional standards.

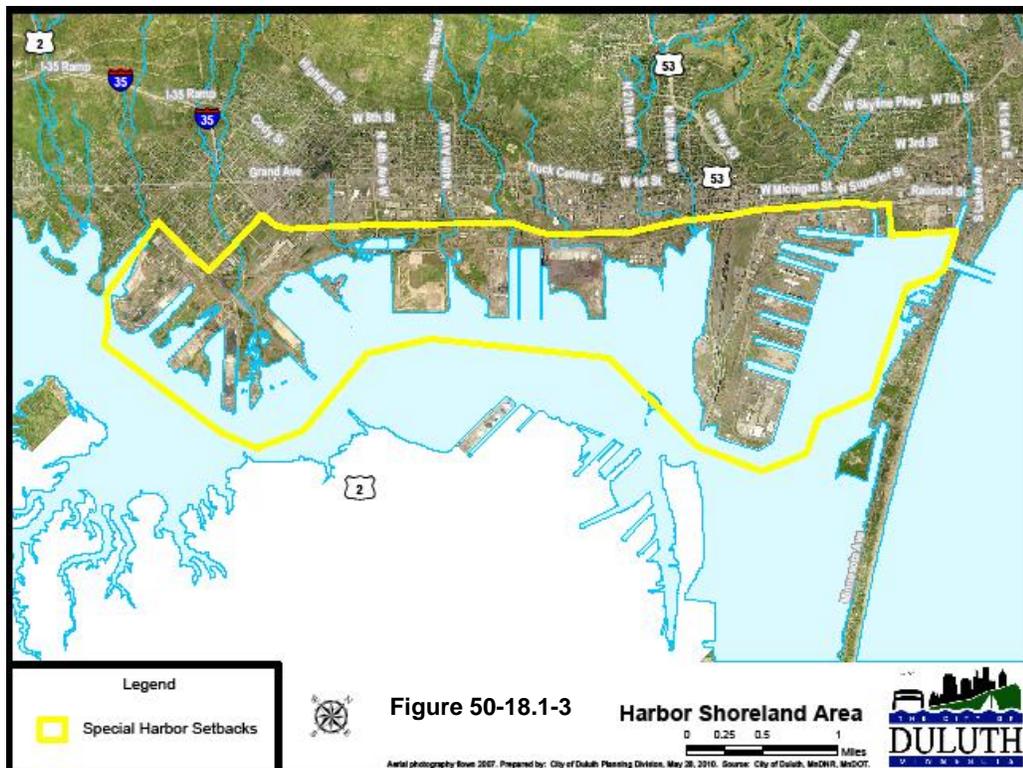
- (a) No shoreland permit shall be approved unless the standards in Table 50-18.1.D-1 are met or a variance obtained pursuant to Article V;

<b>Table 50-18.1.D-1: Minimum Shoreland Area Standards</b>			
<b>Standards</b>	<b>General Development Waters <sup>[1]</sup></b>	<b>Natural Environmental Waters</b>	<b>Coldwater River</b>
Minimum setbacks from Ordinary High Water Level or highest known water level, whichever is higher			
<i>Structures</i>	50 ft.	75 ft.	150 ft.
<i>Commercial, mixed use, &amp; industrial structures in the harbor, shown in Figure 50-18.1.- 3</i>	25 ft.	N/A	N/A
<i>Impervious surfaces in the Shore Impact Zone</i>	50 ft.	50 ft.	75 ft.
Lowest floor elevation above Ordinary High Water Level or highest known water level, whichever is higher <sup>[2]</sup>	3 ft.		
Width of naturally vegetative buffer	50 ft.		

<sup>[1]</sup> All Lake Superior shoreland is classified as general development waters.

<sup>[2]</sup> For a structure located in an area where FEMA has established a base flood elevation, the structure is exempt from this shoreland elevation requirement, but must meet flood plain regulations.

