CITY OF SPRING HILL
Water Quality Buffer Zone Policy
(Adopted April 22, 2008)

Section I - Description

A water quality buffer zone (a.k.a. a riparian zone) is a strip of undisturbed native (indigenous) vegetation, either original or re-established, that borders streams and rivers, ponds, lakes and wetlands. Water quality buffer zones, a.k.a. buffer zones, are most effective when storm water runoff is flowing into and through them as shallow sheet flow, rather than in concentrated form such as in channels, gullies, splays, or wet weather conveyances. Therefore, it is critical that the design of any development include management practices, to the maximum extent practical, that will result in storm water runoff flowing into and through the buffer zone as shallow sheet flow.

Water quality buffer zones protect the physical and ecological integrity of water bodies from surrounding upland activities in the following ways:

- filtering excess amounts of sediment, organic material, nutrients, and other chemicals;
- reducing storm runoff velocities;
- providing flood protection;
- protecting channel bank areas from scour and erosion;
- providing shade for cooling adjacent water; which allows waters to hold a greater level of dissolved oxygen;
- providing leaf litter and large woody debris important to aquatic organisms; and
- improving stream bank habitat for aquatic organisms

Section II - Intent

The intent of this policy is to protect and maintain the native vegetation in the water quality buffer zones by implementing specifications for the establishment, protection, and long-term maintenance of buffer zones along all intermittent and perennial streams, waterways, rivers, ponds, lakes and wetlands in or adjacent to new development and significant redevelopment located within the City of Spring Hill's jurisdictional authority. This policy serves to clarify the requirements for water quality buffer zones. It applies to all development approved after its enactment, including redevelopment of properties approved prior to its enactment.

Section III – Definitions

For the purpose of this Section, the following definitions shall apply: Words used in the singular shall include the plural, and the plural shall include the singular; words used in the present tense shall include the future tense. The word "shall" is mandatory and not discretionary. The word "may" is permissive. Words not defined in this section shall be construed to have the meaning given by common and ordinary use as defined in the latest edition of Webster's Dictionary.

(1) *"Appeal"* - A request for a review of an interpretation of any provisions of these regulations by the City of Spring Hill Storm Water Coordinator who operates under the direction and supervision of the City Administrator.

(2) "*Best Management Practices"* or "*BMPs"* - The physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water, that have been approved by the City of Spring Hill, and that have

been incorporated by reference into this ordinance as if fully set out therein.

(3) *"Crossing"* – A physical breach of the channel bed and banks in which a utility or roadway infrastructure is installed.

(4) *"Building"* - Any structure built for support, shelter, or enclosure for any occupancy

(5) *"Channel"* - A natural or artificial watercourse with a definite bed and banks that conveys flowing water continuously or periodically.

(6) *"Channel (Braided)"* – A channel which is divided into several smaller ones by the accumulation of in-channel deposits.

(7) *"Channel (Single)"* – A channel which has one conveyance route consisting of one channel bed and two banks and is not divided into multiple conveyance routes.

(8) *"Development"* – A tract of land that is proposed to have residential, commercial, industrial or agricultural buildings constructed which may also include roadway and utility improvements.

(9) *"Erosion"* - The removal of soil particles by the action of water, wind, ice, gravity, or other geological agents, whether naturally occurring or acting in conjunction with or promoted by man-made activities or effects.

(10) *"Intermittent Stream"* – A watercourse that flows in a well-defined channel only in direct response to a precipitation event. It is dry for a large part of the year.

(11) *"Maintenance"* – Performing tasks within a designated area that care for the existing conditions of the property. Tasks such as lawn cutting and bush trimming are considered maintenance tasks. Clear cutting, tree removal and grading are not considered maintenance tasks.

(12) *"Native Vegetation"* – A plant whose presence and survival in a specific region is not due to human intervention or is non-invasive.

(13) *"Perennial Stream"* – A watercourse that flows throughout a majority of the year in a well-defined channel.

(14) *"Recreation Areas"* – Areas designated for recreational use such as parks, greenways and nature preservations.

(15) *"Redevelopment"* – A tract of land that has previously been developed and contains either existing residential, commercial, industrial or agricultural buildings and/or roadways and utility improvements that is being proposed to be improved or altered from the current development condition.

