



Meeting Objectives

- Review existing hydrologic options
- Review and add to new/improved options
- Prioritize new/improved options
- Chart course (schedule) for improvements

Meeting Agenda

- 11:00- 11:10
[10 min.] **Arrivals & Introductions**
- 11:10- 12:00
[50 min.] **Staff Review of Options**
- 12:00- 12:10
[10 min.] **Break**
- 12:10- 12:45
[35 min.] **Prioritize Options & Set Schedule**
- 12:45- 1:00
[15 min.] **Wrap-Up**

Criticisms of Current Austin Hydrologic Approach

- Low impact approaches hard to permit; old-school “end of pipe” approach easy to permit
- Conservation not a focus/missing a big opportunity
- Infiltration not required (except BSZ/SOS*)/ full range of hydrologic change not addressed
- Some key hydrologic options not given credit and/or not allowed
- Water quality controls don’t get much/any flood detention credit (except wet ponds)

* BSZ = Barton Springs Zone; SOS = Save Our Springs Ordinance

Traditional Stormwater Options (ECM 1.6.5 & 1.6.6)

- 1.6.5 Sedimentation Sand Filtration**
- Austin’s Main WQ control: 83% of all WQ controls; 2,500+ in service!
 - Basic; familiar to design, build, maintain
 - Good solids removal & erosion detention
 - Drains in 48 hours; limited benefit to baseflow
 - Can serve up to 50 acres drainage (end of pipe)
 - Requires professional maintenance
 - Poor aesthetics/single function
 - Poor dissolved pollutant performance, e.g., nitrogen

Traditional Stormwater Options (ECM 1.6.5 & 1.6.6)

- 1.6.6 Wet Pond**
- Longstanding, high-profile control (6% of all WQ controls; 180+ in service)
 - Can be amenity, serve large drainage areas
 - Provides aquatic habitat
 - High cost to build, maintain, keep wet
 - Requires specialized maintenance/expertise
 - Must serve a relatively large drainage area
 - Accommodates flood detention in same basin

**Green Storm Water Quality Infrastructure:
Current Options (ECM 1.6.7)**

- A. Retention-Irrigation**
- B. Vegetative Filter Strips**
- C. Biofiltration**
- D. Rainwater Harvesting**
- E. Porous Pavement for Pedestrian Use**
- F. Rain Gardens**

**Green Storm Water Quality Infrastructure:
Current Options (ECM 1.6.7)**

- A. Retention-Irrigation**
 - Main WQ control to comply with SOS Ordinance
 - Multiple concerns with installation, maintenance
 - Simpler, more passive alternative would be desirable
- B. Vegetative Filter Strips**
 - Good concept; useful with low imperviousness
 - May be very large relative to drainage area served
 - Uneven installation & maintenance concern

**Green Storm Water Quality Infrastructure:
Current Options (ECM 1.6.7)**

- C. Biofiltration**
 - "Greener" alternative to sand filter; plants beneficial
 - Very similar to sand filter; "end of pipe"
- D. Rainwater Harvesting**
 - Excellent concept; flexible placement
 - Need area to irrigate or otherwise use water
 - Required 5-day drawdown time limits practicality
 - Lower cost of potable water limits attractiveness

**Green Storm Water Quality Infrastructure:
Current Options (ECM 1.6.7)**

- E. Porous Pavement for Pedestrian Use**
 - Excellent concept; some installation & longevity concerns
 - More frequent installations should improve
 - No credit for non-pedestrian applications

**Green Storm Water Quality Infrastructure:
Current Options (ECM 1.6.7)**

- F. Rain Gardens**
 - High interest/demand
 - Flexible placement, can be landscape feature
 - Infiltration & underdrain options
 - Max. drainage area = 2 acres
 - Max. depth = 1 foot (thus larger relative footprint)
 - Not permitted for use with single-family residential (longevity & maintenance concerns)

Improved Hydrologic Options

- VBH 1. Limit storm runoff volume** (e.g., infiltrate, re-use, etc., a portion of WQ Volume on-site)
- GSI 2. Rain gardens for single-family residential**
- GSI 3. Alternatives (rain gardens?) for SOS compliance**
- GSI 4. Rainwater harvesting** for conservation & water quality
- VBH 5. Rainwater harvesting + green roof irrigation** (also flood detention credit)

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Improved Hydrologic Options

- GS1** 6. **Porous pavement** for non-pedestrian surfaces
- VBH** 7. **Flood detention credit** for water quality controls
- LID/ VBH** 8. **Impervious cover credit** for rainwater harvesting catchment and/or tank areas
- VBH** 9. **Volumetric Flood Detention** (add to Drainage Criteria Manual as option)
- LID** 10. **Skinny Streets/Green Streets** (Imagine Austin LDC)