- (b) Exceptions to dimensional standards.
- i. Commercial, mixed use, & industrial structures in the harbor, shown in Figure 50-18.1-3: 0 feet setback for grain elevators, cranes, loading bins, and other equipment necessary for loading and unloading, including impervious surface necessary to support these activities;
  - ii. Public trails with previous surfaces, or with impervious surfaces no more than ten feet wide, may be constructed within these setbacks, provided that a minimum amount of natural vegetation is removed and provided that permits are obtained from the DNR and MPCA, if required;
  - iii. Properties in Stormwater Zone B, as defined in Section 50-18.1E.3(f), that have been previously developed with 75 percent or greater impervious surface may use one of the following methods to determine building setback:
    - Use the impervious surface setback for the shoreland classification as the building setback;
    - When principal structures exist on the adjoining lots on both sides of the proposed building site, the structure setbacks can be altered to conform to the adjoining setbacks, provided the proposed building site is not located within the setback required for the naturally vegetative buffer;
  - iv. Park equipment such as playground structures and ball fields (but not including structures such as garages, storage buildings, toilets or warming houses) may be placed closer than the required structure setback provided they lie outside the area required for the native vegetative buffer;
  - v. Ground or pole mounted solar or wind power collection systems shall not be placed within the impervious surfaces setback in the Shore Impact Zone;
  - vi. Removal of invasive vegetative species is allowed within the naturally vegetative buffer area with an approved shoreland permit, provided there is replacement with non-invasive and non-harmful species;



4. Uses and special use permits.
  - (a) Those permitted and special uses shown in Table 50.19.8, subject to the issuance of any shoreland permit required by subsection D.1 and compliance with the standards of subsection D.2, except as listed below. Agricultural uses are not permitted in the shore impact zone. Within shoreland areas that are outside of the shore impact zone, agricultural uses are permitted if steep slopes are maintained in permanent vegetation or the land is operated under an approved conservation plan from the St. Louis County Soil and Water Conservation District;
  - (b) All industrial uses, including mining, extraction and storage, on coldwater rivers or natural environmental waters require a special use permit pursuant to Article V. The application for a special use permit must include a thorough evaluation of the topographic, vegetation and soils conditions on the site;
  - (c) Standards for special use permit:
    - (i) Compliance with all development requirements for shorelands in this Section 50-18.1.D;
    - (ii) Prevention of soil erosion, stormwater runoff or other possible pollution of public waters, both during and after construction or use;
    - (iii) Restoration of the shoreline buffer to a natural state;
    - (iv) Screening of structures and other facilities as viewed from regulated waters, as shown on the NR-O map;
5. Subdivisions.

New subdivisions in the shoreland area shall meet the following requirements:

  - (a) The land shall not be subdivided until the land has been rezoned into the R-P zone district, and the concept and detailed development plans required in the R-P districts shall be designed to comply with the provisions of this Section 50-18.1.D;
  - (b) A buffer at least 50 feet in width, consisting of trees, shrubs and ground cover of plants and understory in a natural state, is required within a line parallel to the ordinary high water level or highest known water level, whichever is higher, and as close to the ordinary high water level as topography and the health of the plants will permit;
  - (c) After construction is completed, the owner of the property shall be responsible for any continued need for erosion and sediment control and restoration on the property;
6. Nonconforming lots of record.

Lots of record in the office of the county recorder on November 19, 2010, may be allowed an exception from the structure setback requirement in subsection D.3. If the lot of record cannot be developed under the setback requirements of subsection D.3, then:

  - (a) The lot may be developed without a variance if (1) principal structures exist on the adjoining lots on both sides of a proposed building site, and (2) the proposed structure will be located no closer to the protected shore than the principal structure on either adjoining site, and (3) the resulting adjusted setback does not result in the proposed building being located in a shore impact zone; or
  - (b) The lot may be developed if a variance is obtained pursuant to Article V;

## E. Stormwater management and erosion control.

### 1. Goals and purpose.

- (a) The federal Clean Water Act (CWA) requires that municipal stormwater discharges be authorized under the national pollution discharge elimination system (NPDES). The city is allowed to discharge its stormwater under coverage provided by a CWA municipal separate storm sewer system general permit (MS4 permit). As part of the requirements of the permit, the city is required to develop a stormwater pollution prevention program (MS4 program) with specific goals requiring:
  - (i) Non-degradation of all city waters;
  - (ii) Restrictions to special designated waters in the city, including: (a) Lake Superior (which is an MPCA designated outstanding value resource water with both restricted discharge and impaired water designations); (b) St. Louis River (which is an MPCA designated impaired water and area of concern; and (c) 16 trout streams designated by the DNR;
- (b) The goals described in the city's MS4 program pertaining to illicit discharge detection and elimination, construction-site runoff controls, and post-construction runoff treatment are incorporated into this Chapter by reference;
- (c) The purpose of this Section 50-18.1.E is to establish regulations to comply with the federal CWA and the city's MS4 permit and to achieve the goals stated in the city's MS4 program;
- (d) All proposed developments shall follow the requirements in the most recent version of the city of Duluth, engineering guidelines for professional engineering services and developments, and the city of Duluth construction standards were applicable;
- (e) Refer to the Minnesota Stormwater Manual and other stormwater management publications for temporary and permanent low impact development design practices;

