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## **MEETING DETAILS**

- Meeting date/time: 7/9/2020 1:00PM to 2:30PM (via Microsoft Teams)
- Attendees: See Question 1 in Poll Results
- This document: Stakeholder Meeting – Discussion Notes  
Stakeholder Survey – Poll Results (questions)
- Related: Meeting Agenda 08-06-2020  
Video recording (via Microsoft Stream) – available at mhfd.org

## **MEETING NOTES**

### Holly Piza

- Meeting discussion outline
- Introductions

### **Level Spreader / Grass Lined Examples from Stakeholders**

#### Morgan Lynch

- Example #1 with Sterling Gulch
  - o Douglas County requires 100-year conveyance in storm sewers
  - o Based on NC guidance
  - o FILI project
  - o Longer level spreader – sized based on the smaller design storms
  - o Photos shared with the group
- Retrofit example – Marston Gulch
- Overestimate the flows from street
- Erosion occurring before construction complete
- Different type of design – no particular size, tried to fit in as best as possible
- Outfall alternative – indicators of a long term problem
- Share after the fact some curb and gutter
- Better than dealing with the erosion problem in the long run

\*\*\* Takeaways – limited guidance on level spreaders; when a 100-year pipe discharges, how do you divert WQ and lower flows

#### Megan Vogt

- Example #3 – MSU Rain Garden Level Spreader
- Some notable problems with the construction detailing of these level spreaders
- Missing information related to “concrete slab” to criteria/details
- Easy to find size requirements of grass buffer
- Key points – level spreader design (Duraslot slotted drain example)
- Punch walk picture
- No treatment – roof drainage and runoff (collect and treat)
- Another example with Tiffany Clark (at SEMSWA)

Cassie Kaslon

- SEMSWA office demonstration
- Similar conversations with different teams regarding mowing vs. not mowing
- Highly site dependent
- Maintenance crews and discussions
- Understand goals of the project

Questions (see video for discussion; not able to type and share at the same time)

- Part 1: Challenges
- Part 2: V3C4 additions/updates

**CRITERIA SUPPORT PRESENTATION – GRASS BUFFERS & SWALES**

Andrew Earles - Grass Buffers & Grass Swales

- Presentation from AE (using criteria, and some external resources)
- Outline of key topics
- Runoff reductions
  - o Appropriate infiltration rates (HSG) – good for flood control
  - o Not enough credit to low impact development (up to the 2-yr storm)
  - o Irrigation versus non-irrigate buffers (using saturated rate)
  - o Much more effective for grass buffers
- Separation & Sheet Flow
  - o 1-inch might be too small
  - o Sheet flow vs concentrated flow equations
- Buffer length & interface width
  - o For WQ treatment – minimum buffer length (more current studies)
  - o Minimum buffer length – treatment based approach
  - o Minimum width of interface (NCSU)
- Maximum buffer length (NCSU)
  - o Permissible velocity of flow over buffer; effective distance (Ed), uses only 1/3 of available land
  - o Length of buffer diminishing water quality returns
  - o Area of buffer being used during small event
- \*AE→ML – relatively simple at Sterling Ranch (site constraint is the 100-year pipe)
- Vegetation
  - o From Table A-2 – Upload area seed mix (sandy soils)
  - o Self-sustaining vegetation (with temporary vs. permanent irrigation)
- Group question - What experience with non-irrigated buffers and native plantings?
  - o Denver (Josh) – xeric species vs. hydrologic flow regime
  - o Great conversation related to seeding, establishment, coverage, connection with Denver Parks;
  - o NRCS different opinions – germination and non-irrigation; SEEDS/SQ. FOOT (120 vs. 30)
  - o Attempt to replicate a natural area in an unnatural context
  - o JIM – Backcountry swales (native swales with good density), much avoidance on bunch grasses; turf forming grasses; density of vegetation and full coverage is essential for slowing

- water down and getting it into the ground compared to landscaping with shrubs and non-turf grasses
- CASSIE – picture from earlier (irrigated grasses)
- Recycled water for irrigation options
- \*\*\*IRRIGATION – important conversation to have with everyone
- Design Example & Level Spreader Concepts
  - Step-by-step calculations vs. completed spreadsheet
  - Illustrations and key elements – paper to real world
  - Examples → visualizing; level spreader
- Examples of level spreader designs (several examples with photos)
  - Parking area - Not concentrating flows into a pipe, parking space
  - Portland examples -

### **STAKEHOLDER SURVEY – POLL RESULTS**

**Q1: Introduce yourself (Name and organization/place of work):**

- Candice Owen, City of Boulder
- Chris Hodyl, Jacobs
- Brent Kaslon, Valerian
- Mark West, HKG
- Derek Rapp, Peak Stormwater Engineering
- Tiffany Clark, SEMSWA
- Jim Watt, MHFD
- Sam Miler, City of Aurora
- Judah Gaioni, City of Longmont
- Will Wilhelm
- Morgan Lynch, MHFD
- Jesse, Stream Landscape Architecture
- Cassie Kaslon, Valerian
- Joshua Eldridge, Great Ecology
- Brian Wethington, City and County of Denver
- Megan Vogt, S.A Miro
- Laura Hinds, MHFD
- Tracy Bolger, Muller Engineering
- Andrew Earles

**Q2: What is your biggest challenge with Grass Buffers and Swales?**

- Possible for these to be vegetated buffers instead of grass only? Utilize some density of native grasses or woody plants
- Understanding long term maintenance goals of vegetation and aesthetics associated with type of vegetation selected
- Incentivizing design and examples of where grass buffers/ swales has worked
- Documenting runoff reduction / levels of TSS removal

- Applicants not wanting to provide irrigation and vegetation growth
- Understanding infiltration rates to prevent plant die-off; maintenance as Cassie mentioned
- Density of vegetation for native (non-irrigated) areas
- Level spreader design and proper construction, establishing the proper seed mix with the landscape architect.
- Slope

**Q3: Concerning Grass Buffers and Swales, what should be added / updated in Volume 3?**

- Use in a larger treatment train
- More discussion on concrete lip / riprap needs
- More options for level spreaders