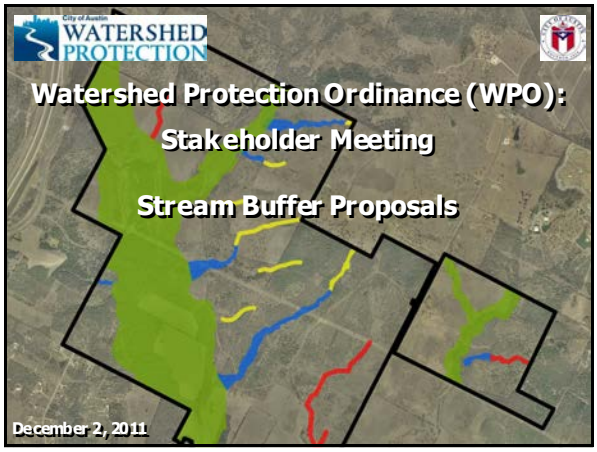



## Meeting Objective

**Discuss key stream buffer proposals* and address them as a group in order to complete evaluation of this topic.**

*** Note: All proposals discussed are for "Suburban" Watersheds.**

## Meeting Agenda

1. **Introductions** (5 min.)
2. **Discuss Finalizing New Buffers** (80 min. + 5 min. break)
   a) Buffer Width (100-200-300 ft.)
   b) Drainage Area Thresholds (64-320-640 acres)
   c) Riparian Buffer Vegetation (Manning's n)
   d) Flexible Buffer Implementation
3. **Updates on Other Topics** (20 min.)
   a) Hydrology and Buffers
   b) Trails and Buffers
   c) Wildlife Habitat and Buffers
   d) Mapping Critical Environmental Features
   e) Army Corps of Engineers Mitigation
4. **Wrap-Up** (10 min.)

## Buffer Widths

- **Front-Runner Configuration: "100-200-300"**
  - 100-ft Minor Buffers (Headwaters)
  - 200-ft Intermediate Buffers
  - 300-ft Major Buffers
  - No Water Quality Transition Zone Buffer
  - Gross Site Area basis for impervious cover calculations (not Net Site Area)

## Buffer Widths

- **Rationale**
  - Best fits Erosion Hazard Zone
  - Best fits floodplain without modification
  - Best protects water quality & habitat
  - Offers simplicity with flexible implementation options
  - Recommended as best practice in national literature review
    - e.g., Wenger & Schueler studies
  - Supported by City of Austin field data and experience
    - EII & Index of Riparian Integrity
  - Impact Analysis on Affected Properties (March)

## Buffer Widths

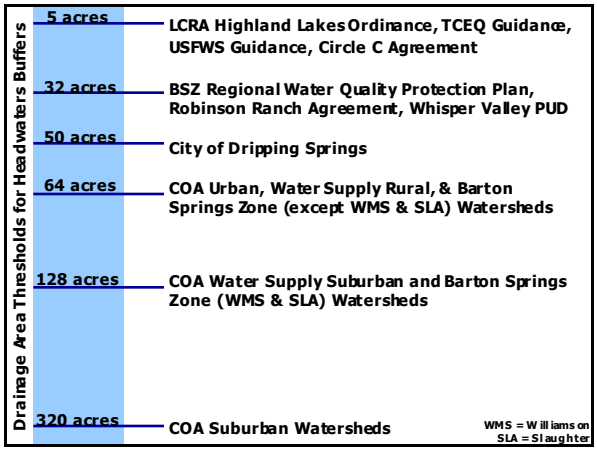
- **Stakeholder Feedback for 100-200-300**
  - Pros
    - Like simplicity for buffer definition.
    - Offers planning level certainty and clarity (floodplain more uncertain).
    - General support, but need options to provide flexibility (averaging, mitigation).
    - Appears to not significantly reduce land development potential.
    - May need wider buffers to account for future extreme weather conditions, e.g., catastrophic floods
  - Cons
    - Arbitrary–doesn't reflect site-specific conditions.
    - Would rather have multiple options to choose from.
    - Doesn't capture full extent of floodplain.
    - Too wide/Not wide enough.

