



MEMORANDUM

TO: Mayor and Council Members

FROM: Chuck Lesniak, Environmental Officer
Watershed Protection Department

DATE: August 27, 2013

SUBJECT: Garza Tract- Responses to Questions from Council at August 22, 2013 Meeting
(Related to Item 39 on the August 29, 2013 Council Agenda)

During the August 22, 2013 Council meeting discussion on the Garza SOS amendment, Council Members raised a number of questions regarding the project. Attached are responses to those questions. The proposed amendment is posted for second and third reading on the August 29, 2013 Council Agenda.

Please contact me at 512-974-2699 if you have any other questions or if I can be of further assistance.

Cc: Marc Ott, City Manager
Sue Edwards, Assistant City Manager
Victoria Li, P.E., Director, Watershed Protection Department
Greg Guernsey, Director, Watershed Protection Department

Attachment to Memo to Council 08.27.13

Note: The responses provide below are based on fairly gross assumptions and approximations of developable area, impervious cover, and other important factors. They should be considered only as estimates for use in general policy discussions and not as absolute values.

What are the impervious cover limits on a net site and gross site basis under existing entitlements and requested amount?

Austin development regulations deduct certain areas from developable area prior to applying the calculation for impervious cover. This results in the “net site area” impervious cover. On the Garza property the deduction is for the Water Quality Transition Zone and Critical Water Quality Zone. Impervious cover calculated on a “gross site area” basis has no deductions and is simply the impervious cover percentage of the entire property.

	Current Entitlement: 11.2 acres	Requested: 16.6 acres
IC Net site area (deduction of 6.14 acres)	39%	58%
IC Gross site area	32%	48.2%

What other projects has the City allowed stormwater treatment irrigation in a CEF buffer and a road in the Water Quality Transition Zone (WQTZ)?

- The Forum PUD included a reduction of a sinkhole buffer to 50’ to provide room for irrigation.
- A site plan on Davis Lane was approved to allow irrigation within the outer 150’ of a 200’ sinkhole buffer. The project was later withdrawn and never built.

Are there any other projects where the City has allowed a road in the WQTZ?

- Perpendicular crossings of the WQTZ are allowed by City Code, parallel crossings are not. Staff was not able to identify any other projects where a road was allowed in the WQTZ with a parallel alignment.

What is the percentage increase in water quality treatment (capture) volume between the current entitlements and the proposed treatment system?

Under the current entitlements a combination of standard partial sedimentation/filtration and retention irrigation would capture and treat approximately 2.6 acre-feet of stormwater runoff.

The proposed development made up entirely of SOS compliant retention irrigation will capture and treat approximately 4.2 acre-feet of stormwater. This is an increase of 63% in treated volume.

What is the difference in pollutant removal for stormwater treatment with current entitlements as compared to the proposed development with all SOS treatment?

The current entitlements allow roughly a 50/50 mix of sedimentation/filtration and SOS retention irrigation.

Compared to traditional sedimentation filtration and the half-inch plus rule, SOS treatment requires larger capture volumes and treats polluted runoff to a greater extent. With sand filtration, polluted water flows through sand media and then typically proceeds downstream to a receiving water along with any bypasses. The dominant removal mechanism is filtration, which is effective at removing particulates but less effective removing dissolved constituents. With an SOS compliant retention irrigation system, polluted water is captured, held, and land applied so only bypasses proceed downstream to a receiving water. Land application reduces overall pollution loading to the receiving water through volume reduction. Retention irrigation uses the removal processes of sedimentation, filtration, aeration, evaporation, vegetative uptake, and biological treatment associated with the biotic community in the soil and plant roots.

The proposed development containing only SOS compliant retention irrigation for the entire site will result in an increase of approximately 32% in the removal of total suspended solids leaving the site as compared to stormwater treatment using a combination of standard partial sedimentation / filtration and SOS retention irrigation. This reduction is achieved by the increased efficiency and greater capture volume associated with SOS compliant treatment design.

Scenario 1: 17 acres at 65% IC (WPO) and 17 acres at 15% (SOS)

TSS Removed: 8,850 lbs (WPO) + 2,068 lbs (SOS) = 10,918 lbs removed

Nitrate removed: 8.7 lbs (WPO) + 10 lbs (SOS) = 18.7 lbs removed

Scenario 2: 34 acres at 48.2% IC and SOS standards

TSS Removed: 14,375 lbs removed (31.7% more removed than Scenario 1)

Nitrate removed: 69.3 lbs removed (271% more removed than Scenario 1)

What is the volume of stormwater runoff that is kept on site under SOS vs current entitlements?

Using the assumptions below and a standard US Army Corps of Engineers' HEC-HMS hydrologic model it is estimated that the proposed development will generate approximately 7.1 acre-feet of runoff from a 2-year storm event. The proposed SOS compliant water quality system will capture and treat on-site approximately 4.2 acre-feet of stormwater. Under current entitlements, the combined SOS and sedimentation/filtration system would retain approximately 1.3 acre feet of stormwater on-site.

Will parking lots in new development at the site have to comply with the commercial landscape ordinance requirements for stormwater runoff into vegetated areas?

Yes, all development at the site will have to comply with current commercial design standards, including those requirements.

Assumptions used in above discussion and calculations:

Current Entitlements:

- 17 Ac @ 65% impervious cover (11.05 Ac.) with standard partial sedimentation filtration treatment
- 17 Ac @ 15% impervious cover (2.55 Ac.) with SOS retention irrigation treatment

Proposed development

- 34 Ac @ 49.1% impervious cover (16.7 Ac.) with SOS retention irrigation treatment
1. For purposes of analysis all runoff is assumed to be conveyed to the water quality ponds. The irrigation fields, pond areas, etc. were included in the drainage areas to be conservative.
 2. Sizing of the water quality controls was completed utilizing standard ECM criteria for SOS compliant retention irrigation systems and a standard partial sedimentation filtration pond.
 3. For purposes of runoff volume analysis the impervious cover was assumed to be spread over the entire drainage area and one large area was used to represent the entire site. For current entitlements a single 34 acre drainage area with 13.6 acres of impervious cover was used and for the proposed developed conditions a single 34 acre drainage area with 16.7 acres of impervious cover was utilized.
 4. Load removal efficiencies are based on ECM sizing and concentration data and runoff-producing rainfall were used for the hydrologic analysis.
 5. Sizing of the required irrigation fields will be completed by the design engineer based on actual field data to determine the design infiltration rate.