



November 30, 2017

## **UDFCD Maintenance Eligibility Program Response to UDFCD Referral Comments**

Project: **Compark Village South Filing 1 – Belford Bridge**  
Stream: **Happy Canyon Creek**  
UDFCD MEP Phase: **Design**  
UD MEP ID: **106582**

Dear **Ms. Morgan Lynch**,

This letter is in response to the comments you provided on October 2, 2017, concerning the referenced project. Thank you for reviewing and providing comments. Below are your original comments with responses to them as it relates to Happy Canyon Creek.

1. Please add the following note to the construction plans:  
*The Urban Drainage and Flood Control District will conduct site visits during the project construction within or near the channel to observe construction for conformance with the approved plans and specifications. Please contact Mike Sarmento, UDFCD construction manager (303-455-6277), [msarmento@udfcd.org](mailto:msarmento@udfcd.org) to schedule a preconstruction meeting. All structural and grouted boulder work require 48-hours prior notice to any construction or concrete placement. Standards and specifications for all outfall and channel work can be accessed at [www.udfcd.org](http://www.udfcd.org) under the References section. Failure to notify may result in project ineligibility.*
  - The note above has been added to the General Notes in the revised plans.
2. Please submit a report detailing the need and basis of design. A cursory review of the plans were completed, without the basis of design documentation, some design assumptions were not clear. Guidance for the report is outlined in the [UDFCD MEP Guidelines](#). In addition, the plans should include the design information requested in the guidelines.
  - A revised CLOMR Report was submitted on October 10, 2017. A revised CLOMR Report has been completed in November 2017 and included for reference.
3. It is recommended that bedding material be used for the soil riprap along the banks.
  - Bedding material has been added per the UDFCD criteria and guidelines.



FELSBURG  
HOLT &  
ULLEVIG

*connecting and enhancing communities*

4. Please provide documentation of the current channel conditions. Please clearly state any assumptions made with the design.
  - A revised CLOMR Report was submitted on October 10, 2017. A revised CLOMR Report has been completed in November 2017 and included for reference.
5. Due to the dynamic nature of this system, is a sheet pile cap more appropriate? A sheet pile cap has less impact and can be lowered or buried easier than a concrete cap if future maintenance is needed.
  - A steel sheet pile cap has been added to the revised plans per the suggested comments.
6. Please provide a plan and profile of the proposed outfall. Please include the proposed flow, velocity and Froude number for this outfall.
  - The proposed outfall was is shown in plan view on Sheet DD-12. A profile of the outfall has been completed and incorporated into the plans. The hydraulics for the pipe outfall are included in the hydraulic calculations in the CLOMR Report appendices for information.
7. Please include all supporting calculations for the riprap and boulder sizing, as well as how the limits of riprap were determined.
  - A revised CLOMR Report was submitted on October 10, 2017. A revised CLOMR Report has been completed in November 2017 and included for reference.
8. Please provide existing and proposed hydraulic information for Happy Canyon Creek. This includes documenting impacts to shear and velocity within the project reach.
  - A revised CLOMR Report was submitted on October 10, 2017. A revised CLOMR Report has been completed in November 2017 and included for reference and includes the more frequent reoccurring storm flow events as described in the FHAD.
9. Based on proposed shears and velocities at drop four, is there a need to grade the right overbank, outside the ordinary high water mark, to minimize those parameters and constriction in the floodplain.
  - The observed shear and velocity located at Drop No. 3 is primarily within the main channel and is being mitigated with the proposed GSB in the main channel as well as a sheet pile cutoff wall for the entire cross section which terminates one foot above the FHAD Future 100-year storm flow event on either side of the main channel. The existing condition for the left overbank (LOB) at Drop No. 3 includes mature wetland vegetation and willows and that are not to be impacted with this project. The proposed condition for the right overbank (ROB) is to provide the GSB, adjacent soil riprap and steel sheet pile section up the adjacent side slope.



FELSBURG  
HOLT &  
ULLEVIG

*connecting and enhancing communities*

10. Based on the location of the next downstream vertical control, would the proposed drop one and associated cutoff wall be better purposed downstream of the low-water crossing to protect the crossing? In addition, in a system that is aggradating, the drop located upstream of the crossing may result in sediment deposition in or on the crossing. If the downstream location is not preferred, please align the proposed cutoff wall parallel to the low water crossing. If the intent is to protect the tributary, can the cutoff wall be broke into two sections?
  - The proposed trail and associated box culvert crossing have been raised to provide a vertical grade adjustment through the box culvert so sediment deposition will occur on the downstream side of the box culvert rather than the previously proposed upstream drop. Downstream riprap has been sized and placed accordingly for outlet protection. The associated sheet pile cutoff wall has been adjusted downstream of the crossing to protect the trail embankment as well as the tributary.
  
11. In general we support the use of the toe-in drop structures, however we have the following comments related to the structures:
  - a. Please confirm the toe-in drop structures extend at least 18” deeper than the crest of the drop located downstream.
    - Noted and confirmed.
  - b. Please extend the grouted boulder drop structures along the overbank to a known water surface elevation. Typically boulders are extended to at least the two- year water surface elevation, but the 10- year is preferred.
    - GSB's were extended to overbanks for the future 2-year water surface where applicable. Existing wetlands and mature vegetation in the overbanks immediately adjacent to the low-flow drops are not to be disturbed (USACOE permitting restrictions) and are being protected according to previous coordination efforts with UDFCD.
  - c. Is the location of groundwater known, if so please show the elevation in the profile? Dewatering for these drops is typically a concern during construction. Please consider providing a note instructing the contractor to install the sheet pile cutoff wall first, then install dewatering wells to dewater below lowest excavation. If the drop cannot be constructed to the plan depth, than a grouted boulder drop with a stilling basin and end sill will be required.
    - The approximate location of groundwater was indicated on test borings from the geotechnical report and incorporated into the profile and sections as appropriate.
    - Notes have been added to the plans for the suggested construction sequencing for the drops and management of dewatering during construction.