



THE CITY OF HENDERSONVILLE

160 6TH Avenue East
Hendersonville, NC 28792
(828) 697-3000

CONTRACT FOR PROFESSIONAL ENGINEERING SERVICES

FIRM: Wildlands Engineering, Inc.

**167-B Haywood Road
Asheville NC, 28806
828.774.5547**

**PROJECT: North Carolina Land & Water Fund Grant:
Mud Creek Stream, Wetland, and
Stormwater Planning Project**

**PROJECT DESCRIPTION: Professional services to support the Mud
Creek Stream, Wetland, and Stormwater
Planning Project ("Project").**

PROJECT NUMBER: 21001

This Contract for Professional Engineering Services, and all exhibits, (collectively this "Contract") is entered into this ____ day of _____, 20____ by and between, the City of Hendersonville, a municipal corporation of the State of North Carolina, (the "City") and, Wildlands Engineering, Inc., a North Carolina firm, having an address of 167-B Haywood Road Asheville, NC 28806 (the "Firm")

WITNESSETH

That for and in consideration of the mutual promises set forth in this Contract below, the sufficiency of which is acknowledged by the parties hereto, the parties do mutually agree as follows:

1. Scope of Services. The Firm agrees to perform for the City the following services according to the following requirements:

The Firm agrees to provide professional engineering services needed to complete the Project. Such professional engineering services shall constitute the "Work." The Scope of Services and Firm's Fee Schedule are attached as Exhibits B and C, which are incorporated herein by reference. Additional (extra) services are defined as any work not included in the Scope of Services in Exhibit B that are requested by the City or any review agencies ("Additional Services"). Additional Services will be billed at the Firm's billing rates as shown on the attached Exhibit D, which is incorporated herein by reference. The Firm represents to the City that the hourly billing rates are the Firm's standard billing rates. The Firm's hourly rates shown on the attached Exhibit D shall apply throughout the duration of the Work. Any services not included in the Scope of Services in Exhibit B will be considered Additional Services. Additional Services will be identified either in writing or by verbal communication but must be approved in writing by the City before proceeding to perform such Additional Services. Unless otherwise specifically stated herein, all services will be provided on a time and materials basis, within the not-to-exceed sum as specified on Exhibit C. If the not-to-exceed sum is reached, the Firm shall complete the Work notwithstanding, with the exception that reimbursables will still be paid to the extent not included in the not-to-exceed limit.

The Firm will be responsible for providing properly licensed professionals to complete the Work in accordance with the standard of care ordinarily used by members of the Firm's engineering profession practicing under similar circumstances and at the same time in Henderson County. In addition to the indemnification obligations contained in the STANDARD TERMS AND CONDITIONS attached to this Contract, the Firm further agrees to indemnify and save harmless the City from claims and liabilities to the extent caused by the negligent errors or omissions of the Firm, including its engineers, technicians or subcontractors.

The Firm agrees to coordinate its Work with the work of any other separate professional services, contractors or with the work of the City's own forces to avoid delaying or interfering with their work.

The Firm must be properly registered with the North Carolina Board of Examiners for Engineers and Surveyors and must be properly authorized to conduct business in the state of North Carolina. The engineers performing the Work, and in responsible charge of the Work, must be a licensed Engineer in the State of North Carolina and must have a good ethical and professional standing.

The City reserves the right to terminate the professional service contract of the Firm based on the Firm's breach of this Contract (ex: schedule, responsiveness, quality of design, accuracy of documents etc.) or for convenience. The City reserves the right to modify the Scope of Work described in Exhibit B Scope of Services, and in such event the City and Firm shall negotiate in good faith to make corresponding modifications to the Fee Schedule in Exhibit C.

