

# MESA ENGINEERING

ENVIRONMENTALLY CONSCIOUS CIVIL ENGINEERING

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October 1, 2008

Austin City Council

Re: West Park PUD  
Case Number: CD-2008-0007

Dear Council Members:

I have been practicing civil engineering in Austin for 25 years. It has come to my attention that the West Park PUD is proposing further expansion of their existing maximized entitlements under the SOS Ordinance.

Technically, their proposal is infeasible as City of Austin ECSD reviewer Benny Ho, P.E. suggests in his review comments for this project in comment WQ1 (09/09/08). Mr. Ho is concerned that the area required for the water quality treatment will exceed the area of the project available for use.

I have performed preliminary calculations to act as a reality check for Mr. Ho's observations. Using City of Austin design criteria, about 110 acres will be required to appropriately treat the stormwater for this project. When the development impervious cover is removed from the available area, only about 88 acres of the site remains. Considering steep slopes and watershed criteria setbacks (which are not extreme on this site), only about 50 acres of the site remains available for use. Much of this area is also dense forest making it unsuitable for use as a water quality treatment area.

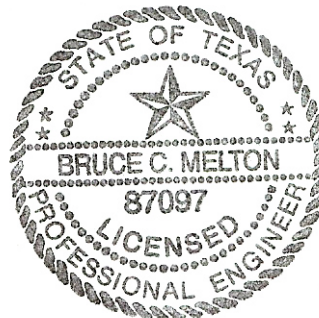
The SOS ordinance is well designed. The unused land area created by the impervious cover limits in SOS is not just greenbelt buffer. This area is required pollutant treatment area. In order to meet the non-degradation standards required to preserve Barton Springs, the Edwards Aquifer, Barton Creek and the endangered species of Barton Springs, this area must be used for stormwater pollution treatment.

Allowing variances to SOS design criteria will result in direct degradation of water quality.

Thank you for your time,



Bruce Melton, PE



## Retention Irrigation Sizing

Bruce Melton PE  
 90908

### Assumptions

|  |                        |
|--|------------------------|
| Net Site (From Paul Frank Calcs COA)   | 128 acres              |
| 40% Impervious Cover (IC) Proposed West Park PUD SOS Variance  | 51.2 acres IC          |
| Ex: 140 acres total site, 100% of site flows to pond, 40% IC on site, 1.32 inches capture volume reqd* =   | 15.4 acre feet Cap Vol |
| Same site, realistically 80 acres of the site drain to the pond, net IC = 70%, 1.86 inches cap vol reqd* = | 12.4 acre feet Cap Vol |
| Capture volume runoff depth required: Assume 1.5 inches, 110 acres drains to pond                          |                        |
| * from Table 1-12, Austin Environmental Criteria Manual, SOS Water Quality Design Guidelines               |                        |

### Runoff Calculations

|  |                    |
|--|--------------------|
| Runoff capture depth assumed (Cap Depth)   | 1.5 inches         |
| Drainage area to pond  | 110 acres          |
| <br>   |                    |
| Capture Volume Reqd = IC area (ac.) * 43560 sf/ac. * (Cap Depth/12 in. per foot) | 598,950 cubic feet |
|  | 13.75 acre feet    |
| Pond Size (add 20% volume for sediment storage)                                  | 16.5 acre feet     |

### Soils Characteristics from USDA Soil Conservation Service Soil Survey of Travis County

Bracket Soil Type Characteristics (BoF and BID soils)  
 Bracket Soils Group  
 0.2 to 0.63 inches per hour permeability  
 0.1 to 0.12 inches of water capacity per inch of soil  
 10 to 20 inch depth to bedrock (assume 15 inches)

### Soils Calculations

Austin SOS Irrigation Design Guidelines require assuming minimum when range is given

|                  |                     |
|------------------|---------------------|
| Permeability =   | 0.2 inches per hour |
| Water Capacity = | 0.1 inch per inch   |
| Soil depth =     | 15 inches           |

### Irrigation Design Assumptions from Austin SOS Design Guidelines

50% irrigation time allowed, for every minute of irrigation, soil must rest for 1 minute.  
 12 hour wait period after rainfall. 72 hour irrigation period total; allows 60 hours for irrigation  
 50% irrigation time allows 30 hours irrigation design "pump on" period.

Irrigation Volume Calculator (determine volume of irrigation per acre of irrigation field)

volume (cf) = 43560 sf \* ((15 inches \* 0.1 inches per inch)/12) = 5445 cf per acre

|  |
|--|
| Required Irrigation Area at 5445 cf per acre = 110 acres |
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### Permeability Check

|  |                     |
|--|---------------------|
| Permeability in inches per hour divided by 2 (for 50% irrigation time) | 0.1 inches per hour |
| Number of hours to irrigate Capture Volume                             | 15 Hours            |