June 11, 2020

Ms. Gina Gilpin
Purchasing Agent
Town of Vienna – Vienna Town Hall
127 Center Street South
Vienna, Virginia 22180

RE: Scope of Work and Cost Proposal for Bear Branch Stream Restoration Project – RFP Number 20-06 – Revision No. 1

Dear Ms. Gilpin,

Wood Environment & Infrastructure Solutions (Wood) is pleased to submit our revised scope of work and cost proposal for the Town's *Bear Branch Stream Restoration Project*. The attached cost proposal includes a breakdown of fully burdened hourly rates for all proposed individuals along with the estimated hours for each individual by task. This contract will be invoiced as hourly not-to-exceed.

Again, we greatly appreciate the opportunity to continue our partnership with the Town in supporting this project. Should you have any questions or require additional information regarding our scope of work and cost proposal, please feel free to contact me at (703) 488-3707 or troy.biggs@woodplc.com.

Sincerely,
Wood Environment & Infrastructure Solutions

M. Troy Biggs, PE, PH, D.WRE
Project Manager

Tucker Clevenger, PE, CFM
DC Office Manager

Name	Signature	Date

Attachment A – Detailed Cost Estimate
Attachment B – Subcontractor Proposals

BEAR BRANCH STREAM RESTORATION

PROPOSED SCOPE OF SERVICES

A. GEOMORPHIC ASSESSMENT

PROPOSED SUBTASKS

The geomorphic/stream assessment will include the following items, to be performed sequentially:

- Watershed Assessment
- Geomorphic Channel Assessment / Hydrologic Comparison
- Detailed Stream Characterization
- Riparian Buffer Assessment
- Assessment of Stable Reaches Along Bear Branch

Watershed Assessment

Wood will review the Accotink Creek Watershed Study and obtain existing readily available mapping data that will be used to assess historical, present, and planned land use practices and their impact on the morphology of Bear Branch. This data will also be used to develop a clear understanding of watershed history and its influence on the hydrologic characteristics of Bear Branch. Such an understanding is necessary to determine restoration potential for the subject corridor. The data reviewed could include any of the following depending on availability from the Town:

- Climatic data
- Aerial photographs (recent and historical)
- Site photographs
- Topographical map of the watershed
- Land use and land cover maps
- Historical documents describing past land use activities
- Geology
- Soils
- Personal interviews to determine past stream conditions, channel and floodplain alterations, and land use activities
- Major development plans for the watershed upstream of the project
- Basin hydrology
- Water quality data including information on point source and non-point source pollutants and stormwater outfalls

Wood will verify existing watershed boundaries and sub-watershed boundaries to the project area. All of the collected information will be reviewed to develop an initial understanding of why certain reaches are unstable.

Geomorphic Channel Assessment/Hydrologic Comparison

Urban systems such as Bear Branch are supply-limited systems. The watershed has been built out, and sediment coming from colluvium and alluvium from ephemeral streams has been replaced with parking lots and storm sewers. This man-man landscape delivers smaller gravel, sands, and salts from road operations and construction. The primary source of moving sediment in these systems is local bank erosion. When this erosion is corrected through restoration, the amount of sediment delivered downstream is drastically reduced.

Degraded urban streams are out of equilibrium. Due to incision and disconnection from the floodplain, the bankfull discharge or “channel filling discharge” does not necessarily correlate well with the effective discharge, or discharge responsible for moving the most sediment over time. Urban streams have such a high degree of instability that there are usually limited physical indicators present to establish a bankfull stage for the project stream reach.

Wood will identify and validate bankfull stage/channel filling stage indicators for the project stream reach prior to completing the morphological survey. The stage validation will be accomplished through an analysis and comparison of field identified indicators within the reach and output from hydraulic computations. Investigation of the inner berm features located along the incised channel will help determine the design discharge to be used

for sizing the channel. Wood will conduct a hydrologic analysis to determine the channel filling (bankfull) discharge for the site. The analysis will be performed considering regional curve data, USGS gage data (where available) and special geological considerations that may alter expected runoff at the site.

In order to determine discharge values for the project area along Bear Branch where applicable, Wood will compare information from the Difficult Run Watershed Study along with urban regression equations based on United States Geological Survey Water-Supply Paper 2207, streamflow data from a surrounding USGS gaged site, and any FEMA effective discharges (if available). These comparisons will allow Wood to determine design discharges for higher return intervals (i.e. 100-yr discharge) as well as for lower more frequent discharges which will aid in sizing the channel.

Deliverable:

- A one page or less technical memo will be submitted to the Town summarizing the results of the discharge values based on the USGS Water-Supply Paper 2207.

Detailed Stream Characterization

Once the geomorphic map is completed, Wood will survey stream morphological character in detail within the project limits. The detailed survey will only be conducted on selected representative reaches identified during the development of the geomorphic map.

The detailed stream survey will describe the existing morphological character of the stream within the project limits. The Rosgen Stream Classification system will be used to describe the morphological character of the surveyed streams. The Stream Channel Classification (Level II) will be completed for each representative reach and the following data will be collected:

- Bankfull/channel filling dimensions
- Plan-form dimensions
- Flood-prone dimensions
- Longitudinal facet profile
- Channel substrates

The reach-wide pebble count procedure (developed by Wolman, 1954 and modified by Rosgen, 1996) will be used to determine the composition of the streambed for stream classification purposes. Channel substrate material will be selected and measured in accordance with the procedure. After counts and tallies are complete, the data will be plotted by size class and frequency. In order to further characterize the upstream sediment supply, Wood will perform pebble counts and bar sampling of both the channel substrate and bank material to develop an understanding of sediment processes through the project reach. The upstream and downstream reach sediment deposition conditions will be used to assess the current sediment transport capacity and equilibrium conditions.