2. Required Insurance. Firm shall be required to purchase and maintain during its performance under this Contract insurance coverage as shown on the Insurance Requirements as stated in Exhibit A, which is incorporated herein by reference. With the exception of Worker's Compensation and Professional Liability policies, all insurance purchased shall have a specific endorsement, copy of which shall be provided to the City, naming the City as an additional insured and for all insurance purchased, an endorsement providing that such insurance will not be cancelled without providing thirty (30) days advance written notice to the City.
3. Standard Terms and Conditions. The attached Standard Terms and Conditions shall be a part of this Contract. Such Standard Terms and Conditions are hereby incorporated by reference, and all parties agree to be bound thereby.
4. Marketing Use. The use of this project for marketing and reference purposes is subject to the City's consent.
5. Time for Performance of the Work. The Work will begin within ten (10) days of receipt of the Notice to Proceed from the City and shall conclude within one year following the notice to proceed, unless sooner terminated as allowed by the Contract Documents.
6. Payment for Services. In consideration of the above services, the City will pay the Firm on a time and materials basis, in accordance with the submitted fee schedule in Exhibit C, attached hereto and incorporated by reference, up to, but not exceeding, the not-to-exceed-sum stated in the Fee Schedule in Exhibit C. Unless otherwise specifically stated in Exhibit C, reimbursables shall be billed at the Firm's actual cost, and shall count against the not-to-exceed sum stated. Firm will submit monthly invoices for Work performed during the month based upon the Work completed during the billing period which shall be paid thirty (30) days after receipt of undisputed invoices delivered. Invoices must be detailed as to time worked and tasks performed, materials used, and reimbursables billed. Additional Services will be billed as provided in Paragraph 1 above in accordance with the hourly fee schedule shown on Exhibit D, attached hereto and incorporated by reference. If any invoice is disputed by the City, in whole or in part, it shall provide a written explanation for such dispute to Firm within five days of receipt of the invoice and shall pay all undisputed amounts therein.

In witness thereof, the contracting parties, by their authorized agents, affix their signatures and seals at Hendersonville, North Carolina, this _____ day of _____, 20_____.

Wildlands Engineering, Inc.

THE CITY OF HENDERSONVILLE

BY: _____ (SEAL)
L)

Signature

Printed Name and Title

BY: _____ (SEAL)
L)

John Connet, City Manager

This instrument has been preaudited in that manner required by the North Carolina Local Government Budget and Fiscal Control Act.

