

PROPOSED ORDINANCE FOR STREAM PROTECTION

Section I. Background

- A. Buffers adjacent to stream systems and water bodies provide numerous environmental protection and resource management benefits that include the following:
1. Restoring and maintaining the chemical, physical, and biological integrity of the water resources
 2. Removing pollutants delivered from urban storm water
 3. Reducing erosion and sediment entering the stream
 4. Stabilizing stream banks
 5. Providing infiltration of storm water runoff
 6. Maintaining base flow of streams
 7. Contributing the organic matter that is a source of food and energy for the aquatic ecosystem
 8. Providing tree canopy to shade streams and promote desirable aquatic organisms
 9. Providing riparian wildlife habitat
 10. Furnishing scenic value and recreational opportunity
 11. Providing flood protection
 12. Providing wildlife migration corridors
- B. It is the desire of the City of Los Angeles to protect and maintain the native vegetation in riparian and wetland areas by implementing specifications for the establishment, protection, and maintenance of vegetation along all stream systems and/or water bodies within our jurisdictional authority.
- C. Streams and water bodies within the City of Los Angeles are a valuable resource to the City. They are an integral part of the watershed and contribute to the water supply system; they remove water pollutants and improve water quality, provide flood control and storm water drainage, are vital to wildlife habitat, and create neighborhood beauty and improved quality of life.
- D. Existing City of Los Angeles ordinances do not provide sufficient protections to streams under existing law, development and other activities injurious to the natural qualities of the streams of the City of Los Angeles may be or have been permitted, including but not limited to, dumping, construction activities resulting in erosion and undercutting of existing property and degradation of stream habitat, culverting and/or the installation of instream structures that endanger downstream property and stream habitat, construction of retaining walls and/or stream bank armoring that endanger downstream property and stream habitat,

improper maintenance of retaining walls, culverts, instream structures, and/or bank armoring, grazing, and the removal of bank vegetation.

- E. Aquatic Buffers serve as natural boundaries between local waterways and existing development. They help protect water quality by filtering pollutants, sediment, and nutrients from runoff. Other benefits of buffers include groundwater recharge, habitat, wildlife migration corridors flood control, stream bank stabilization, stream temperature control, and room for lateral movement of the stream channel.

Section II. Intent

- A. The purpose of this ordinance is to establish minimal acceptable requirements for buffers to protect the streams, wetlands, and floodplains within the City of Los Angeles; to protect the water quality of watercourses, reservoirs, lakes, and other significant water resources and to protect the City of Los Angeles' riparian and aquatic ecosystems; and to provide for the environmentally sound use of the City's land resources by:
 1. Safeguarding and preserving streams and Riparian Corridors in a natural state;
 2. Preserving and enhancing stream side vegetation and wildlife;
 3. Preventing activities that would contribute significantly to flooding, erosion or sedimentation, or that would destroy riparian areas or would inhibit their restoration;
 4. Enhancing recreational and beneficial uses of streams;
 5. Controlling erosion and sedimentation; and
 6. Increasing flood protection
 7. Protecting the public health and safety, and public and private property.
- B. The intent of this ordinance is to protect and enhance the water quality, the aquatic and riparian habitat, and the structure and ecological functions of our watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the federal Clean Water Act.

Section III. Definitions

- A. **Active Channel:** The area of the stream channel that is subject to frequent flows (approximately once per one and a half years) and that includes the portion of the channel below the floodplain.
- B. **Armoring of stream:** Protective covering of a stream's bed or banks with erosion-resistant material such as rock or concrete. Armoring often causes losses of riparian vegetation, and increases in stream flow velocities and water

temperatures, resulting in losses of aquatic and riparian habitat, and water quality.