Deliverables:

- Stream Channel Classification
- Pebble Count Form and Plot

Riparian Buffer Assessment

Wood will perform a riparian buffer assessment, to include visual reconnaissance of the plant communities occurring within the riparian area of the stream reach. Information on plant species composition and areal cover, by strata (canopy, shrub, and ground story), will be recorded for each plant community. Additional information to be recorded will include presence and cover of nuisance plant species and occurrences (areas) of vegetative/ground disturbance. Photographic documentation of existing site conditions will be obtained.

Deliverable:

- A brief memorandum (3-page maximum) on the results of the riparian buffer assessment, along with a photographic log, will be provided to the client.

Assessment of Stable Reaches along Bear Branch

Wood will walk upstream and downstream of the reach in order to field verify and locate stable geomorphic sections along Bear Branch. Wood will survey cross sections and slopes and perform pebble counts along the stable reach. These stable cross sections will be modeled (at a section model using Manning's equation) and velocity, shear stress, and stream power for infrequent higher discharges will be determined along with the

floodplain width, floodprone width, etc. This information will provide a valuable insight to how the stable sections are able to carry flow, and these parameters will be incorporated into the design along the project reach.

Deliverable:

- A one page or less technical memorandum will be submitted to the Town summarizing the results of the stable reaches along Bear Branch

B. STAKEHOLDER MEETING – PUBLIC OUTREACH

PROPOSED SUBTASKS

Identification of Restoration Objectives

Two Wood staff will work with the Town to facilitate a kickoff meeting and conduct a stream walk with the Town and community stakeholders (identified by the Town). The purpose of the meeting and stream walk is to familiarize stakeholders with the project, identify initial concerns and issues, and develop restoration objectives that take into account stream stability and habitat improvement as well as the needs of the community and watershed.

Based on discussions with the Town, the kick-off meeting and stream walk can be structured to be one event, or divided into two events (such as having the meeting on a week night and the stream walk on a weekend). At the meeting, Wood will present the findings of the geomorphic assessment, describe the challenges and potential solutions, and facilitate discussion to develop project objectives. Objectives will cover the following areas:

- Provide for natural channel design and ecological restoration principles
- Results of the tree inventory and analysis
- Address watershed and stream constraints
- Be practical and feasible
- Consider the potential for long term success and minimal maintenance
- Recognize and address problems occurring within the watershed which contribute to stream system problems
- Be clearly defined
- Meet the major needs of the vested partners
- Allow for the community and stakeholders to be engaged and that important feedback is incorporated into the design

Deliverables:

- The stream walk will include a brief on-site orientation and overview of the project followed by a walk-though of the project site to highlight significant issues, challenges, and proposed solutions.
- Based on the kick-off meeting and stream walk, Wood will develop a memorandum summarizing the stakeholder discussion and the key restoration objectives.

C. SURVEY

Surveying Services to Support the Stream Restoration for Design and Engineering

Bowman Consulting Group (BCG) will be supporting Wood by providing all the surveying services for this project. The surveying services consist of a topographic survey and limited property survey. Further detail about these services, assumptions, and deliverables can be found in the proposal from BCG (please refer to the attached BCG subcontractor proposal for additional details).

D. ENVIRONMENTAL SERVICES

Tree Identification and Assessment

Trees greater than 4 inches in diameter at breast height (DBH) that have been tagged and survey located by Bowman as part of Task C (see attached survey scope) will be assessed in the field by a Wood Arborist. Trees will be identified to species and their general health and structural stability (i.e. signs of limb die-back, trunk and root damage/rot, leaning or top-heavy growth form) will be visually assessed. Trees will be given a rating of Good,

Fair, or Poor based on the assessment. A map of tree locations and a table including the tree number, species, DBH, and assessment of each tree will be provided with the plan set. Additionally, Wood will provide the Town with a map illustrating the density of trees (heat map) in GIS format. Wood will walk the site with the Town Arborist to identify trees which could potentially be worth saving. The information gathered in the assessment will be used to inform the design with the goal of protecting significant and high quality trees to the extent practicable.

Deliverables:

- Map of tree locations with table including tree number, species, DBH, and assessment of each tree. Due to the number of potential trees located, the tree inventory in the plan set will most likely be broken into multiple sheets (4-8", 8-12", and greater than 12")
- GIS Heat Map of tree density
- Site walk with the Town Arborist

Permitting Services to Support the Stream Restoration for Design and Engineering

BCG will be supporting Wood by providing environmental permitting services for this project. Further detail about these services, assumptions, and deliverables can be found in the proposal from BCG (please refer to the attached BCG subcontractor proposal for additional details).

E. CONCEPT DESIGN

Using the information and topics discussed during the initial meeting with the Town and stakeholders, Wood staff will develop one (1) concept design. The concept design will include the following:

- Existing Conditions
- Typical Cross Sections
- Stream Structure Details
- Preliminary Planform layout

A meeting will be held with the Town and other project stakeholders to review the concepts, and an additional stream walk will take place to review the design. After approval of the concept design (it is assumed it could require an additional meeting to select the preferred concept), Wood will meet with the Town to discuss the required number of sheets and that will be required by the Town, for a complete set of construction documents

After the concept design has been agreed upon, Wood will prepare a planning level cost estimate based on costs (actual costs from qualified contractors from previous jobs) provided by the Town for the approved concept design. This planning level cost estimate should be used for budgeting purposes only.