## Drainage Area Threshold

- **Front-Runner Configuration: 64-320-640**
  - 64 acres of drainage for Minor Buffers (Headwaters)
  - 320 acres of drainage for Intermediate Buffers
  - 640 acres of drainage for Major Buffers

## Drainage Area Threshold

- **Rationale**
  - "Bed-and-bank" clearly visible at 64 acres; more difficult to delineate streams smaller than 64 acres in eastern watersheds
  - Beginning point for 100-year floodplain delineation
  - Consistent with historic Austin practice
    - Barton Creek Watershed Ordinance (1980)
    - Comprehensive Watershed Ordinance (1986)
  - 1/10th of a square mile (sq. mile = 640 acres)
  - Comparative buffers in Central Texas




## Drainage Area Threshold

- **Stakeholder Feedback for 64-acre Drainage**
  - Pros
    - Difficult to define a channel smaller than 64 acres.
    - Necessary from a water quality standpoint.
    - General support—but should be flexible.
  - Cons
    - Want topographic justification with limited flexibility.
    - Use bed and bank instead of specific number.
    - Increase/Decrease threshold.

## Riparian Buffer Vegetation

- **Front-Runner Configuration:**

  a) Maintain buffers in a naturally vegetated state

  b) Assume 0.1 Manning's n coefficient* for floodplain within stream buffer
  - Assumed vegetation level only (i.e., whether or not mature riparian vegetation exists)
  - Does not apply to floodplain outside stream buffer

* Manning's n is mathematical coefficient used by engineers in floodplain modeling. It represents the degree of resistance to flood flows in channels and floodplains caused by vegetation and other obstacles. It reflects the relationship between the typical height of vegetation and the depth of flow. 0.1 = mature riparian vegetation level.

## Riparian Buffer Vegetation

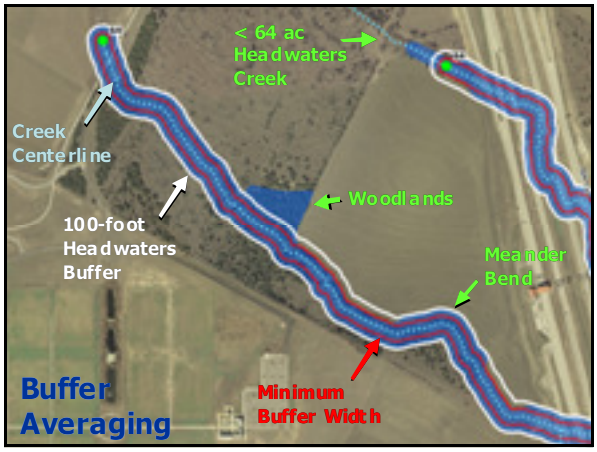
- **Rationale**
  - Preserves or restores riparian vegetation
  - Reduces/eliminates need for active maintenance
  - Protects & improves water quality & habitat
  - Protects against erosion
  - Does not significantly affect floodplain in most cases (limited channel modification can be considered where an issue)
  - Consistent with national buffer ordinances

## Riparian Buffer Vegetation

- **Stakeholder Feedback for Natural Vegetation/Manning's n = 0.1**
  - **Pros**
    - Protect floodplain with higher Manning's n and limited modification.
    - Higher Manning's n/mature forest does not change floodplain width very much but reduces maintenance costs greatly: important driver & consideration.
    - Want option for buffer with unmodified condition without maintenance.
  - **Cons**
    - Some will object to wild look/wildlife.
    - May expand floodplain.

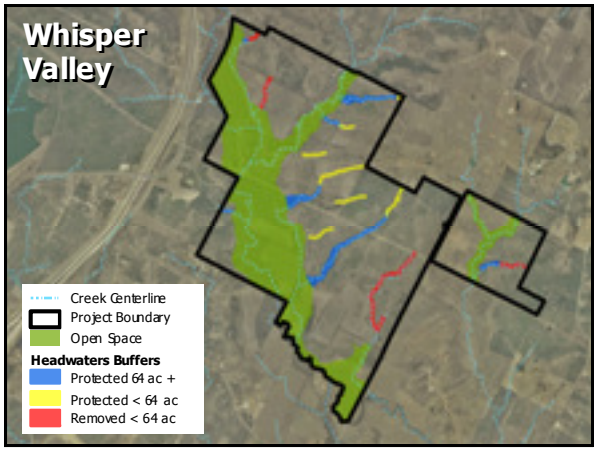
## Flexible Buffer Implementation: Buffer Averaging

- Protects same overall area as original buffer
- Offers best elements of fixed & variable buffers
- Can provide additional protection to sensitive features
  - Wetlands, Springs, Woodlands, Steep Slopes, etc.
- Protects erosion hazard zone and floodplain
- Need to establish a minimum width (half? 3/4?)




