

**Watershed Protection Ordinance  
Stakeholder Meeting  
September 23, 2011**

<http://www.austintexas.gov/watershed/ordinances2.htm>

*The following comments were gathered at and after the September 23, 2011 meeting from stakeholders. Most comments are presented verbatim; some are reworked (as minimally as possible) for clarity. Explanatory text is offered in brackets "[ ]".*

## **Specific Comments on the Stoney Ridge and Berdoll Case Studies**

*The following are all the stakeholder responses to the following four (4) questions asked in this meeting after studying two different single-family residential subdivision case studies:*

1. *What do you like?*
2. *What do you think needs to be changed and why?*
3. *Where should we go? What might a different solution be?*
4. *What needs to be taken into consideration when addressing headwater buffers in each scenario?*

*The first, Stoney Ridge, had a FEMA floodplain through the project prior to development; rather than modify this floodplain (which would require a "Letter of Map Revision" [LOMR] from FEMA) the designers placed its lots further back from a small "headwaters" creek, whose banks were left relatively unmodified.*

*The second, Berdoll Farm, was largely outside of a FEMA floodplain (but within the City of Austin floodplain, which often extends upstream past the FEMA floodplain) modified the pre-development floodplain; straightened, filled, and armored the channel; and placed lots directly adjacent to the new channelized creek.*

*Both subdivisions are located in the Dry Creek East watershed in southeast Austin. Stoney Ridge (490 lots) was built in the 1990s and Berdoll (685 lots) in the early 2000s. Both have comparable property values according to Travis Central Appraisal District (TCAD). More summary information and images are available at: [http://www.austintexas.gov/watershed/downloads/creek\\_protection\\_case\\_studies2.pdf](http://www.austintexas.gov/watershed/downloads/creek_protection_case_studies2.pdf).*

### **Stoney Ridge**

1. What do you like?
  - Stayed out of the floodplain and did not pursue CLOMR/LOMR or channelize floodplain
  - Maintained buffer zone
  - Better school connections [than Berdoll]
2. What do you think needs to be changed and why?
  - Ability to improve degraded CWQZ [*Critical Water Quality Zone buffer*] by adding natural vegetation / mimicking riparian character / wet prairie restoration
3. Where should we go? What might a different solution be?
  - Rain gardens [*small water quality controls using soils and vegetation to infiltrate or filter runoff*]
  - Low Impact Development (LID) [*design concept stressing site-specific methods to reduce negative impacts on hydrology and environment overall*]
  - Reduce amount of water that drains into the creek
  - Innovative [water quality] controls
  - Former WQTZ [Water Quality Transition Zone buffer] area could be mowed area & trails
  - Water quality-detention
  - 50-foot natural area (no mow) and 50-foot trails-mow-WQ-detention

4. What needs to be taken into consideration when addressing headwater buffers in each scenario?
  - Distributing WQ treatment, allowing for limited development (trails, recreation, WQ, detention) in a portion of the buffer zone (approximately 50 feet)

### ***Berdoll Farms***

1. What do you like?
  - Large wet pond with a trail around it
  - Affordable alternative but not best model
  - At least an effort to address flood storage and water quality
  - Great skateboard possibilities in channel
2. What do you think needs to be changed and why?
  - No concrete-gabion: a more natural creek
  - Greatly narrowed channel permanently locks neighborhood into this solution; no future options for trees, trails, greenways, community gardens, amenities, etc.
  - Connection to school
  - Neighborhood connections
  - Pocket parks for kid play areas instead of cul-de-sacs
  - Better streets for pedestrian connectivity
  - Different channel design
  - Either leave creek as is with buffer zone or naturalized channel design; could use grade control structures to reduce shear stress / erosion potential
  - This is a sprawling development
  - This site isn't walkable and is overly automobile oriented
  - Too many cul-de-sacs hurt traffic and pedestrian flow
  - Allows development too close to creek
  - This takes up too much area
  - Development turns its back to school and adjacent neighborhood; disconnected
  - Development turns its back to creek; better to orient to face/have public side to creek
  - No public access to creek
  - Gabions and concrete are long-term maintenance liability; go with something more passive/ needing less active mowing & repair/replacement
3. Where should we go? What might a different solution be?
  - Low impact development / more innovative design
  - So many watershed differences
  - Simplify and remove so many components
  - IC calculation, gross vs. net
  - Volume-based hydrology; LID; distributed storage
  - Need wider buffers to allow these streams to move and undercut without damaging structures
  - Put WQ [structural water quality control] in buffer zone
  - Define 64-acre headwaters buffer using existing flow rates rather than a straight 100-foot buffer
  - Revise codes to allow more flexible design:
    - Smaller lot sizes
    - Clustering
    - More units
    - More housing designs – ROW garage apartments
4. What needs to be taken into consideration when addressing headwater buffers in each scenario?
  - Credit for parkland / smaller streets / collecting rainwater & reducing flows / rain gardens / if larger buffers required, find a way to recoup costs / use area for WQ / detention, recreation / connecting ponds – not fragmented
  - Average width of buffer vs. uniform width – so long as floodplain is not modified