(16) *"Riparian Zone*" or *"Water Quality Buffer Zone"* – A strip of undisturbed native (indigenous) vegetation, either original or re-established, that borders streams and rivers, ponds, lakes and wetlands

(17) *"Sediment"* - Solid material, both mineral and organic, that is in suspension, or in bed load, is being transported, or has been moved from its site of origin by water, wind, ice, or gravity and has come to rest on the earth's surface either above or below sea level.

(18) *"Stabilization"* - Providing adequate measures, vegetative and/or structural, that will prevent or minimize erosion from occurring.

(19) *"Storm Water"* - Storm water runoff, snow melt runoff, surface runoff, infiltration, and drainage.

(20) *"Storm Water Runoff" or "Runoff"* - Water that flows on the surface of the ground, resulting from precipitation.

(21) *"TDEC"* - The Tennessee Department of Environment and Conservation.

(22) *"Top Of Bank (Single Channel)"* – The location of the highest point of the channel which conveys the defined channel flow and as defined by the intersection of the horizontal ground with the side slope of the defined channel. (See Exhibit 1- Water Quality Buffer Zone Cross Section and Exhibit 2 – Single Channel Water Quality Buffer Zone)

(23) *"Top Of Bank (Braided Channel)"* – The location of the highest point of the outer channel which conveys the channel flow and as defined by the intersection of the horizontal ground with the side slope of the channel. (See Exhibit 3 – Braided Channel Water Quality Buffer Zone)

(24) *"Water Quality Buffer Zone"* - A water quality buffer zone (a.k.a. a riparian zone) is a strip of undisturbed native (indigenous) vegetation either original or re-established, that borders streams and rivers, ponds, lakes and wetlands.

(25) *"Water Quality Buffer Zone Measurement (Single Channel)"*- The distance as determined to be two times the channel width as measured from top-of-bank to top-of-bank. This distance (two times the channel width) is then measured from the top-of-bank in a perpendicular direction away from the channel on each side of the channel to establish the Water Quality Buffer Zone. (See Exhibit 1- Water Quality Buffer Zone Cross Section and Exhibit 2 – Single Channel Water Quality Buffer Zone)

(26) *"Water Quality Buffer Zone Measurement (Braided Channel)"*- The distance as determined to be two times the channel width as measured from top-of-bank to top-of-bank of the single defined channel. The top-of-bank to top-of-bank channel width will be determined based on the average width of both the upstream and downstream single channel. The distance will not be measured across the width of the braided sections but will be based on the average upstream and downstream single channel widths. This distance (two times the averaged channel width) is then measured from the outer channel top-of-bank in a perpendicular direction away from the outer channel of the braided section and on each side of the outer channels to establish the Water Quality Buffer Zone. (See Exhibit 1- Water Quality Buffer Zone Cross Section and Exhibit 3 – Braided Channel Water Quality Buffer Zone)

(27) *"Watercourse"* or *"Waterway"* - A permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water.

(28) *"Wet Weather Conveyances"* – Man-made or natural watercourses, including natural watercourses that have been modified by channelization, that flow only in direct response to precipitation runoff in their immediate locality and whose channels are above the groundwater table and which do not support fish or aquatic life and are not suitable for drinking water supplies.

Section IV - Design Standards for Water Quality Buffer Zones

A water quality buffer zone is required along all intermittent and perennial streams, waterways, rivers, ponds, lakes and wetlands as identified on a 7.5-minute USGS quadrangle map, as determined by the Tennessee Department of Environment and Conservation (TDEC), and/or as determined by the City of Spring Hill Storm Water Coordinator. The buffer zone width shall be determined as follows:

Where a proposed development is traversed by a watercourse, water body, channel, or stream, there shall be provided a water quality buffer zone located on each side of the channel or around the water body perimeter and extending two (2) times the width of the main channel (measured from top-of-bank to top-of-bank) of such watercourse from both edges of said main channel. Should the width of the determined water quality buffer zone (two times the main channel width) be determined to be less than 30-feet, then the required buffer zone width shall be a minimum of 30-feet. A water body such as a pond, lake or wetlands will require a buffer zone of 30-feet around the perimeter as defined from the high water elevation.

Water quality buffer zone width adjustment:

A) If there are 15% to 24% slopes which are within the required water quality buffer zone width, then buffer zone width shall be adjusted to include an additional 10 feet.

B) If there are 25% or greater slopes which are within the required buffer zone width, the buffer width shall be adjusted to include an additional 20 feet.