Limit Storm Runoff Volume/ Incentivize Beneficial Re-Use

- Provide benefits of predevelopment hydrology and/or water conservation
- Infiltrate a portion of WQ Volume on-site (how much?) and/or
- Re-use water on-site for irrigation, chillers, toilet flushing, make-up water, etc.
- Other national (Maryland; Tucson, AZ) and international (Berlin) models
- Would require code change

Rain Gardens for Single-family Residential Lots

- Put in drainage easement
- Ensure access is provided & safe for inspection and maintenance (i.e., not behind private fences, guarded by dogs, etc.)
- Assign preventive (routine) maintenance responsibility: City? Property owners?
- Assign corrective (heavy) maintenance responsibility: City? Property owners?
- Determine how City inspections to be done: complaint basis only?

Alternatives (Rain Gardens?) for SOS Compliance

- Provide needed alternative to retention-irrigation
- Consider methods to minimize pollutant export (non-degradation): Shallow depth? Native vs. imported soils?
- Rain gardens? Low-pressure dose system? Gravity? AMD design?
- Community discussion: non-degradation
- Staff currently revising ECM to provide guidance on demonstrating no increase loading for alternative systems. Will provide guidance on allowable BMPs. Draft by Oct. 1, 2013

Rainwater Harvesting for Conservation & Water Quality

- Possible now to build systems for both conservation and water quality...
- ... But guidance is not explicit in ECM
- Simple approach to model rainwater harvesting systems for “equivalency” to sed-sand filters
- Enormous promise: integrate water quality and conservation; importance of water in future
- Revision of ECM to include development of calculator to demonstrate volume/load reduction for compliance with sed/fil equivalence and/or non-degradation based on annual average rainfall/runoff/daily water use

Rainwater Harvesting + Green Roof Irrigation

- Green roofs offer multiple benefits beyond stormwater management: cooling, habitat, green space, beauty, sense of wellbeing, etc.
- Especially attractive for dense, urban areas (hence inclusion in Downtown Density Bonus system)
- Stormwater management: green roof serves as irrigation area; tank serves as “pond” (retention)
- Rain harvesting helps resolve concerns about water conservation and nutrient export
- Criteria would encourage more WQ applications
- Criteria for flood mitigation (e.g., time of conc.)

Porous Pavement for Non-pedestrian Surfaces

- Long an option in other US communities
- Installation and longevity concerns not likely to be resolved until more experience gained (“catch 22”)
- Could especially help small and/or tight sites
- Groundwater contamination concerns minimal over eastern clay soils
- Staff considering allowing WQ credit for use in parking lots, interior roadways

Flood Detention Credit for Water Quality Controls

- City staff recognizes some benefits exist
- WPD and PDRD staff working on now:
 - Brentwood Study
 - Developing spreadsheet calculator and guidance document that incorporates DCM methodology for calculating detention credit for small-scale distributed controls

Impervious Cover Credit for Rainwater Harvesting Catchment and/or Tank Areas

- Want to incentivize use of rainwater harvesting (conservation, etc.)
- Barton Springs Zone Regional WQ Plan favored
- Similar challenges to rain gardens for single-family application: inspection access, ensure maintained, ensure exists, etc.
- Complex issue to grant impervious cover “credit” (cap?) and not just WQ control function
- Small, helpful steps possible? Don’t count tank as IC? Allow in setbacks?

Skinny Streets / Green Streets

- Promising way to reduce impervious cover, increase infiltration, times of concentration, etc.
- Staff working through technical details regarding flood conveyance
- “Green streets” a great concept; very complex intersection of multiple missions: autos, bicycles, pedestrians, trees, water & wastewater, drainage, electrical, parking, and on and on...
- Working on with Transportation Criteria Manual, Subdivision (connectivity) Code, and (later) Imagine Austin

What is needed? Most important?

- How should we prioritize these topics? (Which to talk about first?)
- Is something missing or not needing to be “fixed”?
- What do you need more information on?
- What is a good meeting format?
- Discuss code vs. criteria process.

Phase 1 WPO Adoption Schedule

Council Resolution	January 2011
Stakeholder Meetings: Input	Sep. 2011 – April 2012
Staff develops Draft Ordinance	April – November
Stakeholder Meetings: Phase 1 Draft Ordinance	Dec. ‘12 – May ‘13
Stakeholder Meeting: Review Draft Ordinance	June 14
Planning Commission: Codes & Ordinances (Briefing)	June 18
Environmental Board	June 19
Planning Commission: Codes & Ordinances (Action)	July 16
Planning Commission	July 23
City Council	August 22
Travis County Commissioner’s Court (Title 30)	Fall

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<http://www.austintexas.gov/page/watershed-protection-ordinance-0>