

MEETING MINUTES

Lower Cottonwood Creek Outfall Systems Planning Study

Project Meeting #4

MEC Project #: 07-068
Meeting Date: March 16, 2009
Meeting Location: SEMSWA

Meeting Attendees:

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| Shea Thomas | UDFCD |
| Monica Bortolini | SEMSWA |
| Ron Lambert | Mulhern MRE for Inverness WSD |
| Suzanne Moore | Greenwood Village |
| Bill Ruzzo | CCBWQA |
| Britton Thomas | City of Centennial |
| Ward Mahanke | TST for City of Lone Tree |
| Melanie Chenard | Muller Engineering Co. |
| Jim Wulliman | Muller Engineering Co. |

The objective of this progress meeting was to confirm completion of Baseline Hydrology Report, identify potential problems in the watershed, review the formulation and evaluation of alternatives, seek input on alternatives, and discuss future information needs. Specific discussion topics are as follows:

Baseline Hydrology Report

- The draft report was issued in January. Comments were received from UDFCD, SEMSWA, Douglas County, and Lone Tree. The report was revised and resubmitted to the project sponsors on March 10. Revisions included redefinition of the eastern watershed boundary to match the adjacent Lone Tree, Windmill, and Dove Creek master plan; adjustment of some future impervious values based on Arapahoe County and Centennial criteria; and minor modifications in Centennial Airport and Ridgeway to match hydrologic studies in those areas. A copy of the full set of comments and responses was distributed to the attendees.
- UDFCD and SEMSWA indicated acceptance of the report. CDs containing the PDF file will be prepared and submitted to the sponsors, and the document will be posted on the project website. Per Shea, the addition of bookmarks and links in the PDF document is not required for this report.

Alternatives Evaluation

- Muller recapped the three alternatives that have been developed for the project. Because stormwater quality is a primary issue in the watershed, the alternatives were developed with a focus on providing varying levels of full spectrum detention in the watershed. Full spectrum detention provides approximately twice the extended detention volume as water quality capture volume (WQCV) facilities, and provides closer matching to historic flow rates than traditional detention, reducing the severity

of stream degradation. This watershed is unique in that numerous detention ponds are already in place and several opportunities exist for providing additional detention within the existing floodplain, requiring little or no property acquisition. The detention portions of the alternatives are as follows:

- *Alternative A – Planned EURV Detention and Existing Facilities*
This alternative includes the existing facilities included in the baseline hydrology plus 4 new detention facilities in the City of Lone Tree – three along Lincoln Avenue and one upstream of the existing facility at Skyridge Medical Center. The Upper Skyridge Pond was modeled with WQCV according to its preliminary design. It is Muller’s understanding that full spectrum detention will be required in the development of Ridgeway, so the remaining three facilities are EURV facilities in this alternative.
 - *Alternative B – Planned and Retrofitted EURV Detention*
This alternative includes the four additional ponds in Alternative A and retrofits 11 existing ponds plus the Upper Skyridge Pond for EURV. Additional modifications to existing ponds were modeled in order to limit drain times. Since the last project meeting, the Caley East pond has been added to this alternative due to a potential future SEMSWA maintenance of this pond as a result of a cooperative effort with the Lincoln Executive Center.
 - *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.
- The location of the three Lone Tree ponds shown along Lincoln Avenue (LT West, Middle, and East) was discussed as Ward foresees pushback from the developer on locating ponds in the high density core area of the Ridgeway development, and may want to over-detain further upstream instead. For purposes of this study, Muller will leave the ponds where they are shown – alternate arrangements can be explored during development. Muller will review the configuration of the ponds to confirm that they are not exceeding the UDFCD recommended levels of detention.
 - Through discussions with the Meridian Business Park, Jim has confirmed that Meridian favors on-line regional facilities rather than onsite detention and seems to be on board with the two ponds shown within the business park. The land is available for detention, so no ROW acquisition costs would be incurred.
 - Preliminary design has been completed on the Caley East and Caley West ponds at the request of SEMSWA, who has had discussions with the Lincoln Executive

Center regarding possible cost-sharing for regional detention as an alternative to onsite detention for some upcoming developments. Caley East is an existing detention facility that is privately owned and maintained and therefore not currently recognized by UDFCD. The potential agreement would improve the undersized facility and shift maintenance responsibilities to SEMSWA. Caley West is currently not a detention facility but was already being considered in this study. Though this could be an excellent opportunity to construct these facilities, the timing may not work out – per Britton, at least one of the developers is moving toward onsite detention in the interest of time. The developer of the parcel adjacent to Caley West has cited a reference calling it an existing detention facility. Based on the current configuration of the crossing it seems that any detention would be inadvertent, and none of the attendees were aware of this as an existing facility. Therefore, the Caley West pond will be called a new pond rather than a retrofit.

- The channel stabilization portion of each alternative is based on an assessment of the current condition of each channel reach to determine the level of effort required for stabilization – major, moderate, or minor. Muller has developed a tool for estimating stream improvement costs based on completed projects within the District – this tool is being utilized to identify channel stabilization costs for each alternative based on the condition of each reach and the flow rates for each alternative. As detention and its associated costs increase with each alternative, estimated stream stabilization costs decrease due to reduced flow rates. The cost estimating tool will be thoroughly discussed in the alternatives report, and examples will be given to clarify the condition rankings.
- Other issues identified in the watershed are as follows:
 - Limited conveyance adjacent to the Dry Creek Medical Plaza on Inverness Tributary C
 - Potential conveyance issue on Inverness Tributary C at Inverness Drive East crossing
 - Potential conveyance issue on Cottonwood Creek at newer crossing in commercial area just upstream of Arapahoe – no problems have been reported, but the crossing looks small compared to the adjacent reaches
 - Properties adjacent to Cherry Creek State Park (south end of subwatershed AC96) directing parking lot flow into park

These issues will be investigated further and, where appropriate, addressed in the alternatives analysis. Outfall issues have been difficult to identify as storm sewer information provided by SEMSWA is incomplete – any areas of concern identified by Muller will be investigated further by SEMSWA interns.

- The initial cost comparison for the three alternatives indicates that Alternative C is the most cost effective. The comparison includes capital costs for detention and stream improvements and maintenance costs over a 50-year period with 3 percent annual inflation.

Next Steps

- Muller will submit a PDF of the Baseline Hydrology Report and post the document on the project website.
- Muller will identify and convey to SEMSWA areas where additional storm sewer information is needed.
- Shea Thomas will check on the District's standard inflation rate used for estimating maintenance costs.
- Britton Thomas will look for information on the Cottonwood Creek crossing upstream of Arapahoe Road so that Muller can check the design capacity.
- Any initial comments on the alternatives analysis should be submitted to Muller by March 27. Muller will then proceed with the draft Alternatives Evaluation Report, which will be distributed prior to the next meeting.
- The next meeting will be scheduled following submission of the draft Alternatives Evaluation Report.