- C. **Bankfull channel:** The stream channel formed by bankfull discharge. Bankfull discharge corresponds to the water stage where the flow first overtops the banks.
- C. **Best Management Practices:** Conservation practices or management measures that control soil loss and Practices (BMPs) reduce water quality degradation caused by nutrients, animal wastes, toxics, sediment, and runoff.
- D. **Bioengineering:** Use of native soils and/or plant material to provide bank stabilization, erosion control, and/or re-direct stream flows in a stream system.
- E. **Buffer:** A native vegetated area, including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake, reservoir, or coastal estuarine area.
- F. **Major Remodel:** Any remodeling of a main building whenever the aggregate value of all alterations of any remodeling project exceeds 50 percent of the replacement cost of the main building
- F. **Development or Work:** any act of filling, depositing, clearing, grubbing, mining, drilling, paving or, earthwork, or removing any natural material, or constructing, reconstructing, repairing or enlarging any structure, or any activity that requires a building, plumbing, electrical, mechanical or demolition Permit.
- G. **Flood Control Channel:** Any engineered Stream or other Watercourse that has concrete banks.
- H. **Nontidal Wetlands:** Those areas not influenced by tidal fluctuations that are inundated or saturated by surface water or groundwater 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.
- I. **Nonpoint Source:** Pollution that is generated by various land use activities rather than from Pollution an identifiable or discrete source and is conveyed to waterways through natural processes, such as rainfall, storm water runoff, or groundwater seepage rather than direct discharges.
- J. **Pollution :** Any contamination or alteration of the physical, chemical, or biological properties of any waters that will render the waters harmful or detrimental to
 - 1. Public health, safety, or welfare
 - 2. Domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses
 - 3. Livestock, wild animals, or birds

4. Fish or other aquatic life

- K. **Riparian Corridor:** whichever of the following covers the larger area: (a) a Watercourse together with its Bank and its Setback; or (b) a Watercourse together with an area of adjacent Riparian Vegetation which may be identified through field investigation.
- L. **Riparian Vegetation:** plant species typically native to Riparian Corridors or salt marshes.
- M. **Stream:** a Watercourse that is a naturally occurring swale or depression, or engineered channel which carries fresh or Estuarine water either seasonally or year round within the City boundaries, and/or any area identified through field investigation by a trained biologist, engineer, landscape architect, hydrologist, fluvial geomorphologist, or ecologist as meeting the above criteria. Streams include tributary drainages that carry storm water runoff and connect to larger streams.
- N. **Stream Protection Zone:** a protected area adjacent to a Stream, including Flood Control Channels. As set forth infra, for all Streams, the City of Los Angeles recognizes two Stream Protection Zones: a 30 feet protected zone and 100 feet buffer zone from the Top of Bank.
- O. **Structure:** any works or constructions of any kind, including those of earth or rock, permanent or temporary, and including but not limited to fences, patios, swimming pools, decks, poles, buildings, paving, inlets, levees, tide gates, spillways, drop structures, retaining walls, erosion control devices and similar facilities.
- P. **Toe of Bank:** the point at which the Bank slope intersects the bottom of the Watercourse nearest the side of the proposed Development.
- Q. **Top of Bank:** the point at which a line projected from the Toe of the Bank toward the top of the Bank at a slope of 2 (horizontal) to 1 (vertical), or 26 1/2 degrees from horizontal, intersects surrounding level ground.
- R. **Watercourse:** any pipe or natural or man-made channel through which water flows continuously or intermittently in a definite direction and course or alternating directions and course under the influence of tides or any appurtenant structure thereof which is used for the holding, delay or storage of water, except enclosed public water delivery and storm sewer system pipe.

Section IV. Stream Identification

Stream Mapping: The City of Los Angeles shall map all perennial, intermittent, and ephemeral drainages and streams within their jurisdictional boundaries for purposes of identifying streams for its inspections by 2012.

- A. Mapping shall combine existing and historical USGS, Thomas Brothers, Regional Board, Soils, Detail Irrigation historical stream maps with GIS stream layers created from 10 meter or better digital elevation models (DEMs). These new stream layers will then be buffered and ground-truthed to document likely locations within the stream setback zone. These maps shall be integrated into Navigate LA, ZIMAS, and other reference maps used by the Departments of Planning and Building and Safety to review all development applications and ensure they are in compliance with this Stream Protection Ordinance.
- B. Interim Stream Identification: City staff shall review topography maps within hillside areas and perform site visits as required to validate the presence of a stream and incorporate GIS data layers as provided by resource agencies. Other professionals, such as biologists, engineers, landscape architects, may also make positive stream identification.

Section V. Stream Protection

- A. Every person or entity responsible for ownership, maintenance and/or control of a property through which a Stream and/or its Stream Protection Zone passes, shall:
 - 1) keep and maintain the area reasonably free of trash, debris, excessive vegetation, and other obstacles which would pollute, contaminate, or significantly retard the flow of water through the Stream, in a manner satisfactory to the City;
 - 2) shall maintain existing privately owned Structures within or adjacent to a Stream, so that Structures will not become a hazard to the use, function, or physical integrity of the Stream; and
 - 3) shall not remove, without prior approval by the City of Los Angeles, or other appropriate agency (such as the California Department of Fish and Game or the US Army Corps of Engineers), healthy native Riparian Vegetation beyond that actually necessary for maintenance of the Stream, nor remove said vegetation in such a manner as to increase the vulnerability of the Stream to erosion.