### 2. Temporary erosion and sediment controls.

#### (a) Applicability.

This Section 50-18.1.E.3 applies to all land disturbing activities within the city, except those specifically exempt in this Section and those subject to a superseding or preemptive state or federal law. This Section shall be deemed to supplement, but not to conflict with, the applicable provisions of the State Building Code;

#### (b) Requirements.

All proposed development and redevelopment and all subdivision plats and re-plats shall include drainage system and temporary erosion and sediment best management practices (BMPs) in compliance with the city's MS4 program and the requirements shown in Table 50-18.1.E-1 below. Plans, engineering analysis and calculations, diagrams, drainage reports and other data shall be submitted, as required by the city engineer or designee with each development proposal or application for permit;

<b>Table 50-18.1.E-1: Temporary Erosion and Sediment Controls</b>			
<b>Land Area Disturbed ►</b>	<b>≤ 3,000 sq. ft. [1]</b>	<b>&gt; 3,000 sq. ft. and &lt; 1 acre<sup>[2]</sup></b>	<b>≥ 1 acre</b>
<b>Development Plan Measures Required ▼</b>			
Temporary erosion and sediment controls to prevent any off-site migration of sediment	✓		
Site specific Erosion and Sediment Control Plan (ESCP) and ESCP Permit from city engineer		✓	✓
Site specific Stormwater Pollution Prevention Plan (SWPPP) meeting MPCA NPDES Permit requirements for Construction Activity		✓	✓
MPCA NPDES/State Disposal System Construction Stormwater Permit			✓
MS4 Statement of Compliance from city engineer		✓	✓

<sup>[1]</sup> If the city engineer determines that the proposed development is in a vulnerable area and may cause the degradation of the waters connected to the city's stormwater system, then the provisions applicable to land disturbance areas greater than 3,000 sq. ft. shall apply.

<sup>[2]</sup> If land disturbed is within a mapped shorelands zone, an MS4 Statement of Compliance from the city engineer is also required.

- (c) Authority to waive.  
The city engineer has authority to waive the requirements in Table 50-18.1.E.1 in accordance with the city's MS4 permit. If stormwater and erosion controls required by this subsection 2 are demonstrated to be technically feasible, provisions of subsection 2 must be met to the maximum extent practicable;
3. Permanent water quality and discharge rate, volume and temperature controls.
- (a) Applicability.
- (i) This Section 50-18.1.E.3 applies to all land disturbing activities within the city, except those specifically exempt in this Section and those subject to a superseding or preemptive state or federal law. This Section shall be deemed to supplement, but not to conflict with provisions of the State Building Code;
- (ii) This Section does not apply to pavement resurfacing and pavement rehabilitation projects that meet all of the following conditions:
- No new impervious surface is created;
  - There is no change to the configuration of the site;
  - There is no change to the land use;
- (b) General requirements.  
All proposed development and redevelopment and all subdivision plats and re-plats shall include a drainage system with stormwater runoff site, volume and temperature controls and water quality treatment in compliance with the city's MS4 program and the requirements shown in Table 50-18.1.E-2 below. Plans, engineering analysis and calculations, diagrams, drainage reports and other data shall be submitted, as required by the city engineer with each project (referred to as the "development plan" below);

**Table 50-18.1.E-2: Permanent Water Quality and Discharge Rate, Volume and Temperature Controls**  
*[See additional requirements for land in shorelands below]*

Development Plan Measures required ▼	Total New Impervious Area Created or the Impervious Area Redeveloped <sup>[1][2]</sup>	
	≤ 3,000 sq. ft.	> 3,000 sq. ft. <sup>[3][4]</sup>
Water quality treatment	NONE	✓
Runoff rate controls		✓
Volume Controls		✓
Temperature Controls <sup>[5]</sup>		✓
Drainage report		✓
Site specific SWPPP		✓
BMP Operation and Maintenance Manual		✓
MS4 Statement of Compliance from city engineer		✓

<sup>[1]</sup> The total area is the sum of both the new and redeveloped impervious areas that are part of the common plan of development or sale.