- Difficult to look at setback consequences (in isolation) without considering other development components – storage for flood control, ability to re-pattern streets for distributed storage or other considerations
- Erosion potential in waterway
- WQ benefits of existing waterway vs. potential benefits of - Would re-engineering the channel in a more natural manner provide any WQ or community benefit?
- Crossings – variances needed; wide floodplain crossings; some grading needed to get natural floodplain into channel
- Development would need two separate detention / WQ structures

## General Comments, Recommendations & Concerns

### **Buffers**

- Restore buffer
- Desire to improve buffers, which aren't anything right now, to make them into an attractive amenity, good for development
- West side has natural beauty in its creeks that make them worth protecting; east side creeks are usually barren: take into account the existing landscape – if the creek is plowed allow for LID development within buffer
- Land is already modified – already “artificial”
- When we do not have a natural palette existing, we need to be allowed to create one.
- When we don't have the natural pallet to work with, we need to be allowed more flexibility to augment in some places, protect in others
- If the developer can bring some of the WQ controls into the stream buffer to create an AMENITY, the lots with adjacent natural area will sell for a premium
- Protect should not mean “don't touch”
- How can a development be allowed to create something beautiful along the creeks and streams?
- Site specific is good
- Can we allow each section of a creek to be treated differently? Flexibility will allow site specific considerations.
- Separating buffers from floodplains is cumbersome – bring them together
- [One commenter in a discussion group] suggested that we apply a fixed mannings  $n^1$  with a fully functioning riparian area (and natural in-channel “character”), and require developments to provide the buffer size that would contain/pass the 100-year flood. Others thought you could make it flexible (depending on specific local conditions) or come up with standard buffer sizes at regional scales that would be based on this same construct.
- [Proposed] Buffers are way too wide – should just use 100 year floodplain, as it is now – since all surrounding development will build to maintain drainage at pre-development level
- The examples in the photos are sites that used the rules and regulations because they had to due to site constraints. Agree with everything discussed in presentation, but setbacks lead to more cul-de-sacs which lead to more impervious cover, and then Fire Dept regulations, and so on. The design is not by choice – we need a holistic assessment to look at the process. I like setbacks but because you can't get WQ credit, they aren't appealing – you can't just take that area out of the equation.
- I don't know why you would end the buffer requirement at 64 acres. Everything above that will be channelized and the City will again be responsible for maintenance. You should require a buffer any time there is a channel modification, although the buffer could continue shrinking [have a smaller width] as you move upstream. If there is no channelization, the floodplain will be sufficiently wide to serve the same purpose

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<sup>1</sup> “Mannings  $n$ ” is a mathematical coefficient used by engineers to model floodplain extents; it approximates channel “roughness.” Floodwaters will move through a stream corridor with heavier vegetation differently (more slowly, on average) than one that is armored or only lightly vegetated.

- How does the proposed ordinance compare to ordinances in the drinking water protection zone and to USFWS buffers in the Barton Springs Zone?
- Consider extending the western buffers to 32 acres per the 2005 Barton Springs Zone (BSZ) Regional Water Quality Plan
- Allow stormwater controls to be placed in the buffer area because it gives more space and it makes the buffer into an amenity
- Need flexibility to allow restoration in degraded floodplain – 50-feet restore to native [vegetation nearest to creek]; 50-foot WQ [structural controls] & trails [on top half of buffer upslope from creek]
- Consider elevation when defining drainage areas, as it affects flow downstream.
- Current regs don't work in east side
- Don't say "protect," say "restore"; needs to be something you want to walk along; trees for shade; little current natural beauty – waterways are the only place to put attractive "Austin" style amenities
- We should allow the floodplain to be modified only down to the buffer, i.e. Yes, allow floodplain modifications, but with a clear eye to wq [water quality], erosion AND flood constraints. It was pointed out that in the larger drainage areas in the east, these floodplains can be HUGE, so this would be a good give.