- B. No person or entity shall install septic seepage pits within a Stream Protection Zone; nor shall the Stream Protection Zone be used for agriculture, equestrian, or livestock facilities.
- C. No Person shall commit or cause to be committed any of the following acts, unless a written permit has first been obtained from the City:
1. Discharge concentrated storm water into or connect any storm water pipe to a Stream;
 2. Modify the natural flow of water in a Stream;
 3. Carry out Development within a Stream Protection Zone, as described infra,
 4. Construct, alter, enlarge, connect to, or remove any Structure, or alter the stream course or profile in a Stream, unless the specified action restores the Stream's natural structure or functions.

D. Stream Protection Zones

Two Stream Protection Zones are created by this Ordinance:

1. A 30 foot setback from a Stream's Top of Bank. This zone shall be called the Stream Protection Zone. No Development activity or other Work shall be allowed in this zone except for those activities necessary for restoration, maintenance, and protection.
2. A 100 foot setback from a Stream's Top of Bank for a natural stream. This zone shall be called the Stream Buffer Zone and will limit Development or Work in the area from 30 feet from Top of Bank to 100 feet from Top of Bank, as set forth in Section V. E, infra.

E. Restricted and Exempt Activities

1. Development or Work allowed in the Buffer Zone will be classified according to the following guidelines:
 - a. Exempt: Non-structural Interior Work that is independent of structural Development or Work that does not normally require a Building Permit, and costs less than 50% of the value of the property;
 - b. Category I: Exterior Development or Work that remains outside of the Stream Protection Zone, or interior Development or Work that requires a Building Permit.

Included in this category are the following activities:

- 1) Development or Work that remains inside the existing building footprint; *and*

- 2) Any Development or Work where the cost of the new development does not exceed 50% of the property's value.
- c. Category II: Any landscape Development or Work that can be demonstrated to maintain soil permeability of the Stream Protection Zone and not contribute to surface erosion.
 - d. All new Development including but not limited to pervious (or hardscape) trails, septic leach fields or seepage pits, outbuildings (sheds), housing or foraging areas for livestock, equestrian, and agricultural activities are prohibited except under the following circumstances:
 - 1) Where the new Development is an expansion of any structure that existed prior to the enactment of this ordinance; and
 - 2) The new Development does not in take place any closer to the Stream than the existing Development; and
 - 3) The new Development is designed according to the Best Management Practices of the Standard Urban Storm water Mitigation Plan such that there is no new runoff or increased runoff volume diverted toward the Stream
 - e. Storm water Best Management Practices, other than wetlands, swales, native vegetation and other bioengineered Best Management Practices, are prohibited within the Buffer Zone unless the Best Management Practice is shown to have no negative impact, including no increase in impervious area, on the streambank or streambed. For example, a continuous deflection separation unit is prohibited in the Buffer Zone of natural streambank where it would increase impervious surface area, but may be permitted in a concrete streambank where it would have no impact on the amount of impervious surface and would result in improved water quality in the stream.

F. **Flood Control**

The policy of the City of Los Angeles ("City") is to discourage armoring of streams (drainage courses). This practice can create problems for downstream property owners, degrade water quality, and increase maintenance costs. Instead, all flood control projects within stream areas should be constructed using bioengineering (no use of hardened structures) to the maximum extent practicable, and should be designed to maintain or reestablish connectivity to the floodplain, maintain or reestablish appropriate stream slope and length, and ensure or reestablish biological function. The follow criteria shall be used in designing any new flood control projects:

1. Use of infiltration methods instead of hillside storm drain pipes/structures or flood control pipes/structures that are not directly connected to a drainage course, whenever geotechnical conditions allow. When storm drain or flood control pipes/structures are connected to a drainage course, connections should be accomplished using bioengineering techniques to include the natural dissipation of energy and allow for infiltration, such as natural step pool drainage devices also designed to prevent hillside erosion and sediment loading to downstream water bodies.
2. Avoid perched hillside drainage pipes and actively retrofit existing perched pipes.
3. Maintain the natural flow of water in the Stream and prevent upstream, instream and downstream impacts.
4. Prevent the deposition of material into the Stream that causes bank erosion, instability, or unnatural or excessive compaction.
5. Maintain the existing stream channel capacity.
6. Protect Riparian Vegetation, animal wildlife, and the Stream's structure, function and dynamics.