<sup>[2]</sup> A pavement resurfacing or pavement rehabilitation project is exempt where: (a) no new impervious surface is created; and (b) no change to configuration of the site occurs; and (c) no change to land-use occurs.

<sup>[3]</sup> An individual one-family or two-family residence (that is not part of a common plan of development) with less than 10,000 sq. ft. of disturbed area and less than 7,500 sq. ft. of new impervious area is exempt.

<sup>[4]</sup> If the site contains an existing impervious surface area greater than one acre, the drainage report must include a determination of the current total suspended solids removal across the entire site. If the current TSS removal is below 50 percent, the drainage report must include an evaluation of the feasibility of increasing the TSS removal to 50 percent on an annual basis across the entire site.

<sup>[5]</sup> Temperature controls are required for projects that discharge to, and are within one mile from, a trout/cold water stream.

(c) Authority to waive.

The city engineer has authority to waive the requirements in Table 50-18.1.E-2 in accordance with the city's MS4 permit, if the developer demonstrates it to be technically non-feasible AND then mitigates for the non-compliance by increasing the level treatment or control of one of the other requirements;

(d) Shoreland requirements.

(i) In addition to the requirements in subsection 50-18.1.E.3(b) above, no residential development or redevelopment within a shoreland shall result in impervious surface area exceeding 25 percent of the lot area unless the owner (a) submits a development plan including water quality treatment and (b) obtains an MS4 statement of compliance by the city engineer;

(ii) In addition to the requirements in subsection 50-18.1.E.3(b) above, no commercial, mixed use, institutional or industrial development or redevelopment within a shoreland shown on the NR-O map shall create new impervious surface area unless the owner (a) submits a development plan including water quality treatment and (b) obtains an MS4 statement of compliance issued by the city engineer;

(e) Water quality treatment requirements.

Where subsection 50-18.1.E.3(b) requires that a development plan include water quality treatment, the development or redevelopment must provide at least the minimum treatment shown in Table 50-18.1.E.3;

<b>Table 50-18.1.E-3: Water Quality Treatment Requirements (Total Suspended Solids TSS, Total Phosphorus TP)</b>		
<b>Development Type</b>	<b>New and Existing Impervious surface</b>	<b>Required Treatment</b>
New	> 3,000 S.F.	No net increase of TSS/TP from predevelopment conditions.
Redevelopment	> 3,000 S.F. and < 1 acre	10% reduction in impervious surface or 50% TSS removal (TP to be removed via TSS reduction).
Redevelopment	≥ 1 acre	50% TSS removal. No net increase in TP from pre-project condition.

(f) Runoff rate control.

Where subsection 5018.1.E.3(b) requires that a development plan include runoff rate control, the development or redevelopment must be designed to provide the controls as follows. Runoff rate control is beneficial in the upper, flatter part of the watershed above the bluff line. Below the bluff line, the topography is relatively steep and stormwater flows quickly to Lake Superior and the St. Louis River. This bluff line designation is shown on the NR-O map. The stormwater rate control requirements for development and redevelopment are shown in Table 50-18.1.E-4;

<b>Table 50.18.1.E-4: Discharge Rate Limits</b>		
<b>Location ►</b>	<b>Post-Development Peak Flow Rates at Each Discharge Point Shall Not Exceed</b>	
<b>Type of Activity ▼</b>	<b>Zone A -- Above Bluff Line</b>	<b>Zone B -- Below Bluff Line</b>
<b>New Development</b>	75% of predevelopment peak flow rates for 10 and 100 year events; and 90% of predevelopment peak flow rate for 2 year event	Predevelopment peak flow rates for all storm events
<b>Redevelopment</b>	Predevelopment peak flow rates for all storm events	Predevelopment peak flow rates for all storm events

(g) Stormwater runoff volume control.

Where subsection 50-18.1.E.3(b) requires that a development plan include storm water runoff volume control, the development or redevelopment must be designed to provide the controls so that the volume of stormwater runoff discharged from a proposed project shall not exceed the pre-development site conditions;

(h) Storm water temperature control.

Temperature controls are required for development and redevelopment where subsection 50-18.1.E.3(b) specifies. Temperature controls are beneficial for trout/cold water streams, by minimizing the increase in stream temperatures from stormwater runoff from impervious surfaces that tend to be warmer than natural vegetated surfaces. The potential for the increase in temperature of stormwater runoff discharged from a proposed project shall be minimized through the use of certain BMPs and/or site design methods;

(i) General design criteria.

