

## **Graham County**

### **EWP DSR 37-11-20-5039-0001 – Little Snowbird debris removal and bank stabilization**

#### ***PE Design needed***

Graham County is requesting quotes for PE design work needed for debris removal and stream bank stabilization located on the Little Snowbird Creek. Included in this information are photos showing the damage at the site. The GIS coordinates of the site are provided below for your reference. Below is guidance from James F. (Jim) Kjelgaard, PE, PhD (NRCS) when considering the expectation and workload for design. The selected PE will need to submit a draft design at 50% for comment/review by NRCS, and at 100% completion for review.

#### **DSR 37-11-20-5039-0001**

GIS COORDINATES OF THE SITE: 35\* 15' 05", 83\* 55' 00"

#### **James F. (Jim) Kjelgaard, PE, PhD (NRCS) Guidance**

Below is guidance when considering the expectation and work load for design.

#### **Expected Accomplishments and Deliverables**

1. Prepare design, construction specifications, and drawings in accordance with standard engineering principles that comply with NRCS programmatic requirements; and/or contract/install the designed construction. Any design services will be by a professional registered engineer. Sponsor will obtain NRCS review and concurrence on the design, construction plans, and specifications. The Sponsor must ensure description of work is reviewed, concurred, and approved by NRCS. A copy of the final signed and sealed plans and specifications shall be provided to NRCS.

From a design aspect, we have attached the applicable NRCS practice standard 380: STREAMBANK AND SHORELINE PROTECTION but that has requirements that may not apply in these situations. From NRCS' standpoint, rock riprap or a flexible armoring are the preferred installations. However, if the design engineer believes that shaping and vegetating can suffice, or partial armoring, then they're free to propose.

A short, narrative design report/cover letter should lay out the following in short and concise language, using NRCS policy verbiage, but the engineer should keep it simple. On the rock sizing, can be Isbash curve and Manning's or similar methodology is fine. NCDOT specifications will be considered equivalent to NRCS' for Hurricane Florence/Michael. Summarization of the work plan should be limited to a few pages. Specific requirements for design are as follows:

2. Previously developed requirements established during the planning phase must be included by reference. Design reports may vary in length from a brief synopsis to an extensive review. A design report addresses the topics in the following list, as appropriate. The report contents should be commensurate with the design complexity and significance; some items listed may not be relevant, and if not, need not be included.

3. Summary.—A concise statement of the history and status of the design, previous reviews for disposition of applicable policy items, justification for departure from standards, receipt of waivers, etc.
4. Description of the Job.—A brief description of the major features, hazard classification, drainage area, storm frequencies, landscape resources, capacities, etc., must be included. Include any variance from project plans.
5. Design Objective.—A brief, clear statement that may be a summary from a project plan. Differences identified from plans must be supported by proper approvals.
6. Basis for Design.—A listing of reference documents used in the design, such as handbooks, codes, reports, studies, and criteria.
7. General Basic Data.—Hazard analyses, seismic assessment, limiting conditions or restraints that may influence the design, construction, or facility operation.
8. Location and Layout.—Consideration of site configuration or landscape conditions that had an effect.
9. Hydrology.—The data reference, procedures, spillway operation frequency water yield, reservoir operational studies, and summary of precipitation amount and intensity.
10. Hydraulic Design.—A summary of the hydraulic shape and proportioning selected. Include channel stability and sediment transport considerations.
11. Foundations, Embankment Design, or Both.—A summary of data, site conditions, assumptions, treatments selected, and design analyses used to make stability analyses and determine material quality and quantity.
12. Environmental Considerations.—Features or practices to provide for conservation of visual, biological, and surface and ground water resources that may be affected by the planned measures, both during and after construction.
13. Construction Drawings.—Mention of standard detail drawings or any use of previously prepared special drawings.
14. Specifications.—Mention of special specifications and why they were needed. Explain special conditions or the need for special provisions in the construction contract.
15. Bid Schedule.—Give the rationale for selection of lump sum or subsidiary items.
16. Cost Estimate.—The considerations used that may be affected by the season or changes in size of contract.
17. Construction Schedule.—Explanation of any critical starting, delay, or completion dates.
18. Operation and Maintenance (O&M).—Explanation of conditions in which design assumptions depend on proper O&M and significant O&M activities are anticipated (for example, grasses in the emergency spillway to

protect against erosion during flow). Items identified and evaluated during the design that are planned for replacement during the evaluation period must be noted and described.

19. Construction Review.—A summary of those items, conditions, or features encountered during construction that require a field review by the designer, geologist, soil engineer, or other specialist to ensure that conditions anticipated during the design are verified and consistent with the design assumptions. Include the request for timely notification. Note whether a preconstruction conference is needed.

20. Authority.—The name (with signature) and title of the designer and approving officer must appear on the report. Plans must be stamped with the PE's seal.

The final completion date for the engineering and construction terminates on 6/06/2021.

For additional information regarding the site and questions regarding NRCS requirements and project deliverables, please contact:

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