G. **Variance**

In circumstances where a stream is situated on real property such that a 100' buffer would preclude any reasonable new development of the property, the property owner may appeal to the Commission of the Department of Planning for a variance in the setback requirement. There should be no variance which would allow for less than a 30 foot setback.

Section VI. Stream Retrofit

- A. The City of Los Angeles will engage in a program to map all perennial, intermittent, and ephemeral drainages and streams within their jurisdictional boundaries for purposes of identify streams for its inspections by 2010. The initial program will at a minimum utilize GIS stream layers created from 10 meter or better digital elevation models (DEMs). These new stream layers will then be buffered to document likely locations within the stream setback zone. These maps should be used by the planning and building permitting department to review all development applications and ensure they are in compliance with the Stream Protection Ordinance. City will identify inspections in GIS section and map perennial streams.

- B. The City will conduct a periodic review of existing armored instream and bank structures for retrofit potential, and will allocate funding for this purpose. It will review the economic feasibility of replacing aging, undersized and maintenance intensive structures (including solid culverts, box culverts, drops structures, sediment basins) for the potential of replacing them with appropriately sized freespan bridges or re-establishing a natural stream channel with appropriate stream slope and length. This review will take the form of a one-time inspection of all structures, at which time potential problem sites will be flagged for further restoration/retrofit analysis. Thereafter, a restoration/retrofit potential review will be added to all ongoing city inspection programs, prioritized according to need.
- C. The City will establish an active impervious surface retrofit program within the stream setback zone, and a hillside drainage retrofit program. These retrofits should be based on any significant reconstruction/remodel i.e. resurfacing parking lots, major remodels and/or applied on a time schedule to coincide with TMDL implementation dates whichever comes first. This impervious surface retrofit program should infiltrate and/or treat water from the 85th percentile design storm.
- P. The City will set aside funds and actively engage in property acquisition, and the retirement of instream structures and bank armoring that strategize creek side acquisition leading to stream restoration, park space, and improved flood protection using bioengineered methods.
- Q. The City will establish ongoing funding mechanisms for stream restoration acquisition and BMP retrofits.
- R. The City will conduct an economic feasibility analysis that includes long-term costs and benefits of existing armoring practices and of bioengineering practices. The analysis must include the full costs of maintaining and replacing concrete structures and armoring; of clearing debris from storm drain grates and concrete channels; of treating runoff that flows directly from impervious surfaces to waterways in order to meet TMDLs and other water quality regulations; and a comparison of these costs with the costs of installing and maintaining native vegetation on stream banks and the water quality and flood control benefits derived therefrom.

Section VII. Enforcement Procedures

- A. The City of Los Angeles, Department of Public Works is authorized and empowered to enforce the requirements of this ordinance in accordance with the procedures of this section.
- B. If, upon inspection or investigation, the City of Los Angeles, Department of Public Works is of the opinion that any person has violated any provision of this

ordinance, they shall with reasonable promptness issue a correction notice to the person. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance that has been violated. In addition, the notice shall set a reasonable time not to exceed 30 days for the abatement and correction of the violation.

- C. If it is determined that the violation or violations continue after the time fixed for abatement and correction has expired, the City of Los Angeles shall issue a citation by certified mail to the person who is in violation. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance that has been violated and penalties proposed to be assessed. The person charged has 30 days within which to contest the citation or proposed assessment of penalty and to file a request for a hearing with the Board of Public Works. At the conclusion of this hearing, the City of Los Angeles, Department of Public Works will issue a final order, subject to appeal to the appropriate authority. If, within 30 days from the receipt of the citation issued by the director, the person fails to contest the citation or proposed assessment of penalty, the citation or proposed assessment of penalty shall be deemed the final order of the director.
- D. Any person who violates any provision of this ordinance may be liable for any cost or expenses incurred as a result thereof by the agency.
- E. Penalties that may be assessed for those deemed to be in violation may include the following:
1. A civil penalty not to exceed \$10,000.00 for each violation. Every day that such violation(s) continue will be considered a separate offense.
 2. A criminal penalty in the form of a fine of not more than \$10,000.00 for each violation, or imprisonment for not more than 90 days, or both. Every day that such violation(s) continue will be considered a separate offense.
 3. Anyone who knowingly makes any false statements in any application, record, or plan required by this ordinance shall upon conviction be punished by a fine of not more than \$10,000.00 for each violation, imprisonment for not more than 30 days, or both.
- F. In addition to any other sanctions listed in this ordinance, a person who fails to comply with the provisions of this buffer ordinance shall be liable to the agency in a civil action for damages in an amount equal to twice the cost of restoring the buffer. Damages that are recovered in accordance with this action shall be used for the restoration of buffer systems or for the administration of programs for the protection and restoration of water quality, streams, wetlands, and floodplains.