Deliverables:

- Additional stream walk with Town and stakeholders followed by meeting
- Technical Memorandum with maps of design
- Additional meeting(s) with Town and stakeholders
- Meeting Minutes
- Planning Level Cost Estimate for concept design

F. 90% & 100% CONSTRUCTION DOCUMENTS

PROPOSED TASKS

90% Plan Submission

The final design (90%) will advance the Conceptual Design completed and presented to the Town of Vienna and associated stakeholders. As Wood works toward the 90% and final design, hydraulic analysis will be conducted using a combination of HEC-RAS 1-D and/or 2-D. Wood will evaluate the hydraulics for the proposed solutions and evaluate velocity, sheet stress, and stream power. The design will attempt to focus on minimizing any impacts or increases of the 100-yr flood elevation. The Wood team will attend one meeting with the Town do discuss the

review comments for the 90% plan set. Wood will also facilitate a final meeting with community stakeholders to review the 90% plan (or earlier version, could be closer to the 75% plan) and ensure that any remaining issues or concerns have been adequately addressed. Comments from the Town and stakeholder meetings will be addressed/incorporated as appropriate in the plan set under the 100% Final construction document submission, which will be sealed by a VA Licensed Professional Engineer. Wood will offset the 50 foot and 100-foot RPA buffer area from edge of bank and show on the construction documents. The work will be conducted in accordance with the guidelines published by the Virginia Department of Environmental Quality entitled Resource Protection Area Onsite Buffer Delineation (revised June 15, 2009). The Final construction documents sheet (agreed upon in Task E) will most likely include:

- Cover Sheet
- Design Narrative & Computations
- General Notes
- Existing Conditions Legend and Property Owner Information Info
- Existing Tree Survey with Identification Table
- Existing Conditions / Demolition Plan
- Erosion and Sediment Control Ph I
- Erosion and Sediment Control Ph II
- Erosion and Sediment Control Notes
- Erosion and Sediment Control Details
- Soils Map
- Geometry Plan
- Overall Grading Plan
- Bear Branch Plan and Profile
- Bear Branch Cross Sections
- Stormsewer Outfall Plan and Profile
- Bear Branch Typical Stream Sections
- Stream Structure Details and Notes
- Structure Stakeout Plan
- Water Quality Narrative and TMDL Computations
- Riparian Planting Plan
- Riparian Planting Plan Notes & Schedule
- Riparian Planting Plan Details

Deliverables:

- Entire set of 90% and 100% Plan Submission After concept design is agreed upon – three (3) printed plan sets provided to the Town at 90% and 100% submissions. Wood will also develop the technical specifications for the project. Wood will also meet in the field with DEQ and walk the site and review the proposed design.
- Wood will submit the final design plans to obtain approval from:
  - Town of Vienna Department of Public Works
  - U.S. Army Corps of Engineers (NWP #27)
  - Virginia Marine Resource Commission Permit (confirmation of no permit required)
  - Virginia Department of Environmental Quality (confirmation of DEQ's 401 certification for NWP #27)
- Construction Cost Estimate - Wood will prepare the Bill of Quantities (BOQ) and Cost Estimate for the Final Design using the prevailing unit prices and information provided by the Town of Vienna.

G. FLOODPLAIN ANALYSIS

The current project reach is located within an effective Federal Emergency Management Agency (FEMA) approximate (Zone A) floodplain. In support of the Bear Branch stream restoration design, it will be necessary to develop an updated floodplain analyses to reflect the proposed design. This analysis will enable any potential impacts of the proposed project to the existing conditions approximate floodplain to be evaluated. Wood will aim to minimize impacts through iterative design modifications, with the ideal scenario demonstrating no increases ("no rise") to the existing 1% annual chance (100-year) water-surface elevations (WSELs) as a result of the proposed project.

If available, the Town will provide Wood the effective HEC-RAS hydraulic models for Bear Branch. It assumed that this model will be provided as a digital HEC-RAS file. Wood will use the field survey information collected as part of Task C to create the existing conditions model. The existing conditions model may also require changes to cross section layout/orientation to allow for a direct comparison to the post-project or proposed conditions

model. It is not expected that a corrected effective model will be necessary for Bear Branch and as a result the development of a corrected effective model was not included in this scope of work. Development of additional model runs (corrected effective, duplicate effective) would be considered out of scope and warrant a cost modification.

A Proposed Conditions model will be developed along Bear Branch. The Proposed Conditions model may include:

- Updated stream alignment and channel configuration
- Revised geometry/cross sections to account for proposed restoration grading
- Updated roughness coefficients to represent proposed vegetation and in-stream structures
- Modified ineffective areas based on HEC-RAS modeling updates

The 1% annual chance WSELs associated with the proposed conditions HEC-RAS hydraulic model will be evaluated versus the updated existing conditions hydraulic model to determine if the proposed design results in WSEL increases. While it is the overall goal of the design is to minimize impacts to 1% annual chance WSELs, it is possible that slight increases may exist, but may be preferable to alternatives (design modifications that eliminate increases but increase the cost or reduce the effectiveness of the project for example). The stream restoration principal of floodplain reconnectivity sometimes results in minor increases, however, additional mitigation measures may offset the impacts. Unless specifically required by the participating community, FEMA does not require that Conditional Letters of Map Revision (CLOMRs) be submitted in support of proposed projects located within approximate floodplains. As a result, CLOMR development and submission is not included as part of this scope of work and would require a scope and cost modification. If WSELs and floodplain delineations change significantly as a result of this stream restoration project, it is advised that a Letter of Map Revision (LOMR) be submitted to FEMA upon completion of the project. LOMR support services are not included within this scope of work.

Deliverables:

- Existing and Proposed Conditions HEC-RAS hydraulic models to support the no-rise analysis

H. VSMP Permit

Wood will provide technical assistance to apply for a General VPDES Permit for Discharges of Stormwater from Construction Activities for this Project. As part of this effort, Wood will develop a Stormwater Pollution Prevention Plan (SWPPP) as required by the Construction General Permit (CGP). Wood will complete the Registration Statement for your signature and prepare the SWPPP, in addition to coordinating the submittal of the required Registration Statement and fee forms to the Virginia Stormwater Management Program (VSMP) Authority on behalf of the Town of Vienna. This task excludes all required permit application fees and all CGP annual permit maintenance fees that may be required by the VSMP Authority.