## Flexible Buffer Implementation: Mitigation & Relocation

- Mitigation: find ways to compensate on- or off-site for reduced buffer width and/or length
  - Extend other buffers beyond (upstream of) 64 acres
  - Works in coordination with buffer averaging
  - Ensure high quality riparian areas not replaced by less valuable ones
- Channel relocation: options for moving channel from existing location
  - Not the preferred scenario; discuss further
  - Need new Open Channel Waterway criteria
  - May need for "Activity Centers" in Comprehensive Plan
- Develop further in future meeting (March)
  - Discuss possible off-site mitigation options




## Flexible Buffer Implementation: Water Quality Controls

- Storm water controls problematic in buffers
  - Interrupt water & sediment flow, damage buffer during construction, non-natural materials, etc.
  - WQ controls currently not allowed in Critical WQ Zone
- But some "innovative" water quality controls likely OK in buffers
  - Rain Gardens & Vegetative Filter Strips: feature vegetation, infiltration, high surface area
- Where to put them:
  - In "upper half" of buffers
  - Out of Erosion Hazard Zone
- More Discussion in Jan/Feb (Storm water Controls)

## Flexible Buffer Implementation: Exemptions & Variance Process

- Administrative Variance vs. Land Use Commission
  - Develop specific criteria
- Existing platted single-family lots exempt
- Grandfathering claims could apply, but seek to design an ordinance that majority of landowners will embrace
- Hardship cases may seek variances or potentially use mitigation

## Process Check

1. Review each proposal item.
   - Understanding that a lot of work has to be done to turn a proposal into an ordinance, let's review each of these items with the idea that the ordinance will have everyone's best interests in mind.
2. Check for general level of support.
   - Scale of 1 - 5. A rating of 5 means you fully support the item. A rating of 1 means there's no way you can support the item. 2, 3, and 4s are somewhere in between.
3. Document Pros and Cons.
   - This is a status check, not a debate. That's why we're debriefing pros and cons separately.
4. Discuss implementation considerations.

## Process Check

1. Review each proposal item.
   - 100-200-300 foot Buffer Width*
2. Check for general level of support.
   1 (Do Not Support)
   ↓
   5 (Fully Support)
3. Document Pros and Cons.
4. Discuss implementation considerations.

* Also includes elimination of WQ Transition Zone buffer and use of Gross Site Area instead of Net Site Area.

## Process Check

1. Review each proposal item.
   - 64-320-640 acre Drainage Area Threshold
2. Check for general level of support.
   1 (Do Not Support)
   ↓
   5 (Fully Support)
3. Document Pros and Cons.
4. Discuss implementation considerations.

## Process Check

1. Review each proposal item.
   - Maintain buffers in a naturally vegetated state / 0.1 Manning's n coefficient in stream buffer
2. Check for general level of support.
   1 (Do Not Support)
   ↓
   5 (Fully Support)
3. Document Pros and Cons.
4. Discuss implementation considerations.

## Process Check

1. Review each proposal item.
   - Flexible Buffer Implementation: Buffer Averaging
2. Check for general level of support.
   1 (Do Not Support)
   ↓
   5 (Fully Support)
3. Document Pros and Cons.
4. Discuss implementation considerations.

## Process Check

1. Review each proposal item.
   - Flexible Buffer Implementation: Mitigation & Relocation
2. Check for general level of support.
   1 (Do Not Support)
   ↓
   5 (Fully Support)
3. Document Pros and Cons.
4. Discuss implementation considerations.

