

# MINUTES

## First Creek Tributaries

### Master Drainage Plan - Alternatives

Progress Meeting, Thursday, June 20<sup>th</sup>, 2019, 10:00 am – at Merrick

Attendees:

Name	Organization	Phone	Email
Teresa Patterson	UDFCD	303-455-6277	tpatterson@udfcd.org
Janet Bender	City of Aurora	303-739-7512	jbender@auroragov.org
Sam Miller	City of Aurora	303-739-7368	samiller@auroragov.org
George Slovensky	City of Aurora	303-739-7431	jsolvens@auroragov.org
Sarah Young	City of Aurora	303-379-7279	syoung@auroragov.org
Jon Nelson	SEMSWA	303-858-8844	jnelson@semswa.org
Stacey Thompson	SEMSWA	303-858-8844	sthompson@semswa.org
Jeanne Boyle	Merrick	303-800-9036	jboyle@merrick.com
Clare Steninger	Merrick	303-800-9074	clare.steninger@merrick.com
Jennifer Goldman	Merrick	303-353-3712	jennifer.goldman@merrick.com

#### 1. Project Overview

The project includes 11 tributaries to First Creek, all of which have tributary drainage areas greater than 130 acres. The project location is south of I-70 and east of E-470. The hydrology for the project has been completed and tributaries have been given official names based on their proximity to specific roads. The next phase of the project is to identify alternatives for each tributary, then ultimately to provide a recommended alternative for conceptual design.

#### 2. Alternative Categories

##### a. Naturalized Channels

- The purpose of the naturalized channel design is to define a floodplain corridor to inform future development. The channel must be wide enough so that the shear stress is below 1.2 psf per criteria. Teresa suggested using 1.0 psf for this project. Historic longitudinal slopes and grassy side slopes for the naturalized channels will be assumed for this study. Any armoring needed will be determined by developers with future designs.



- The District would like a section included in the report discussing natural stream networks and how the corridors should follow the historic drainage patterns and not reroute tributaries.
- Teresa will provide the spreadsheet she uses to design naturalized channels.
- If the channels are naturally too steep to design stable channel slopes, grade control can be accomplished using step pools or riffle sections. The cost of grade control items will be investigated using other master plans with similar items.

b. Regional Detention

- Each tributary alternative will include online regional detention to release to the First Creek mainstem at historic flow rates. At a minimum, a pond near the outfall to the mainstem will be provided. Other potential pond locations will be dependent on property lines and roadways. Merrick will identify locations for proposed ponds and send to the team for approval. Pond locations will be noted as “general” in the master plan.
- Water quality will be identified for the tributaries as part of detention, but this does not mean future development will not be required to provide on-site water quality.
- Regional detention is defined as 130 acres contributing, minimum, but if future ponds need to be split due to multiple developments/property owners, this will be addressed by the developer at the time of design, so long as the divided ponds meet the intent of the regional facility. Dividing regional detention will be determined on a case by case basis for each of the proposed developments. Stacey will verify if these assumptions are acceptable or not. If ponds serve less than 130 acres of tributary area, they would not be eligible for maintenance assistance. Also, if the tributary area is less than 130 acres, ponds may not be allowed for hydrologic analysis to reduce downstream design flows, depending on their impact. This would be decided by the governing entity (i.e., City of Aurora, SEMSWA, Arapahoe County).

c. Capacity upgrades

- Upsizing existing storm sewers or channels, specifically in the Harvest and Powhaton South Tributaries, will be determined and included as an alternative.

d. Additional detention

- Recognizing existing detention ponds in the master plan will be part of the alternatives, specifically the detention ponds on the Harvest tributary and other developed reaches. Since these ponds are existing, the alternative costs will be those associated with maintaining the ponds. A field visit may be necessary to investigate the existing conditions of the ponds that have potential for becoming maintained by the City of Aurora.
- Cost differences between the capacity upgrades to the storm sewer or channel system alternative versus the additional detention alternative will be included as part of the alternatives analysis.
- The ponds at the upstream end of Harvest tributary can be found in the Adonea Filing 2 drainage report.

3. Sky Ranch Regional Ponds

- Merrick will base the alternative design for regional detention in Sky Ranch on the May 2019 Phase 2 Drainage Report for Sky Ranch Filing 2 by CVL Consultants.



- Pond C will be included in the Monaghan Tributary and have a 100-year release rate of 135 cfs per design assumptions for the downstream channel in Neighborhood B.
- Pond G will be included in the 1<sup>st</sup> Avenue Tributary. Merrick will add a subbasin to the hydrology that will be tributary to this pond that was not previously in the baseline hydrology to match the proposed tributary area per the Sky Ranch design.
- The previous master plan for Sky Ranch showed a pond (HK) east of the future F Street in the 1<sup>st</sup> Avenue Tributary. However, the May 2019 report shows two ponds: Pond J and Pond H.
  - Pond J only has 77 acres contributing and therefore it will not be included in the master plan on its own.
  - Pond H re-delineates drainage boundaries so the contributing area would be approximately 206 acres.
  - Merrick will propose one regional pond upstream of proposed F Street for master planning purposes. The developer may subdivide this pond, but the smaller ponds may not be eligible for maintenance assistance or for peak flow reduction. As mentioned in 2b above, Stacey will verify if this assumption is acceptable or not.

#### 4. Hydraulic Modeling

##### a. Existing Topography with Future Flows

- The existing topography has been modeled with future condition flows, and problem areas have been identified by Merrick.

##### b. Harvest (Traditions) Tributary

- The street sections along the Harvest Tributary cut from the LiDAR topography appear to have several sump areas. These areas appear to be places where basements were being excavated. Based on the low precision of the topography in this area, Merrick will use typical street sections to calculate street capacities in this reach and adjacent to the detention pond and determine if future flows are contained within the streets or not.

#### 5. Other/General

- A schedule to finish the alternatives phase will be prepared so that a public meeting can be scheduled. It is important to begin scheduling the public meeting as soon as possible.
- Third Creek and Second Creek MDPs are available on the District's website and should be referenced for alternatives costing, especially for the naturalized channel designs.
- Later this year it is expected that the hydrology for the entirety of the First Creek watershed will be updated.
- Merrick will provide locations of proposed regional ponds for team approval prior to analysis.
- Merrick will submit a draft of the alternatives analysis to the team for review prior to the public meeting.
- The alternatives section of the report will be finalized after the recommended alternatives are selected based on input from the public meeting.