### ***Channel Design / Drainage Design***

- Slow the water down, relax requirements on moving water out [e.g., minimum channel slopes, etc.]
- Speaking of the word holistic, we need to address wastewater line placement. Can the City include this as a consideration and include AWU in the discussions?
- Long term costs of historical practices/maintenance need to be clearly quantified to show how expensive it is to add a few more houses to a development. (One commenter asked that we add this to the cost of a development, but this evolved as the discussion continued).
- We can NOT include these costs if we use a high mannings n into our development assumptions and make sure that all developments can pass the 100 year flood, fully built out, through these fully vegetated channels.
- We should do some experimental calculations to see what size buffer a stream needs to pass the 100 year flood through a given development given the above (high mannings n, fully built out, low gradient, etc). Does a 100-foot buffer work? Could it be smaller? Larger? (it would be a nice complement to the erosion hazard zone corroboration, eh?).
- Channels should be thought of as part of our valued infrastructure, like roads and water pipes, and valued the same way. This should be used in our argument for this Ordinance, since it makes creeks/headwaters more fixed and clear part of city/citizen assets. Valuing these systems that way would compare quite well to a small economic loss to the developer (from previous calculations).
- Reduced developable space along creek (due to buffers) can be offset by cost changes to drainage
- Reduce requirements for storm drains (25-year→ 22-year [design standard]);
- Open channel requirements push them towards pipes (no V) 12-foot maintenance path
- [Requirement to have] No standing water pushes [too] steep slope (2%) in channels; 1% requires concrete channel
- Allow for more open channels along roads
- No trickle channels
- Open channels (n value) [should change n value to one allowing less long-term maintenance and mowing]
- Pipe depth [allow reduced pipe depths to reduce construction costs]

### ***Development Review Process/Development Issues***

- Review process for innovative ideas needs to be faster; "can we do a California development in Austin?"
- Current process is rigid; alternate possibilities have a high cost
- Innovations are hard to get through, take time – "by the book" gets approved right away

- We need criteria to allow alternate treatments such as LID. Right now great ideas, outside the box, take longer for approval.
- Can we do California style development in Austin? – clustering, high density? It's working for infill, why not in new development?
- Can we do clustering?
- Dallas, which also has flat land, does drainage in alleys; here it's a market issue: we're told buyers don't want alleys
- New development is limited by surrounding undeveloped land; e.g., access into development is limited by lack of contiguous streets, which leads to increased creek crossings internally

### ***Subdivision & Transportation Code & Criteria***

- Subdivision flexibility – condominium
- Detached condominiums are popular now – give us the flexibility of these in SF [Single Family residential projects]
- Let's talk about narrower streets
- Redo transportation criteria at the same time as buffer criteria so they gain and lose space at the same time
- Design road speed – if slower that's more flexibility
- Mountable curbs
- Subdivision design – multiple problems: connectivity; centralized uses
- Sidewalk requirement (one sidewalk) [reduce costs by requiring sidewalks on one, not both, sides of road] [2 separate comments]

### ***Parkland Dedication and Land Acquisition***

- Purchase land within the development for preserve
- City should purchase buffer fee simple
- [Offer additional] Parkland dedication in floodplain
- Spend habitat preserve funds in east side
- Travis County has bond issue to buy land in east
- What are the different issues with COA city limits and the ETJ? For example, what effect does parkland dedication have on this proposed ordinance?

### ***Stormwater Controls***

- Wet ponds have amenity value
- Stack stormwater goals: WQ & FC [*water quality & flood control structural controls; except for wet ponds, water quality and detention ponds must be constructed as two separate controls; to "stack" them would be to combine them*]
- Access requirements and perimeter roads around WQ controls and fence eat up land. Can a trail be a perimeter road?
- Vegetative filter strip criteria is too conservative [resulting in overly large required areas]
- Filter strip size [should be reconsidered/reduced]
- Allow for more distributed [stormwater] controls [e.g., allow in buffers]
- Distributed detention [rather than end-of-pipe]

### ***Other Amenities/Considerations***

- Community garden [want designs to incorporate, possibly in buffers]
- Address wildlife [commenter wanted improved buffers to help restore wildlife health]
- Community swimming pools in subdivisions are problematic

### ***Environmental Justice / Affordability***

- WQ ordinance in context of environmental justice – current regulations are an expression of racism. How can we incorporate this into our conversations? There is a need to acknowledge the relationship between wealth and the protective ordinances. The affordability issue needs to be considered.

- The cost to taxpayers is significant for remediation - \$40m/year. This affects affordability. What are some strategies to enhance future affordability? Won't we reduce costs and benefit from open space when we protect our waterways?
- [One commenter] suggested we raise up IC numbers to offset the economic costs of calculated from above, but other (developers) said that IC was NOT the limiting issue, and that wouldn't help much (i.e. mostly residential, but even commercial IC limits are rarely approached, let alone maxed out. This is another reason why using IC in our examples probably isn't that helpful. Any why did we use commercial, 80%, and not residential values?).