C) If the adjacent land use involves drain fields from on-site sewage disposal and treatment systems (i.e. STEP system collection / sand filter treatment / disposal field lines) or subsurface sewage disposal systems (i.e. conventional, alternative, and experimental septic systems) current TDEC-Division of Water Pollution Control and County Health Department regulations, requiring a setback from top of bank, shall govern. No septic tanks shall be allowed within the buffer zone, while disposal field lines are allowed within the buffer zone, as long as the lines abide by the aforementioned state and county regulations.

D) If the land use or activity involves aboveground storage of hazardous substances or petroleum facilities, the water quality buffer zone width shall be adjusted to include an additional 100-foot.

E) If the land use involves animal feed lot operations, the buffer zone width shall be adjusted to include an additional 120-foot.

F) If the land use or activity involves solid waste landfills or junkyards, the buffer zone width shall be adjusted to include an additional 200-feet.

G) If the adjacent land use involves surface discharges of collected septage current TDEC Division of Water Pollution Control regulations shall govern.

H) If the adjacent land use involves surface discharges from a wastewater treatment plant, land application of bio-solids, or animal waste the buffer zone width shall be governed by current TDEC-Division of Water Pollution Control regulations.

I) If more than one of the aforementioned are applicable, the greater width adjustment shall apply.

Section V - Water Quality Buffer Zone Management and Maintenance

The function of the water quality buffer zone is to protect the physical and ecological integrity of the waterway, to reduce flooding potential, and to filter runoff from residential, commercial, institutional, recreational, and industrial development. The buffer zone vegetative objective is to protect native vegetation with the ability of the land owner to maintain their property and also plant native vegetation and landscaping. Ordinary maintenance of existing native vegetation can be conducted by the property owner as long as it is not damaging the overall function of the designated Water Quality Buffer Zone as determined by the Storm Water Coordinator.

A) Management of the water quality buffer zone includes specific limitations on alteration of the natural conditions. The following practices and activities are restricted within the water quality buffer zone, except with prior approval by the City of Spring Hill Storm Water Coordinator:

1) Clearing or grubbing of existing vegetation;
2) Clear cutting of vegetation or trees;
3) Soil disturbance by grading, stripping, or other practices;
4) Filling or dumping;
5) Use, storage, or application of pesticides, herbicides, and fertilizers; and
6) Conversion of existing established vegetation from majority native to majority exotic species.

B) The following structures, practices, and activities are permitted in the Water Quality Buffer Zone, subject to prior approval of the City of Spring Hill Storm Water Coordinator; the acquisition of an Aquatic Resources Alteration Permit (ARAP) from the Natural Resources Section, Division of Water Pollution Control, TDEC; and with the following specific design or maintenance features:

1) Stream crossings, paths (i.e. trails and greenways), stream bank stabilization efforts, riparian zone enhancements, parks, in-stream deflector structures and utilities. Prior to submitting these variance uses for approval by the Storm Water Coordinator, the following shall be performed:

a) A written analysis to ensure that no economically feasible alternative is available;

b) Determination of the minimum right-of-way width needed to allow for maintenance and access installation;

c) The angle of a crossing shall be perpendicular to the stream or buffer in order to minimize clearing requirements;

d) The minimum number of crossings should be used within each development, and no more than one crossing is allowed for every 1,000 linear feet of buffer zone. Where possible, the design of roadways and lots within a development should be aligned such that all streams are either to the rear or the side of individual lots, never along the front.

2) Individual trees within the water quality buffer zone may be cut down if in danger of falling, causing damage to dwellings or other structures, or causing blockage of the stream. The remaining root wad or stump should be left in place, where

feasible, to maintain soil stability and in-stream habitat. Requests to remove unsightly or undesirable trees that are not in danger of falling, causing damage to dwellings or other structures, or causing blockage of the stream may be made to the Storm Water Coordinator on a case-by-case basis. The tree removal requests should not cause damage to the stream bank or the overall effectiveness of the stream's tree canopy. Should the Storm Water Coordinator approve a tree removal request then replacement trees shall be installed by the property owner. The replacement trees total caliper shall, at minimum, equal the tree caliper of the approved tree to be removed. The tree caliper shall be a measurement equal to the tree diameter as measured at breast height. This measurement is referred to as diameter at breast height (DBH).