I. PREBID MEETINGS / RESPONSE TO BIDDER QUESTIONS

Wood will attend one pre-bid conference and assist with answering contractor questions about the design documents. Wood shall also attend one (1) pre-construction meeting to assist the Town with Contractor questions. In addition, Wood will respond to bidder questions provided by the Town. Wood will also provide the Town prequalification language which can be used in the bidding process to ensure a qualified contractor is selected.

J. CONSTRUCTION OBSERVATION SERVICES

The Wood team will provide construction oversight services to represent the Town of Vienna and ensure proper construction and installation, provide on-site clarification to contractors, and assist in rectifying the unforeseen.

The construction contractor will be responsible for providing the stakeout and providing stakes at key structure locations and to identify the extent of the work. Wood will field review the stakeout with the contractor and identify and locate key structures and components, and field-adjust the design as needed. Wood will contact the Town as soon as possible if problems or issues are discovered during the site visit.

This proposal assumes that the construction duration would last for 17 weeks, and Wood would provide oversight services by one staff for 40 hours per week. Any additional construction oversight resulting from extensions to the construction schedule beyond 17 weeks would warrant a cost modification

PROPOSED SUBTASKS

Construction Inspection and Oversight Services

- Responses to Contractor questions through the Client for the duration of the project
- Wood will review shop drawings, construction submittals, materials, as-builts, and related data submitted by the general contractor
- Construction inspection for the duration of all construction activities and/or as directed by the Town by a qualified and experienced construction inspector onsite to observe and record all construction activities for the purpose of determining if the construction is in compliance with the construction contract documents. One Wood staff will be onsite during construction.
- Coordinating with the Town and addressing any necessary field changes due to unexpected field conditions.
- Wood will be available to attend weekly construction inspection and progress meetings held by the Town and the Contractor.
- Weekly submittals documenting daily construction inspections. Construction activities to be inspected and documented include, but are not limited to:
    - ✓ Determining and documenting the acceptability as specified in the construction contract documents
    - ✓ Furnished and salvaged construction materials.
    - ✓ Finished grading.
    - ✓ Constructed proposed channel cross section, longitudinal profile, and channel geometry. Dimensions and elevations of cross sections, structures, and longitudinal profile will be checked as part the construction inspection using the non-certified as-built survey data
    - ✓ In-stream structures within the channel (rock structures (footer and top rock placement) and reinforced bed material), including photographic documentation of the installation of each structure to highlight key elements such as footer rock placement, etc. Include selected photographs in inspection forms and provide a final digital copy of photographs and reports on CD.
    - ✓ Erosion and sediment control measures.
    - ✓ Plant materials and plant material installation.
    - ✓ Approval of the final as-built survey
    - ✓ Recommending corrective actions if necessary

Wood will only communicate issues concerning design and construction with the Town. Wood will not supervise, direct, or have control over the Contractor's work, nor will Wood have authority over or responsibility for the construction means, methods, techniques, sequences or procedures, or for safety precautions. Wood will observe and report and supply observations and findings to the Town. Wood will follow safety rules of the contractor while on-site.

Final Construction Certification

Wood will conduct final construction inspection and submit a punch list of construction work that needs repaired, replaced, adjusted, or finished. This walk-through will occur before the contractor demobilizes from the site. The required submittal includes the punch list, supporting photographs, and other information to support the inspection findings.

As-Built Survey

After construction of the stream restoration is complete, BCG surveyors will provide an as-built survey of the site to locate the critical constructed features. This task includes as- built topography, utility as-built, as-built of the critical stream restoration hardscape and natural features, provide photographs, etc.

Deliverable:

- Certified survey by a licensed surveyor in the Commonwealth of Virginia, and providing an AutoCAD file, as required.

K. POST CONSTRUCTION MONITORING

As part of the conditions of the NWP #27 permit, monitoring may be required. A post construction as-built survey of the restored stream will be conducted to ensure conformance with the approved design. In addition, Wood will conduct annual inspections of the project for a maximum of three years post construction. This monitoring will help determine the success of the project and if any maintenance actions are required to satisfy plan goals during the monitoring period.

Deliverable:

- Annual monitoring report for three years to include a visual inspection and photo documentation of the stream.

L. PROJECT MANAGEMENT & CLIENT COORDINATION

Project management activities include budget and schedule management, invoicing, contract management, and overall project coordination.

SCHEDULE

Wood previously provided a schedule with the RFP submission. This project schedule proposed a general guideline for the project duration. Once Notice-To-Proceed has been issued, Wood will coordinate with all subcontractors and the Town to develop a mutually agreeable final schedule.

M. COST ESTIMATE SUMMARY

Wood will provide the services referenced within this scope of work on a time and materials basis for a total of $427,003. Additional cost details are provided in Attachment A.

Cost Summary - Town of Vienna - Bear Branch Stream Restoration	
Task A - Geomorphic Assessment	*$26,669*
Task B - Stakeholder Meeting - Public Outreach	*$9,797*
Task C - Survey	*$49,748*
Task D - Environmental Services	*$36,460*
Task E - Concept Design	*$29,017*
Task F - 90% and 100% Construction Documents	*$72,112*
Task G - Floodplain Analysis	*$9,918*
Task H - VSMP Permit / SWPPP	*$4,700*
Task I - PreBid Meetings/Response to Bidder Questions	*$6,385*
Task J - Construction Observation Services	*$145,667*
Task K - Post Construction Monitoring	*$5,663*
Task L - Project Management	*$30,867*
TOTAL COST	$427,003