- (i) New minor system drainage systems shall be designed to efficiently convey the peak discharge rates for a ten-year flow;
- (ii) New major system drainage systems shall be designed to efficiently convey the peak discharge rates for a 100-year flow;
- (iii) The 100-year rainfall event or 100-year peak flow shall be evaluated to ensure that no damage occurs to adjacent properties for all systems;

- (iv) The stormwater management systems for any new or redevelopment project shall maintain at least two feet of freeboard between the anticipated 100-year high water elevation and the minimum building opening;
  - (v) Consideration may be given for treating existing untreated impervious areas diverted to the site and included in the control area for analysis if it is in the best interest of the city;
  - (vi) All impervious areas shall be considered connected and curve numbers shall not be weighted for impervious areas except under special circumstances;
  - (vii) Ninety-five percent of all newly added impervious surface shall have its runoff directed to the water quality treatment area. If it is impractical to direct 95 percent of the added impervious surface to water quality area, alternate methods may be used in combination so long as 95 percent is treated and all peak flow requirements are fulfilled;
  - (viii) Flow shall not be diverted from one major or minor system to another major or minor system;
  - (ix) When stormwater management plans involve directing runoff from a site, it shall be the responsibility of the applicant to obtain from adjacent property owners any necessary easements or other property interests concerning flowage of water to a point where the stormwater enters a major system;
  - (x) Adequate measures shall be taken to prevent uncontrolled drainage across lot lines;
4. General stormwater restrictions.  
City of Duluth has numerous ordinances regarding stormwater runoff and the protection of the area's water resources. Refer to the Duluth, MN - Legislative Code, Chapter 43 Article XI Stormwater Utility System, Chapter 45 Division 2 – Improvements by Private Party and Article VIII – Obstructions to Watercourses, and Illicit Discharge;
5. Ownership and maintenance.
- (a) Maintenance of temporary erosion and sediment control practices.  
During the period of a land disturbing activity, the person engaging in the construction shall be responsible for installing and maintaining erosion and sediment control practices. After construction is completed, the owner of the property shall be responsible for installing and maintaining erosion and sediment control practices. For the purposes of inspection during construction monitoring, the permittee shall maintain inspection logs and will make them available to the city upon request. The permittee shall retain the inspection logs for three years after the project is complete;
  - (b) Ownership.
    - (i) All components of the stormwater management system shall be constructed, owned, operated and maintained by the developer or owner(s) to their confluence with the major system or city owned minor system;
    - (ii) In the case of developments in which right-of-way is transferred to public ownership, the storm drain system within the city right-of-way shall be owned and maintained by the city. Stormwater treatment facilities and ponds shall be in common space and shall be owned and maintained by the developer or the owners of the development. Stormwater treatment facilities shall not be located in the public right-of-way;
  - (c) Owner inspection, operation and maintenance.
    - (i) A stormwater management facilities operation and maintenance manual shall be prepared by an engineer for the development and approved by the city engineer;

- (ii) Stormwater management facilities shall be designed to minimize maintenance and provide inspection and maintenance access;
- (iii) All facilities shall have a plan of operation and maintenance that assures continued effective removal of runoff pollutants and accumulated sediment;
- (iv) The developer or the owner(s) shall be responsible for inspection, maintenance and reporting for all non-publicly owned stormwater management facilities associated with the development. Facilities shall include structural components and all non-structural components (buffer strips, swales and other stormwater management practices that were part of the approved development);
- (v) An annual inspection and maintenance report shall be submitted to the city engineer. Inspection and maintenance shall be performed on a regular basis so the stormwater management facilities function as designed, but not less than annually. Maintenance work and repairs identified in the annual report shall be completed within three month of the annual inspection;
- (vi) The inspection and maintenance of the stormwater facility shall be performed by a qualified professional and who will prepare and sign the annual inspection/maintenance report.

Copies of the inspection and maintenance records shall be maintained by the developer or owner for a period of six years. Copies of all inspection records shall be provided to the city upon request. (Ord. No. 10041, 8-16-2010, § 2; Ord. No. 10044, 8-16-2010, § 6; Ord. No. 10075; 1-24-2011, § 1; Ord. No. 10082, 4-11-2011, § 1 [NR-O Map 6]; Ord. No. 10096, 7-18-2011, § 13; Ord. No. 10285, 3-10-2014, § 1; Ord. No. 10341, 11-24-2014, § 1; Ord. No. 10456, 7-11-16, § 1)