An example of tree replacement is indicated as follows: If a 12-inch caliper tree is approved to be removed then an approved replacement would be three trees each having a 4-inch caliper or four trees each having a 3-inch caliper. The minimum tree caliper for tree replacements shall be 2-1/2-inch.

C) All site development plans and plats prepared for recording shall:

1) Show the extent of any Water Quality Buffer Zone on the subject property by metes and bounds and labeled as "Water Quality Buffer Zone";

2) Provide a note to reference any Water Quality Buffer Zone stating, "There shall be no clearing, grading, construction, or disturbance of soil and/or vegetation except as permitted by the City of Spring Hill Storm Water Coordinator";

3) If water quality buffer zones are located within designated open spaces or green spaces of a particular development and restrictive covenants are to be adopted and recorded for that particular development, a note should be indicated on the site plan or plat stating "Any water quality buffer zone shown hereon is subject to protective covenants which may be found in the land records and which restrict disturbance and use of these areas." The restrictive covenants should include language which references the City of Spring Hill's Water Quality Buffer Zone Policy disturbance restrictions and requirements.

D) All water quality buffer zones must be protected during development and redevelopment activities. Prior to the initiation of development or redevelopment activities, ensure adequate visibility of the Water Quality Buffer Zones by staking and flagging and by onsite visitation and discussion(s) with all appropriate contractors. Temporary boundary markers, in the form of silt fence barriers with wire backing as approved by the City of Spring Hill Storm Water Coordinator, shall be installed prior to any construction activities of the development.

E) Stream banks and other areas within the water quality buffer zone shall be left in a stabilized condition upon completion of the development activities. The vegetative condition of the entire buffer zone shall be monitored and landscaping or stabilization performed to repair erosion, damaged vegetation, or other problems identified. Only native vegetation may be used in conjunction with stabilization activities. A guide to selecting native vegetation can be found at:

ww.tva.com/river/landandshore/stabilization/plantsearch.htm

All landscaping or stabilization activities within the Water Quality Buffer Zone shall have prior approval by the City of Spring Hill Storm Water Coordinator. In addition, performing work in and around waters of the state may require coverage under a state and possibly a federal permit. Contact the nearest TDEC, Division of Water Pollution Control Environmental Assistance Center (1-888-891-8332) for more information on whether a proposed activity requires a permit.

F) No buildings shall be allowed in the water quality buffer zone with the exception of open type recreation areas, park facilities and walking trails as approved by the Storm Water Coordinator.

G) Water quality buffer zones shall be recorded on the plat for parcels subject to plat revision as water quality buffer zones. On parcels not subject to plat revisions, the buffer zone shall be applied as a setback from the top of bank of the stream channel and shown on the site plan as a water quality buffer zone.

Section VI - Waivers/Variances

A) This water quality buffer zone policy shall apply to all proposed development and redevelopment except for a development in which the construction plans were approved by the Planning Commission prior to the effective date of this policy.

B) The Storm Water Coordinator may grant a variance for the following:

1) Those projects or activities where it can be demonstrated that strict compliance with the ordinance would result in practical difficulty or financial hardship; or

2) Those projects or activities serving a public need where no feasible alternative is available; or

3) The repair and maintenance of public improvements where avoidance and minimization of adverse impacts to wetlands and associated aquatic ecosystems have been addressed.

C) The Storm Water Coordinator may consider a variance to the buffer width at restrictive locations and may allow the buffer to be narrower at some points as long as the width is not reduced to less than thirty (30) feet perpendicular from the top of bank at any location, and the overall average width of the buffer zone meets the minimum requirement set forth in Section IV – Design Standards for Water Quality Buffer Zone.

D) The applicant shall submit a written request for a variance to the Storm Water Coordinator The application shall include specific reasons justifying the variance and any other information necessary to evaluate the proposed variance request. The Storm Water coordinator may require an alternatives analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development.

E) When considering a request for a variance, the Storm Water Coordinator may require additional information such as, but not limited to, site design, landscape planting, fencing, placement of signs and establishment of water quality best management practices in order to reduce adverse impacts on water quality, streams, and

wetlands.