EXCLUSIONS & ASSUMPTIONS

- A traffic control plan for the project site entrance would not be required.
- FEMA LOMR/CLOMR submission are not included within the scope of work
- No upfront administrative specifications will be provided. Wood will provide technical specifications for the project.
- One round of comments will be addressed for the 90% submission.
- The major stream construction is assumed to be approximately 22 feet/day. Construction Observation time assumes 40 hours per week for 17 weeks for one Wood inspector.
- Geotechnical borings are not included within this proposal scope.
- The assumed length of the Bear Branch stream restoration project is approximately 1,900 linear feet.
- Wood and all subcontractors will have open access to the project area.
- The Town of Vienna will provide Wood all relevant data if available for the project including – existing utility information, easements, previous/proposed development plans in the vicinity of the project area.
- Since the project will be relocated using the principles of Natural Channel Design, it is expected that any wetland and stream impacts determined by regulators are self-mitigating and will not require additional compensation.
- The project will be drafted and delivered utilizing the AutoCAD platform.
- Wood is not responsible for directing the contractor. We will observe and report and supply observations and finding to the Town.
- Wood will follow the safety rules of the contractor while on-site but is not responsible for on-site safety of others.
- Wood will not perform materials or laboratory analysis as part of this scope.
- A maximum of three (3) printed plan sets will be delivered to the Town at the 90% and 100% design phases.
- Further detail about exclusions and assumptions can be found in the proposal from BCG and Jennings Environmental (please refer to the attached BCG subcontractor proposal for additional details).

ATTACHMENT A – DETAILED COST ESTIMATE

Town of Vienna - Bear Branch Stream Restoration

Detailed Cost Estimate

11-Jun-20

Task	Principal-in-Charge	Project Manager/ Senior Technical	Senior Engineer	Design Engineer	Project Engineer	Junior Engineer	Engineering Technician	Senior Planner	Riparian Specialist	Direct Expenses			Total Expenses (5% Markup)	Total Cost
										Jennings Environmental	Bowman Consulting Group	Mileage/ Printing		
Rates	$265.94	$219.72	$172.12	$139.00	$108.44	$98.74	$89.26	$162.49	$98.74					
Task A - Geomorphic Assessment	0	48	4	52	15	0	0	0	25	**$3,000**	**$0**	**$915**	**$4,111**	**$26,669**
Watershed Assessment		*7*		*6*	*1*								$0	$2,480
Geomorphic Channel Assessment/Hydrologic Comparison		*15*		*14*	*7*					$2,000		$40	$2,142	$8,143
Detailed Stream Characterization		*12*		*24*	*3*					$1,000		$75	$1,129	$7,427
Riparian Buffer Assessment		*4*							*25*			$600	$630	$3,977
Assessment of Stable Reaches along Hunters Branch		*10*	*4*	*8*	*4*							$200	$210	$4,641
Task B - Stakeholder Meeting - Public Outreach	0	22	0	17	0	0	0	16	0	**$0**	**$0**	**$0**		**$9,797**
Kickoff Meeting/Present Assessment Findings		*10*		*10*				*10*						$5,212
Stream Walk		*4*		*4*				*4*						$2,085
Indentify Restoration Objectives		*8*		*3*				*2*						$2,500
Task C - Survey	**0**	**8**	**0**	**12**	**0**	**4**	**4**	**0**	**0**	**$0**	**$43,400**	**$0**	**$45,570**	**$49,748**
Survey											$41,400		$43,470	$43,470
Easement Plat											$2,000		$2,100	$2,100
Coordination with Bowman		*8*		*12*		*4*	*4*							$4,178
Task D - Environmental Services	**0**	**14**	**0**	**38**	**0**	**0**	**0**	**0**	**48**	**$0**	**$22,250**	**$0**	**$23,363**	**$36,460**
Wetlands and Waters of the U.S. Delination											$8,250		$8,663	$8,663
USACE Jurisdictional Determination											$1,500		$1,575	$1,575
Threatened & Endangered Species Review											$1,500		$1,575	$1,575
Cultural Resources Review											$2,500		$2,625	$2,625
Section 404/401 Permitting											$8,500		$8,925	$8,925
Coordination with Bowman / Natural Channel Checklist & Geomorph Table		*10*		*38*										$7,479
Tree Identification and Assessment		*4*							*48*					$5,619
Task E - Concept Design	**0**	**20**	**22**	**86**	**8**	**14**	**4**	**16**	**0**	**$500**	**$0**	**$3,000**	**$3,675**	**$29,017**
Concept Design		*8*	*12*	*56*	*8*	*14*	*4*			$500		$3,000	$3,675	$17,889
Meeting with Town and Stakeholders		*4*	*4*	*8*				*16*						$5,279
Stream Walk		*2*	*2*											$784
Additional Meeting with Town and Stakeholders		*2*	*2*	*4*										$1,340
Memo - Meeting Minutes		*2*	*2*	*14*										$2,730
Planning Level Cost for Concept		*2*		*4*										$995
Task F - 90% and 100% Construction Documents	**0**	**42**	**38**	**112**	**177**	**80**	**65**	**0**	**16**	**$3,000**	**$0**	**$3,000**	**$6,300**	**$72,112**
Submit 90% Set		*24*	*24*	*65*	*90*	*40*	*5*		*16*	$3,000		$3,000	$6,300	$40,475
Meeting with Town to Discuss 90% Comments				*6*	*6*									$1,485
Meeting with Town and Stakeholders					*8*		*20*							$2,653
Address Comments and Finalize Plan Set		*10*	*10*	*25*	*55*	*30*	*30*							$18,998
Technical Specifications		*4*	*2*	*8*	*10*	*10*	*10*							$5,300
Develop Engineering Cost Estimate		*4*	*2*	*8*	*8*									$3,203
Task G - Floodplain Analysis	**0**	**4**	**10**	**31**	**15**	**14**	**0**	**0**	**0**	**$0**	**$0**	**$0**	**$0**	**$9,918**
Existing Conditions Model/Validation		*1*	*3*	*8*	*4*	*4*								$2,677
Proposed Conditions Model		*1*	*3*	*15*	*5*	*7*								$4,054
No Rise Evalutation		*1*	*2*	*2*	*2*	*1*								$1,158
Model Revisions as a result of design iterations		*1*	*2*	*6*	*4*	*2*								$2,029
Task H - VSMP Permit / SWPPP	**0**	**16**	**0**	**0**	**0**	**12**	**0**	**0**	**0**	**$0**	**$0**	**$0**	**$0**	**$4,700**
Technical Assistance VSMP / SWPPP		*16*				*12*								$4,700
Task I - PreBid Meetings/Response to Bidder Questions	**0**	**24**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**$0**	**$0**	**$0**	**$0**	**$6,385**
Provide Town with Prequalification Language		*4*												$879
Attend one Pre-Bid Conference Meeting		*4*		*4*										$1,435
Assist with Answering Contractor Questions		*16*		*4*										$4,071
Task J - Construction Observation Services	**0**	**240**	**130**	**274**	**100**	**0**	**0**	**0**	**0**	**$2,500**	**$16,500**	**$1,600**	**$21,630**	**$145,667**
Review shop drawings and submittals		*16*												$3,515
Construction Inspection		*200*	*130*	*250*	*100*					$2,500		$1,600	$4,305	$116,218
Final Construction certification		*12*		*12*										$4,305
As-Built Survey											$16,500		$17,325	$17,325
Coordination with Bowman		*12*		*12*										$4,305
Task K - Post Construction Monitoring	**0**	**3**	**0**	**36**	**0**	**0**	**0**	**0**	**0**	**$0**	**$0**	**$0**		**$5,663**
Yearly monitoring for up to 3 yr period		*3*		*36*										$5,663
Task L - Project Management	**8**	**112**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**$0**	**$0**	**$0**		**$30,867**
Overall Project Management, Invoicing and Client Coordination	*8*	*112*	*24*											$30,867
TOTAL	**8**	**533**	**218**	**635**	**300**	**98**	**73**	**32**	**89**	**$9,000**	**$82,150**	**$8,515**	**$104,648**	**$427,003**