John Buchanan, Finance Director, City of Hendersonville

STANDARD TERMS & CONDITIONS

1. **Acceptance.** Firm's acknowledgment of the terms of this Contract constitutes an agreement to (i) all terms and conditions set forth or referenced herein, (ii) Exhibits A, B, C & D hereto, and (iii) any other terms and conditions of a written agreement signed by Firm and the City that deals with the same subject matter as this Contract (collectively, the "Contract Documents"). The terms and provisions set forth in the Contract Documents shall constitute the entire agreement between Firm and the City with respect to the performance of the Work as described in the Contract Documents. The agreements set forth in the Contract Documents are sometimes referred to herein as the "Contract." Except as provided herein, no additional or supplemental provision or provisions in variance herewith that may appear in Firm's quotation, acknowledgment, invoice or in any other communication from Firm to the City shall be deemed accepted by or binding on the City. The City hereby expressly rejects all such provisions which supplement, modify or otherwise vary from the terms of the Contract Documents, and such provisions are superseded by the terms and conditions stated in the Contract Documents, unless and until the City's authorized representatives expressly assent, in writing, to such provisions. Stenographic and clerical errors and omissions by the City are subject to correction.
2. **Entire Agreement.** The Contract Documents constitute and represent the complete and entire agreement between the City and Firm and supersede all previous communications, either written or verbal with respect to the subject matter of this Contract.
3. **Changes, Additions, Deletions.** No changes, additions, deletions or substitutions of scope of work, specifications, terms and conditions, quantity, unit of issue, delivery date, delivery charges or price will be permitted without the prior written approval from the City. However, the Firm will not be liable for delays caused by circumstances beyond its control including without limitation, delays caused by acts of God, the City or its other consultants/contractors, federal, state, and local government authorities, strikes, riots, civil unrest, war, or unknown or concealed conditions, and if such delays occur, the Firm will be entitled to an equitable adjustment in the time for the performance of the Work and compensation.
4. **Relationship of the Parties.** The Firm is an independent Professional Engineering Company and not an affiliate of the City. The conduct and control of the work will lie solely with the Firm. The Contract shall not be construed as establishing a joint venture, partnership or any principal-agent relationship for any purpose between the Firm and the City. Employees of the Firm shall remain subject to the exclusive control and supervision of the Firm, which is solely responsible for their compensation.
5. **(RESERVED).**
6. **Taxes.** Any applicable taxes paid shall be itemized on invoices.
7. **Substitutions.** No substitutions or cancellations shall be permitted without prior written approval from the City.
8. **Indemnification.** To the greatest extent allowed by the law the Firm shall indemnify and hold harmless the City, its officers, agents, employees and assigns from and against all claims, losses, costs, damages, expenses, attorneys' fees ("Claims"), but only to the extent the fault of the Consultant or its derivative parties (as defined in N.C.G.S §22B-1) is a proximate cause of the Claim. In the event that any portion of the Work performed under the Contract shall be defective in any respect whatsoever, the Firm shall indemnify and save harmless the City, its officers, agents, employees and assigns from all loss or the payment of all sums of money, but only to the extent the fault of the Consultant or its derivative parties (as defined in N.C.G.S §22B-1) is a proximate cause of the Claim.
9. **Invoices and Payment Terms.** Invoice and Payment Terms are set forth in Section 5 in the Contract for Professional Engineering Services. All invoices and statements shall reference the City's Purchase Order Number, Contract number (if applicable) and Project Number, and shall be submitted to: City of Hendersonville, Accounts Payable, 160 6th Avenue East, Hendersonville, North Carolina 28792.
10. **Anti-Discrimination.** During the performance of the Contract, the Firm shall not discriminate against or deny the Contract's benefits to any person on the basis of sexual orientation, national origin, race, ethnic background, color, religion, gender, age or disability.
11. **Insurance.** The Firm shall provide the insurance coverages shown on Exhibit A, attached hereto and incorporated herein by reference. The Firm shall provide the City with a North Carolina Certificate of Insurance and such endorsements as may be required by the Contract Documents PRIOR to the commencement of any work under the Contract and agrees to maintain such insurance until the completion of the Contract. Such certificates of insurance

shall be considered part of the Contract.