Section VII- Appeals

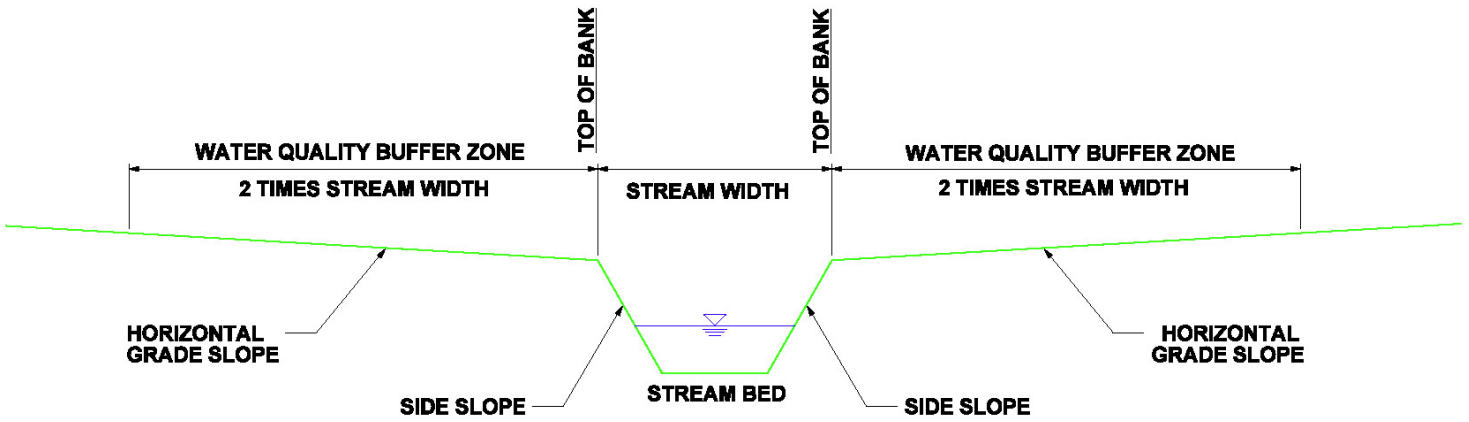
Any aggrieved landowner affected by any decision of the Storm Water Coordinator, in regard to enforcement of this policy, may appeal such decision to the Board of Mayor and Aldermen for the City of Spring Hill, Tennessee.

Section VIII- Conflict with Other Regulations

Where the standards and management requirements of this Water Quality Buffer Zone Policy 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 most restrictive requirements shall apply.