### **Other**

- If you don't get it right the first time it discourages others to try it again; if you get it right others will copy
- Gilleland TMDL example – stress importance and inclusion of Water Quality issues. Don't want other creeks on the list. [*TMDL = Total Maximum Daily Load—a reference to a federal requirement for minimum water quality standards for major waterways; Gilleland Creek was out of compliance for bacteria loads and improved stream buffers were one strategy identified to help control this problem.*]

### **Questions/Requests for More Analysis/Information:**

1. We want to see the pre- post- examples to include actual build out LOT comparisons, i.e. If you leave a 100-foot buffer, how many lots are you losing and what is that as a percentage of your profit, (real estate/economic impact, not impervious cover).

*Response: We agree. We are working on this exact analysis and will bring it back to the group when it is complete. We welcome your thoughts and independent analysis of this question.*

2. Does 100-foot buffer take into account long-term erosion?

*Response: Yes. It closely matches the geometry of the "Erosion Hazard Zones" that our technical consultants delineated along Gilleland Creek, a large watershed that runs north to south from Pflugerville to the Colorado River along SH-130. We'll discuss this more at future meetings.*

3. How would a buffer zone impact the WQ BMP [water quality control] design in Berdoll?

*Response: We will discuss this in more depth at our meetings on "Improved Stormwater Controls" in December and January. The short answer is that a new headwaters Critical Water Quality Zone buffer would affect wet pond permitting. We think this may be a good thing in that many developments might be better served by smaller systems, such as biofiltration ponds and other innovative controls.*

4. Referring to pictures of creeks – when were they taken and how healthy are the trees now? Considering the drought, we want to protect what's there, but what if we lose what's there? What's the program then?

*Response: The photos were largely taken in early 2011. Most trees and vegetation in Austin are stressed at present and some will be lost, including some along riparian areas: we've had the lowest amount of rainfall in a 12-month period in Austin's history.<sup>2</sup> However, native riparian-zone plants have adapted to the extremes of Texas weather both wet and dry; we expect plants to self-select for best placement and survival. This is not to diminish the potential challenge of a development that proposes new plantings in an attempt to speed this process. We hope to work with the design community to develop a way to best assure plant survival and limit water waste in an era of increasing water scarcity and a hotter and dryer climate.*

5. Explain how a wider floodplain helps keep the stream level lower and with continual flow.

*Response: A healthy riparian zone that is "connected to its floodplain" acts as a sponge and allows high flows to spill across its floodplain. This absorbs water over a large surface area (compared to a*

<sup>2</sup> [http://www.kxan.com/dpp/weather/us\\_wx\\_news/state-in-midst-of-worst-1-year-drought-](http://www.kxan.com/dpp/weather/us_wx_news/state-in-midst-of-worst-1-year-drought-)

*channelized stream channel) and allows water to be slowly released over time, providing additional baseflow for the creek. A channelized creek is typically deeper and narrower than a natural channel and allows for much less of this extensive surface-to-soil interaction.*

6. How to define buffer and/or control land use to promote connectivity without a defined channel (32-acre creeks, for example).

*Response: We are still evaluating the best "starting point" for stream buffers. Currently it is 64-acres in most of Austin's western watersheds. The 2005 Barton Springs Zone Regional Water Quality Plan recommended 32-acre buffers in these areas. The LCRA Highland Lakes Ordinance requires 5-acre buffers. We will consider these options, but it is less likely that we will recommend 32-acre buffers in the eastern, Blackland Prairie watersheds in part because it is difficult to see a "bed and bank" at this drainage area threshold. From field observation, stream channels are usually apparent in drainageways with 64 or more acres of contributing area. However, this is site-specific: some properties will have been highly modified—frequently due to longstanding farming practices—and will not have an obvious channel at 64-acres. But with development and new impervious surfaces, water will begin to be concentrated and will require some sort of channel at this point (be it natural or channelized or closed/piped). This will be the subject of much thought and consideration by our staff and the stakeholder group leading up to the ordinance draft.*

7. People were a bit flustered by the FEMA factor, that we didn't know how/if they could come in and mess with any of this in the future, and how/if their jurisdictions may conflict with our WPO efforts. I think we just needed someone to clarify all the ways we can and can't interact with FEMA floodplains.

*Response: Our floodplain experts are closely involved in this project and we will ask them to help us answer this question during the next sessions on "Floodplain Protection;" these meetings are scheduled for October 21 and November 4.*

8. "Pre-existing conditions" – [does this mean] before current development or what??

*Response: "Pre-existing condition" refers to the state of a property prior to a proposed development. Thus, for a property already developed as a shopping center and proposed for redevelopment, the pre-existing condition might actually be 80% impervious. Another, similar but distinct term used is "pre-developed condition," which refers to the more natural state of land prior to urbanization, which would assume no impervious cover and undisturbed soils and vegetation.*