12. **Ethics in Public Contracting.** By submitting their prices and acceptance of this Contract, the Firm certifies that their proposal was made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other supplier, manufacturer or subcontractor in connection with their proposal, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.
13. **Applicable Laws and Courts.** This Contract shall be governed in all respects by the laws of the State of North Carolina. All matters, whether sounding in contract or tort relating to the validity, construction, interpretation and enforcement of the Contract, shall be governed in all respects by the laws of the State of North Carolina and exclusive venue shall be in a court of competent jurisdiction for Henderson County, North Carolina. The Firm represents and warrants that it shall comply with all applicable federal, state and local laws, regulations and orders.
14. **Strict Compliance.** The City may at any time insist upon strict compliance with these terms and conditions notwithstanding any previous course of dealing or course of performance between the parties to the contrary.
15. **Assignment.** The Firm shall not assign, subcontract or otherwise transfer any interest in the Contract without the prior written approval of the City.
16. **General Provisions.** The City's remedies as set forth herein are not exclusive. Any delay or omission by the City in exercising any right hereunder, or any waiver by the City of any single breach or default hereunder, shall not be deemed to be a waiver of such right or of any other right, breach, or default.
17. **Obligations of the Firm.** The Firm shall adhere to all applicable laws, codes, ordinances, and regulations of the United States, the State of North Carolina, the County of Henderson, and the City of Hendersonville in the performance of the Work outlined in this Contract and any design documents, drawings and specifications applicable to the Work. The Work shall also adhere to all applicable federal, state and local laws, codes, ordinances, and regulations.
18. **Quality and Workmanship.** The Firm shall perform all Work in accordance with this Contract and the standard of care ordinarily used by members of the engineering profession practicing under similar circumstances and at the same time in Henderson County.
19. **Default.** Either Party may terminate the Contract, in whole or in part, upon thirty (30) days written notice upon a material breach by the other Party unless the alleged default is cured within the thirty (30) day notice period. The nonbreaching party shall have all remedies available at law or in equity in addition to any remedies provided in this Contract for material breach. In the event of a material breach by the Firm the City may procure upon such terms as the City shall deem appropriate, professional engineering services substantially similar to those so terminated, in which case the Firm shall be liable to the City for any excess costs for such similar services and any expenses incurred in connection therewith.
20. **Termination for Convenience.** The City shall have the right, without assigning any reason therefore, to terminate any Work under the Contract, in whole or in part, at any time at its complete discretion by providing ten (10) consecutive calendar days notice in writing from the City to the Firm. If the Contract is terminated by the City in accordance with this paragraph, the Firm will be paid for all Work performed and reimbursable expenses incurred at actual cost to the Firm up to the effective date of the termination. The City will not be liable to the Firm for any costs for materials acquired or contracted for, if such costs were incurred prior to the date of this Contract.
21. **Instruments of Service and Work for Hire.** All Work performed by the Firm, and all data compiled, shall be considered Instruments of Service and Work for Hire, and shall be the Property of the Owner. The Firm shall retain a license in the Work performed and data compiled to use for the Firm's own purposes, and not for the benefit of any third party without the City's consent. The terms of this Paragraph shall survive the termination of this Contract for any reason, including but limited to for a material breach of either Party, or for the convenience of the Owner. In the event this Contract is terminated for any reason, the City shall be entitled to keep and use all design work provided by the Engineer and all data compiled by the Engineer. All representations and obligations with respect to the Work by the Firm under this Contract shall survive termination of this Agreement unless this Contract is terminated by the Firm for the City's material breach, in which case use by the City of the Firm's design work and data compiled shall be at the City's own risk, and without any representation by the Engineer as to its accuracy or

fitness for any purpose.

22. **Assignment.** Firm may not assign, pledge, or in any manner encumber the Firm's rights under this Contract, or delegate the performance of any of its obligations hereunder, without the City's prior, express written consent.
23. **No Third Party Beneficiaries.** There shall be no intended nor incidental third party beneficiaries of this Contract. The Firm shall include in all contracts, subcontracts or other agreements relating to the Contract an acknowledgment by the contracting parties that the Contract creates no third party beneficiaries.
24. **Valid Contract.** In order for this Contract for Professional Engineering Services to be valid, it must be executed by the City Manager or his or her authorized designee, and must be pre-audited in that manner required by the Local Government Budget and Fiscal Control Act, as the same may be amended.
25. **Verification of Work Authorization.** The Firm shall comply with, and require all contractors and subcontractors to comply with, the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, "Verification of Work Authorization," sometimes known as E-verify for all contractors and subcontractors.
26. **Iran Divestment List.** With the execution hereof, Firm, certifies that they are not on the Iran Final Divestment List created by the N.C. State Treasurer pursuant to N.C.G.S. § 147-86.58, and will not contract with anyone on such List in performance of the work hereunder.
27. **Severability.** If any provision of this Contract is found to be invalid or unlawful, then remainder of this Agreement shall not be affected thereby, and each remaining provision shall be valid and enforced to the fullest extent permitted by law.
28. **Companies that Boycott Israel List.** With the execution hereof, Firm, certifies that they are not on the Companies that Boycott Israel List created by the N.C. State Treasurer pursuant to N.C.G.S. § 147-86.80, and will not contract with anyone on such List in performance of the work hereunder.

