

MEETING MINUTES

Lower Cottonwood Creek Outfall Systems Planning Study

Project Meeting #3

MEC Project #: 07-068
Meeting Date: June 2, 2008
Meeting Location: SEMSWA

Meeting Attendees:

Ken MacKenzie	UDFCD
Shea Thomas	UDFCD
Monica Bortolini	SEMSWA
Ron Lambert	Mulhern MRE for Inverness WSD
Brad Robenstein	Douglas County
Suzanne Moore	Greenwood Village
Bill Ruzzo	CCBWQA
Britton Thomas	City of Centennial
Melanie Chenard	Muller Engineering Co.
Jim Wulliman	Muller Engineering Co.

The objective of this progress meeting was to review a working copy of the draft Baseline Hydrology Report, discuss potential problems in the watershed, review formulation and evaluation of alternatives, and seek input on engineer's recommended alternative. Specific discussion topics are as follows:

Draft Baseline Hydrology Report

- Naming of tributaries was discussed relative to an overall effort to keep tributary names consistent across the metro area. The Cottonwood Creek tributary in Douglas County (subwatersheds DC 12, DC, 11, DC 9) has been referred to as Meridian Tributary in this report – Shea Thomas will check Urban Drainage records to see if it has a name. The names used for the major tributaries are commonly used and are consistent with the 1991 study (Havana Tributary A, Peoria Tributary B, Inverness Tributary C, Airport Tributary).
- Subwatershed boundaries in Arapahoe County were generally taken from the 1991 study, with some modifications to account for development. Subwatersheds less than 10 acres were combined into adjacent subwatersheds. In Douglas County, more thorough redefinition was provided to limit subwatershed size to the maximum allowable 130 acres.
- Aerial photography was used to determine both existing and future impervious values. For the future condition, Muller assumed that any developable areas would have similar land uses to surrounding areas. Planning documents were used as guides when available, e.g. Centennial Airport Master Plan and Ridgeway PDD.

- Stage-storage-discharge curves for detention ponds were taken from various sources, including the 1991 study and design plans and reports. Curves for the four airport ponds were based on as-built data included in the draft master plan for Centennial Airport, which Muller reviewed on behalf of SEMSWA under a separate contract.
- Ken and Shea mentioned that printed output files for CUHP models need not be included in the report – they will be available as part of the digital file record for the study. Instead, the sponsors would like to see a summary table with peak flows and runoff volumes for each subwatershed for each storm event.
- Similarly, printed output files for SWMM should not be included. An expanded version of the peak discharge table (Table 3-5) including all points in the model should be included in the appendix, and an abbreviated version with only the major design points should be added to the text.
- Some oscillation can be seen in the falling limb of the design point hydrographs. This appears to be an issue within the SWMM program, although it does not appear to affect peak flows.
- Including color figures in the project reports is acceptable, but they should be reproducible in black and white.

Alternatives Evaluation

- Three alternatives were developed based on different approaches to detention within the watershed. These alternatives are as follows:
 - *Alternative A – Planned EURV Detention and Existing Facilities*
This alternative includes 4 additional detention facilities in Lone Tree. It is Muller's understanding that construction of these four ponds will be a requirement for the Ridgegate development. The Upper Skyridge Pond is modeled with WQCV (water quality capture volume) according to its preliminary design, and the remaining three are modeled with EURV (excess urban runoff volume).
 - *Alternative B – Planned and Retrofitted EURV Detention*
This alternative includes the four additional ponds in Alternative A and retrofits 10 existing ponds plus the Upper Skyridge Pond for EURV. Additional modifications to existing ponds were modeled in order to limit drain times.
 - *Alternative C – Planned, Retrofitted, and New EURV Detention.*
This alternative adds five new detention basins to the Alternative B scenario. Two of these are located in Arapahoe County, on mainstem Cottonwood Creek at Caley Avenue and on the Peoria Tributary at Arapahoe Road. The

remaining three are located in Douglas County, with two on mainstem Cottonwood Creek in Meridian Business Park and one on the Airport Tributary at the county line.

- Each alternative also includes channel improvements which vary in cost based on the level of detention provided upstream. Additional clarification will be provided in the report regarding the major/moderate/minor work required classifications and the determination of unit costs for channel improvements.
- Muller's initial cost estimates do not include costs for the four detention facilities in Lone Tree as they are to be developer constructed. Ken clarified that the cost estimates should include costs for construction of all facilities shown in the alternatives.
- The group discussed the concept of the two Meridian detention facilities included in Alternate C. The sponsors and stakeholders indicated a preference for the online detention concept shown vs. onsite detention, making it worthwhile to include these two potential ponds in the study.
- Due to time restrictions, discussion of the alternatives was limited.

Next Steps

- Muller will complete and submit the draft Baseline Hydrology Report for review.
- At the next project meeting, Muller will provide additional information for further discussion of the alternatives prior to completion of the draft Alternatives Evaluation Report.
- The next meeting was not scheduled.