EXHIBITS

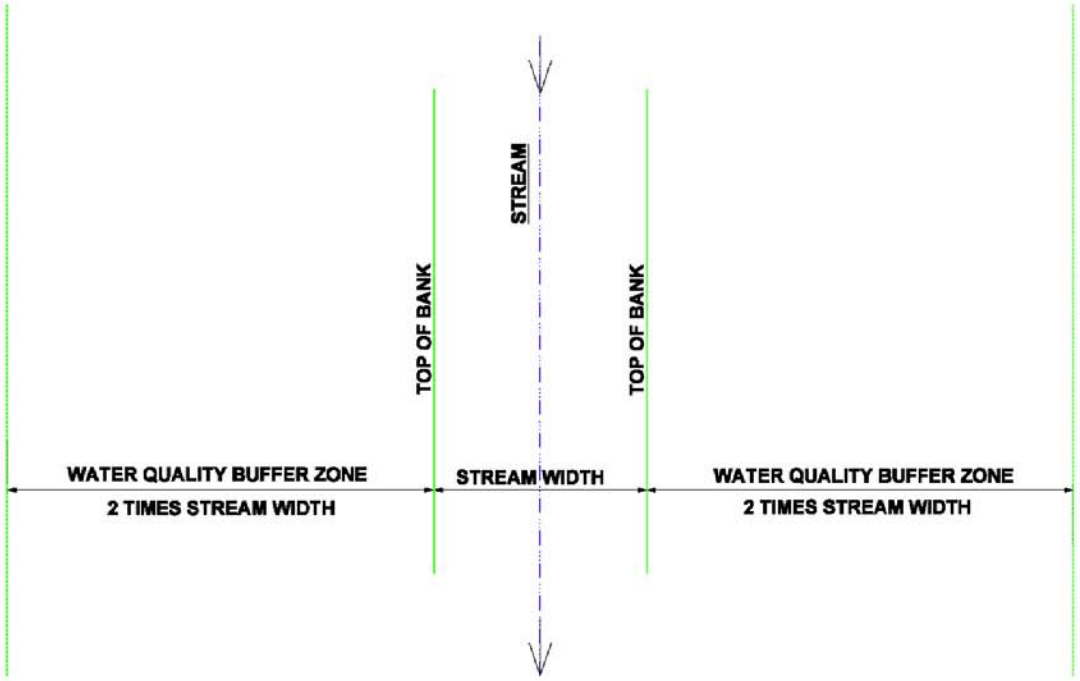
EXHIBIT 1



WATER QUALITY BUFFER ZONE CROSS SECTION

NOT TO SCALE

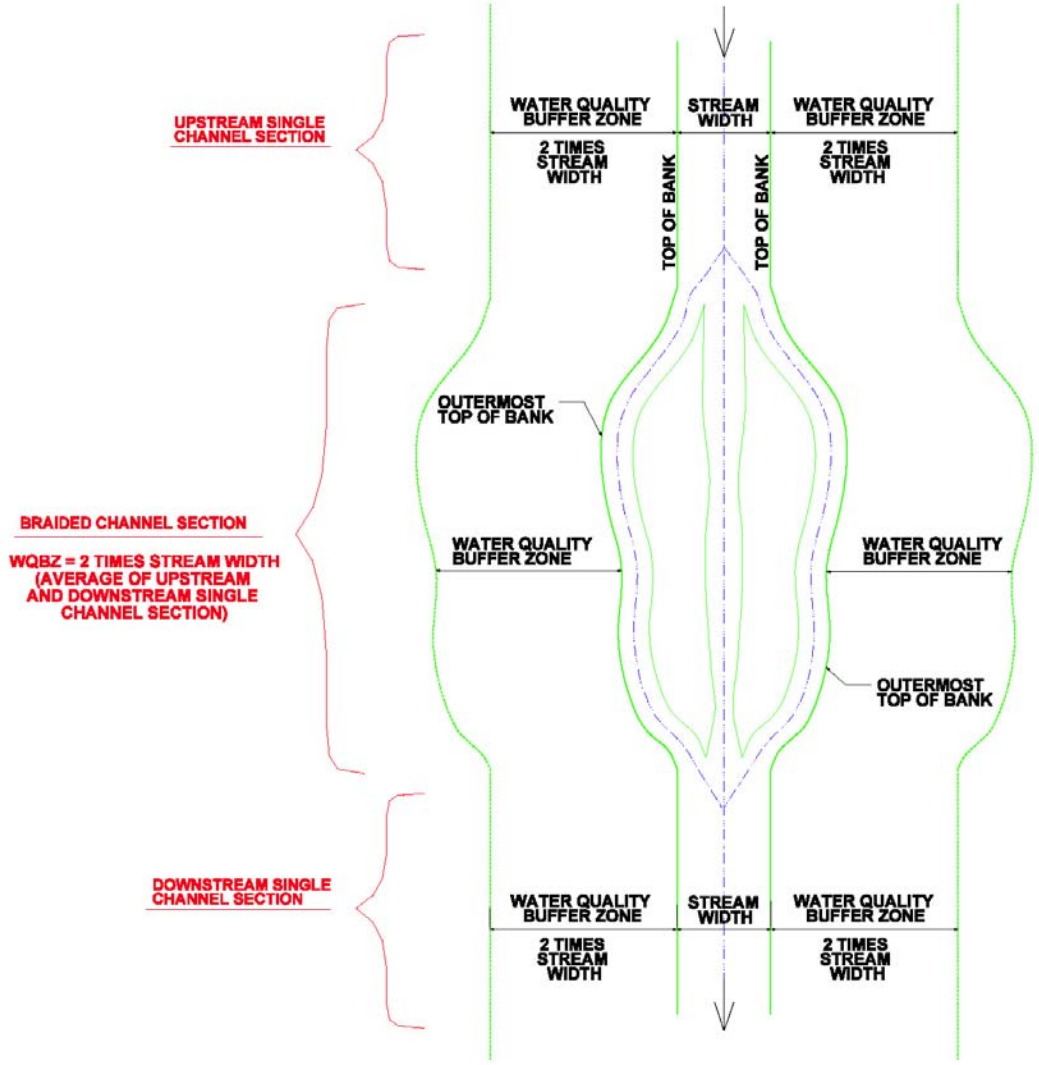
EXHIBIT 2



PLAN VIEW OF SINGLE CHANNEL STREAM

NOT TO SCALE

EXHIBIT 3



PLAN VIEW OF BRAIDED CHANNEL STREAM

NOT TO SCALE