ATTACHMENT B – SUBCONTRACTOR PROPOSALS

Bowman

Revised June 10, 2020
Revised May 21, 2020
May 15, 2020

Troy Biggs
Wood
4795 Meadow Wood Ln., Suite 310
Chantilly, Virginia 20151

Re: Bear Branch – Southside Park / Accotink Creek Stream Restoration, Town of Vienna, VA
Proposal to provide Survey and Environmental services

Dear Mr. Biggs:

Bowman Consulting is pleased to submit our revised tasks and fees for Land Surveying, and Environmental services to support you and WOOD on the Bear Branch Stream Restoration in the Town of Vienna, Virginia.

Bowman Consulting has the resources and experience to make your project a success. In addition to Surveying services, BCG also provides Engineering, Planning, 3D Laser Scanning, Subsurface Utility Engineering Services (SUE), Landscape Architectural, Right-of-Way Services and Transportation services to clients across the nation.

PROPOSAL ASSUMPTIONS AND PROJECT UNDERSTANDING

Standard of Care - Services provided by BCG under this proposal will be performed in a manner consistent with the degree of care and skill ordinarily exercised by members of the same profession practicing under similar circumstances, including standard of care at the time the services were provided.

Quality Control - A portion of the stated compensation is set-aside for Quality Control/Quality Assurance, which is part of the BCG Quality Control Policy.

SCOPE OF SERVICES AND FEES

The scope of services (the "Scope") and associated fees shall be as follows:

1. Perform a Topographic Survey and Limited Property Survey:

Bowman Consulting Group (BCG) will perform topographic surveying services as need to complete the design and engineering of the Bear Branch stream restoration. Survey services includes the following:

Establish a semi-permanent horizontal and vertical control network using GPS and conventional technology. Horizontal datum will be NAD83, and vertical will be NAVD88 as required. This task includes setting temporary control as needed to complete the surveying. Semi-permanent control will be set in locations that will remain usable during construction and as-built operations.

BCG will perform property research to determine current ownership of the properties adjacent to the stream restoration survey, including research to acquire subdivision plats, public right-of-way information and public utility easements as shown on the subdivision plats.

With parcel and right-of-way research completed and property boundaries processed in AutoCAD; our surveyors will perform reconnaissance and locate sufficient property corner monuments and evidence of property lines including, iron pins, fence corners, fence lines necessary to accurately depict the property boundaries on the topographic survey base.

Concurrent with the property survey, BCG will perform a field run topography/stream cross-section survey and utility as-built necessary to design the proposed stream restoration. This task shall include the following:

- Perform a field run topographic and cross-section survey at approximately on about 1,900 linear feet of the Bear Branch stream and tributary.
- Cross-section survey will include the following details on the stream channel:
  TWG – thalweg (deepest part of channel cross section – not centerline).
  RCH – right toe of channel (bottom edge of channel, or toe of channel bank).
  RTB – right top of bank (of main channel).
  LCH – left toe of channel (bottom edge of channel, or toe of channel bank).
  LTB – left top of bank (of main channel).
- Cross-section will be taken at approximately 50-foot intervals and includes intermediate cross-sections at bends, or other critical features in the stream.
- Topographic survey includes locating significant natural features within the stream channel.
- It is estimated that *approximately 8-acres* of topography is included.
- Topography will represent 1-foot contour intervals.
- BCG surveyors will take photographs of significant features and link them to the topographic survey.
- BCG will locate all visible indications of utility such as water meter, fire hydrants, valves, poles – including pole numbers, wires, transformers, pedestals, vaults, etc. Sanitary sewer and accessible storm sewer structures will locate and as-built, to acquire invert of pipes, and pipe sizes and pipe material. Any storm culverts will be surveyed and as-built.
- Surveying along Ross Drive SW will include capturing data to the top of curb nearest to the stream and site survey (does not include a full roadway survey).
- After a complete inspection of the site, BCG will coordinate with Miss-Utility to locate any suspected subsurface utilities. If subsurface utilities are delineated on the ground, BCG surveyors will locate the paint or flags, identify the utility and include the information on the topographic survey base.
- BCG will field locate wetlands flagged and provide the wetlands location to the to the BCG environmental team and update the topographic survey base to include the flagged wetlands.
- *Individual trees 4"* in diameter and larger (measured at breast height) will be identified by species, tagged and survey located within the survey limits.
- Final deliverable includes a certified topographic survey prepared by a surveyor licensed in the Commonwealth of Virginia and includes delivering an AutoCAD digital file developed at the scale requested for engineering and depicting 1-foot contour intervals and referencing select spot elevations and cross-sections.

FEE: Lump Sum of $41,400.00

2. ***Easement Plat:***
Under this task BCG shall prepare an easement plat for Fairfax County Map#0491-02-0004, at 1319 Ross Drive SW, Vienna. Excludes Review or submission fees.

FEE: Lump Sum of $2,000.00

3. ***Provide a Post-Construction As-Built Survey:***
After construction of the stream restoration is complete, BCG surveyors will provide an as-built survey of the site to locate the critical constructed features. This task includes as- built topography, utility as-built, as-built of the critical stream restoration hardscape and natural features, provide photographs, etc. The deliverable shall include a certified as-built survey prepared by a licensed surveyor in the Commonwealth of Virginia, and provide an AutoCAD file, upon request.

FEE: Lump Sum of $16,500.00

Environmental Services

4. **Wetlands and Waters of the U.S. Delineation:**
BCG shall conduct a wetland delineation within the Project limits based on the requirements of the Corps of Engineers' Wetlands Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0, 2012). BCG shall delineate and flag the boundaries of waters of the U.S. and wetlands and will collect photographs and data points to document existing site conditions and jurisdictional areas. BCG will then prepare and submit to the Town a Wetland Delineation Report and Map, which summarize the results of the field investigation and identify those areas that are most likely within the regulatory purview of the U.S. Army Corps of Engineers (USACE).

Please note that the flagged waters of the U.S. and wetland boundaries shall be field-located under separate survey task.

FEE: Lump Sum of $8,250.00

5. **USACE Jurisdictional Determination:**
Following approval by the Town, BCG shall submit the Wetland Delineation Report and Map with a Jurisdictional Determination (JD) Request to the USACE. BCG shall then meet with the USACE at the Project to review and confirm the flagged waters of the U.S. and wetland boundaries, and will update the Wetland Delineation Map as necessary to reflect any changes agreed to in the field. During the site visit, BCG shall also review the concept design for the Project with the USACE to obtain preliminary feedback concerning the proposed stream restoration activities and Section 404/401 permitting requirements.

FEE: Lump Sum of $1,500.00

6. **Threatened and Endangered Species Review:**

BCG shall prepare and submit a Project Review request to the Virginia Department of Conservation and Recreation (DCR), Division of Natural Heritage, to obtain preliminary information related to Federal or State-listed threatened and endangered species and other natural heritage resources for the Project. BCG shall also conduct searches of the U.S. Fish and Wildlife Service's (FWS) Information, Planning and Conservation System (IPaC) and the Virginia Department of Game and Inland Fisheries' (DGIF) Fish and Wildlife Information Service (VaFWIS) to determine the potential for Federal or State-listed threatened and endangered species on, or in the vicinity of, the Project, and review the Center for Conservation Biology's VA Eagle online database. BCG shall then prepare a summary letter and exhibit to the Town detailing the results of the reviews, general habitat descriptions for the Project, and the potential for the occurrence of listed threatened and endangered species on the Project.

Please note that this task specifically excludes species-specific field surveys that may be recommended or required based on the results of the Review, or during Section 7 consultation by the USACE.

FEE: Lump Sum of $1,500.00

7. **Cultural Resources Review:**

BCG shall conduct a review of the Virginia Department of Historic Resources' (DHR) Virginia Cultural Resource Information System (V-CRIS) to identify any documented cemeteries, archaeological sites, architectural resources, historic districts or other cultural resources on, or in the immediate vicinity of, the Project. BCG shall then submit a Project Review Request submission package to DHR through their ePIX system to obtain preliminary feedback concerning the proposed stream restoration activities at the Project and potential effects on historic resources. BCG shall then coordinate with the Client concerning the findings and results of DHR's Review, including the extent of any recommended archaeological and cultural resource surveys.

Please note that this task specifically excludes field investigations, archaeological and cultural resource surveys, and Memorandum of Understanding that may be recommended or required by DHR following their review of the Project, or during Section 106 coordination by the USACE.

FEE: Lump Sum of $2,500.00

8. **Section 404/401 Permitting:**

BCG shall prepare and submit a Joint Permit Application/Pre-Construction Notification (JPA/PCN) for the Project to the USACE, Virginia Department of Environmental Quality (DEQ), and Virginia Marine Resources Commission (VMRC) for authorization to impact waters of the U.S. and wetlands under Nationwide Permit (NWP) 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities), for which DEQ has issued conditional Section 401 Water Quality Certification; it is anticipated that VMRC shall issue a No Permit Required Letter for the Project. This task includes serving as Town's Agent and submitting the JPA/PCN package with accompanying exhibits and supporting information, including Section 7 Endangered Species Act and Section 106 National Historic Preservation Act information, and a mitigation monitoring plan with success criteria as required by NWP 27.