## Process Check

1. Review each proposal item.
   - Flexible Buffer Implementation: Water Quality Controls
2. Check for general level of support.
   1 (Do Not Support)
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   5 (Fully Support)
3. Document Pros and Cons.
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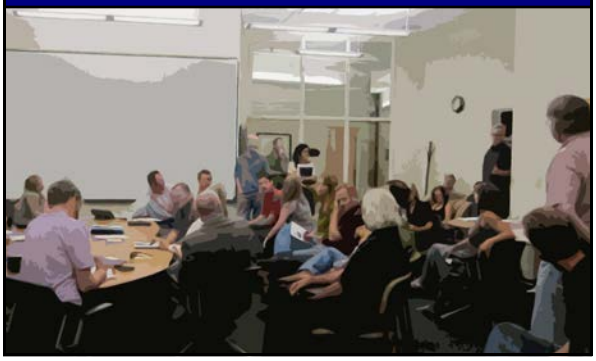
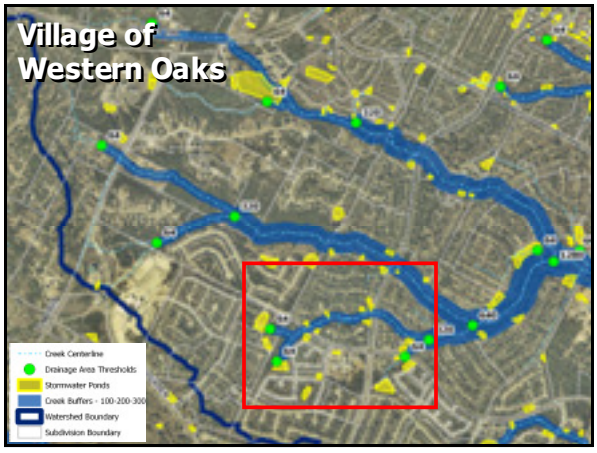
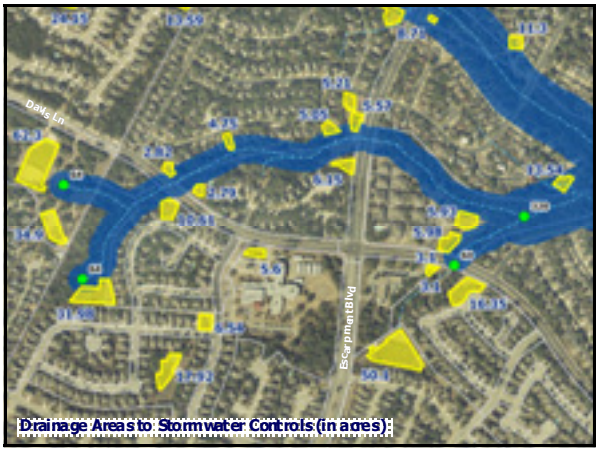
## Update on Other Topics



## Hydrology and Buffers

- Will the flow to headwaters buffers be short-circuited by water quality ponds?
  - Vast majority (98%) of water quality ponds have a drainage area smaller than 64 acres
    - Discharge meted out to buffers/creeks
  - Going to explore adding vegetative filter strips and rain gardens to buffers
  - Buffer provides similar but not same function as water quality controls



## Trails and Buffers

- **Will the buffers allow for recreational and transportation uses (i.e., trails)?**
  - Central discussion item in Dec. 16 stakeholder meeting.
  - Not the main purpose of stream buffers.
    - Waterway & water quality protection is focus.
  - Protecting buffers provides opportunity for future trails and greenways.
  - Trails must be designed and constructed in an environmentally sustainable way.
    - Avoid sensitive features, erosion hazard zone, etc.

## Wildlife Habitat and Buffers

- **What is the recommended buffer width for wildlife corridors?**
  - Major stream corridors (> 640 ac. of drainage) are the most important for wildlife protection.
  - 300 feet is the generally accepted minimum required to protect a diverse terrestrial riparian wildlife community.
  - A higher manning's n assumption will allow a mature riparian community to be restored in degraded areas.

## Mapping Critical Environmental Features

- **Is the City mapping significant ecological features in eastern watersheds?**
  - 2006 tree canopy & priority/significant woodlands are mapped using aerial imagery (2010 in process).
  - Critical environmental features are identified and mapped for proposed developments.
    - Access restricted to private property for undeveloped tracts.
  - Freshwater mussels identified in surveys of creeks, lakes, and river.

## Army Corps of Engineers Mitigation

- **Will mitigation already required by US Army Corps of Engineers be counted toward meeting City of Austin environmental requirements?**
  - City staff met with Shannon Dorsey (Horizon Environmental) to discuss (11/30/11).
  - Corps flexible/open to mitigation approaches: opportunity to coordinate with City approaches (e.g., on-site mitigation)
  - Mitigation approaches used by Corps will be studied for potential inclusion in City's Watershed Protection Ordinance.

## Adoption Schedule

| | |
|---|---|
| **Stakeholder Meetings** | Sep 2011 – April 2012 (Meetings approx. every two weeks) |
| 1. Creek Protection: | Sep 9, 23, Oct 7 |
| 2. Floodplain Protection: | Oct 21, Nov 4, Dec 2 |
| 3. Development Patterns & Greenways: | Dec 16 – Jan |
| 4. Improved Stormwater Controls: | Feb |
| 5. Mitigation Options (DDZ) + Rule Simplification & Flexibility | Mar |
| 6. Draft Ordinance: | Apr |
| **Boards & Commissions** | May – June 2012 |
| **City Council** | August 2012 |
| **Travis County Commissioner's Court** | Fall 2012 |

## Contact Information

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www.austintexas.gov/watershed/ordinances2.htm