Section IX. Conflict with Other Regulations

Where the standards and management requirements of this buffer ordinance are in conflict with other laws, regulations, and policies regarding streams, steep slopes, erodible soils, wetlands, floodplains, timber harvesting, land disturbance activities, or other environmental protective measures, the more restrictive shall apply.

Section X. Responsible Entity

Except as otherwise stated, all actions specified in this ordinance shall be the responsibility of the Department of Public Works.

Section XI. Exempt Water Bodies

Those portions of the Los Angeles River which are the subject of the Los Angeles River Revitalization Master Plan are specifically exempted from the provisions of the ordinance.

References

Belt, George H., O'Laughlin, Jay, and Merrill, Troy, *Design of Forest Riparian Buffer Strips for the Protection of Water Quality: Analysis of Scientific Literature*, Report No. 8, University of Idaho, June 1992.

Center for Watershed Protection, Watershed Protection Institute, *Program U: Protecting Streamside Buffers*,

Chagrin River Watershed Partners, Inc., 2006. Riparian Setbacks, Technical Information for Policy Makers.

City of Knoxville, TN, *Stream Buffer Zone, Policy 22*, date not available.

Correll, D.L., *Buffer zones and water quality protection: general principles*, Smithsonian Environmental Research Center, 1997

Correll, Dave, *Vegetated Stream Riparian Zones: Their Effects on Stream Nutrients, Sediments, and Toxic Substances. An annotated and indexed bibliography of the world literature, including buffer strips and interactions with hyporheic zones and floodplains.* April 2003

Correll, David L., *Principles of planning and establishment of buffer zones*, Elsevier Ecological Engineering, January 10, 2005

Daniel, Heather, reviewer. Robert D. Clark Honors College, University of Oregon, 2005.: Brosofske, K.D., J. Chen, R.J., Naiman, and J.F. Franklin, *Harvesting Effects on Microclimate Gradients from Small Streams to Uplands in Western Washington*, Ecological Applications 7, (1997) 118-1200

Delaware Riverkeepers, <http://www.delawareriverkeeper.org/index.asp>.

EPA model ordinance <http://www.epa.gov/owow/nps/ordinance/mol1.htm>

Heraty, M. 1993. Riparian buffer programs: a guide to developing and implementing a riparian buffer program as an urban best management practice. Metropolitan Washington Council of Governments, USEPA Office of Wetlands, Oceans and Watersheds. Washington, DC.

Mayer, Paul M., Reynolds, Steven K., Canfield, Timothy J, and McCutcheon, Marshall D., *Riparian Buffer Width, Vegetative Cover, and Nitrogen Removal Effectiveness: A Review of Current Science and Regulations*, USEPA Office of Research and Development National Risk Management Research Laboratory and East Central University, Ada, Oklahoma, Oct. 2005.

San Francisco Regional Water Quality Control Board, *Local Government Riparian Buffers in the San Francisco Bay Area*, 2004.

Schueler, Thomas R., and Holland, Heather K., eds., *The Practice of Watershed Protection: The Architecture of Urban Stream Buffers, Watershed Protection Techniques 1(4): 155-163*, Center for Watershed Protection, 2000.

Schueler, T. 1995. Site planning for urban stream protection. Metropolitan Washington Council of Governments, USEPA Office of Wetlands, Oceans and Watersheds. Washington, DC.

Stormwaterauthority.org

Tennessee MS4 Working Group Water Quality Buffer Zone Policy, <http://www.franklin.gov.com/engineering/stormwater/ms4/buffer/buffer.pdf>, 3/9/04.

USDA, Mississippi Department of Environmental Quality, and Mississippi Soil & Water Conservation Commission, *Planning & Design Manual for the Control of Erosion, Sediment, and Stormwater*, April 1994.

Water Laws Magazine, interview with Tom Schueler, published on internet, date not available, http://www.waterlaws.com/commentary/interviews/schueler_interview.html.

Welsch, D. 1991. Riparian forest buffers. FS Pub. No. NA-PR-07-91. US Department of Agriculture, Forest Service. Forest Resources Management, Radnor, PA.

Wenger, Seth, Fowler, Laurie, and McStotts, Jennifer, *Stream Buffer Ordinances*, Etowah Habitat Conservation Plan, April 2005.