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BCG will also meet and coordinate with the Town and USACE concerning the proposed Project and impacts, respond to additional information requests and agency comments concerning the JPA/PCN, and negotiate the terms and conditions under which the final Permit shall be issued.

FEE: Lump Sum of $8,500.00

SUMMARY MATRIX

1	Topographic and Limited Property Survey	$41,400.00	Lump Sum	1	$41,400.00
2	Easement Plat	$2,000.00	Lump Sum	1	$2,000.00
3	Post-Construction As-Built Survey	$16,500.00	Lump Sum	1	$16,500.00
Environmental Services					
4	Wetlands and Waters of the U.S. Delineation	$8,250.00	Lump Sum	1	$8,250.00
5	USACE Jurisdictional Determination	$1,500.00	Lump Sum	1	$1,500.00
6	Threatened and Endangered Species Review	$1,500.00	Lump Sum	1	$1,500.00
7	Cultural Resources Review	$2,500.00	Lump Sum	1	$2,500.00
8	Section 404/401 Permitting	$8,500.00	Lump Sum	1	$8,500.00
Total Estimated Fee					**$82,150.00**

ASSUMPTIONS

The fees quoted above are based on work being performed in a systematic, orderly and progressive manner. If this is impossible because of circumstances peculiar to the particular operations, lump sum fees listed shall not apply, and instead work will be billed in accordance with our prevailing hourly rate schedule. The following circumstance, among others will necessitate charges being based on hourly rates:

- Work requiring less than 4-hour survey party day at the site, unless performed at the discretion of BCG.
- Re-stakes of all types.
- Work area not cleared of trash, building materials, vehicles, earth, etc.
- Both horizontal and/or vertical control points destroyed so as to require resetting necessary control for the job.
- Work requiring overtime when requested by you. Under these conditions, hourly rates will be at 1.5 times the quoted hourly rates charged. Sundays and holidays will be billed at 2.0 times the appropriate rate. All overtime is subject to the availability of personnel.
- Any additional work requested that is not specifically covered in the above scope of work.
- Cut sheets will be delivered by close of business the day following completion of stakeout.
- Client is responsible to provide traffic control, if needed.
- A minimum 48-hour notification is required for all stakeout requests.

EXCLUSIONS

- Services other than described herein
- All Archaeological Survey
- ALTA/NSPS Land Title Survey
- Bio-Retention Filters
- Boundary Survey
- Construction Administration Services
- Color Renderings

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- Exhibits other than described herein
- Final Building Location
- Final Cost Estimates Geotechnical Report
- Hardscape Design and Layout
- Monitoring and/or Testing
- Off-site Design services other than those described
- Permits
- Record Plats
- Site Design
- Submission Fees

REIMBURSABLE EXPENSES
Reimbursable expenses shall include actual expenditures made by BCG in the interest of the Project and will be invoiced at the actual cost to BCG plus fifteen percent (15%) for handling and indirect costs. Reimbursable expenses shall include but not be limited to costs of the following:

- Mailing, shipping, and out-source delivery (i.e. DHL, FedEx) costs
- Fees and expenses of special consultants as authorized by the Client

REPROGRAPHIC, COURIER AND OTHER CHARGES
Reprographic, plotting, in-house courier, and archive retrieval services will be invoiced in accordance with Schedule A attached hereto.

CLIENT RESPONSIBILITIES
The Client shall be responsible for obtaining permission for BCG, its employees, agents and subcontractors to enter onto the subject property and any properties in the vicinity as reasonably necessary for BCG to perform the services described herein. By either countersigning this Proposal or verbally authorizing BCG to proceed, the Client warrants and represents that it has obtained such permission. The Client shall provide the following items upon request of BCG in a timely manner and at no expense to BCG:

- Site Access Permissions
- Title Report (if required)

OTHER TERMS
This proposal is based on the scope of services indicated herein and the information available at the time of the proposal preparation. If any additional services are required due to unforeseen circumstances and/or conditions, Client or regulatory requested revisions, additional meetings, regulatory changes, etc., BCG will notify the Client that additional scope of work and fees are required and will obtain the Client's written approval prior to proceeding with any additional work.

Please indicate your acceptance of this proposal by executing below and returning a copy to this office. Thank you for the opportunity to provide services to Wood.

Sincerely,
BOWMAN CONSULTING GROUP, LTD.

Brent Evans
Brent Evans
Director of Survey - Principal

Bowman

Wood hereby accepts this Proposal (per agreement dated 03/06/2015) and authorizes BCG to proceed with the Project.

WOOD

By: _____
(Signature)

Printed Name: _____

Title: _____

Date: _____

7 Samuel Ashe Drive, Asheville, NC 28805
919-600-4790
greg@jenningsenv.com

May 21, 2020

PROPOSAL

Stream Restoration Consulting Support Services for the Town of Vienna – Bear Branch Stream Restoration Design

Total Fee: $9,000

Jennings Environmental proposes to provide Senior Technical QA/QC services to Wood personnel for the Town of Vienna Bear Branch Stream Restoration Design Project. Technical advising consulting services will be provided by Greg Jennings, PhD, Founding Principal and President of Jennings Environmental. Consulting services will include QA/QC services for the geomorphic assessment, development of 90%, and 100% CD and senior technical support during construction.

Standard Rate Sheet

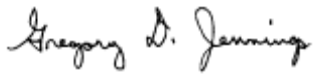
Gregory D. Jennings, PhD, PE, Principal Engineer

$175 per hour

Task A – Geomorphic Assessment
Task E – Concept Design
Task F – 90% DD and 100% Final CD
Task I – Construction Observation Services

48 hrs. @ $175/hr. = $8,400
Travel/Expenses = $600
Total = $9,000

Respectfully,



Gregory D. Jennings, PhD, PE
President, Jennings Environmental PLLC