EXHIBIT A

MINIMUM INSURANCE REQUIREMENTS

The Work under this Contract shall not commence until the Firm has obtained all required insurance and verifying certificates of insurance have been approved in writing by the City. The City shall be named as additional insured on all policies, except Worker's Compensation and Professional Liability policies. These certificates shall document that coverages afforded under the policies will not be cancelled until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the City of such cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

a. Worker's Compensation and Employer's Liability

The Firm shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

b. Comprehensive General Liability Insurance

The Firm shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the Firm or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury: \$1,000,000 per occurrence / \$2,000,000 aggregate

Property Damage: \$100,000 per occurrence / \$300,000 aggregate

Or,

Bodily Injury and Property Damage, combined single limit (CSL): \$1,000,000 per occurrence / \$2,000,000 aggregate

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the Work performed under the contract.

c. Deductible

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the Firm.

d. Other Insurance

The Firm shall obtain such additional insurance as may be required by the City or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

e. Proof of Carriage

The Firm shall furnish the City with satisfactory proof of carriage of the insurance required before written approval is granted by the City

EXHIBIT B

FIRM'S SCOPE OF SERVICES

Wildlands Engineering, Inc. will provide the following professional services in coordination with City staff:

Professional Services to Support Mud Creek Stream, Wetland, and Stormwater Planning Project

Background

The City of Hendersonville (City) owns multiple vacant parcels, totaling 38.16 acres, along Mud Creek that have been prioritized and preserved for the purpose of water resource restoration potential. The City proposes to conduct a planning, assessment, and concept development project on these sites to facilitate the implementation of restoration objectives. Additionally, the City would like to further assess whether the acquisition of additional properties would facilitate holistic solutions to water resources challenges and restoration efforts and/or enhance connectivity to existing and proposed park and greenway systems. These sites present many opportunities for restoring ecological services through floodplain reconnection, wetland restoration, stream realignment, riparian vegetation restoration, and innovative stormwater treatment. As stated above, the City is interested in facilitating and enhancing connectivity to greenways, and the use of City-owned land for passive recreation and educational opportunities consistent with restoration goals.

The goals of this scope are to:

- Complete a thorough assessment of three City-owned properties for the purpose of stream restoration, wetland restoration, and stormwater management.
- Evaluate options and costs for restoring and enhancing resources for ecological uplift purposes identified on all sites.
- Explore opportunities for creating public passive recreation areas with educational opportunities.
- Evaluate options for innovative stormwater treatment of runoff from the adjacent commercial properties or to treat base or first flush flows from adjacent streams and ditches.
- Identify and research the feasibility and cost-benefits of properties for acquisition or easement targeting to support project goals and enhance viability of identified projects.
- Develop Level 1 design and fact sheet for all proposed projects.
- Work with stakeholders to prioritize identified projects.
- Develop a 30% design concept plan-set (Level 2 Design) for one site.

Site Descriptions

Site 1, the Wilson Tract, is a 13.07-acre parcel held in a permanent conservation easement through an agreement between the City and the North Carolina Wetland Restoration Program (NCWRP). The conservation easement allows for stream and wetland restoration activities, construction of a greenway, and maintenance of the property as a green space. The site contains sections of Mud Creek and multiple tributaries thought to be the headwaters of Johnson Ditch. All water bodies are highly channelized and bermed from the floodplain, appear to have been straightened, and have poor riparian vegetative cover. Evidence of wide-spread historic and current floodplain wetlands exist across this site. Developed property and City road infrastructure below the site is highly impervious and is known to flood frequently. This property presents an opportunity for floodplain reconnection and channel realignment of the tributary, and floodplain wetland restoration to achieve improved water quality downstream, increased floodplain storage during

higher flows, and to provide ecological uplift in a highly urban setting.

Site 2, the Brevard Church Property, is a 14-acre parcel owned by the City and is also held in a permanent conservation easement through an agreement between the City and NCWRP. Three water bodies intercept this site, including Mud Creek, Johnson Drainage Ditch, and an unnamed tributary. Johnson Drainage Ditch carries untreated stormwater from an adjacent commercial property that does not have stormwater management facilities. Central to the property runs a second urban drainage tributary that is channelized and appears to have been straightened. A 10-15' berm and Mud Creek bounds the site to the west. Previous aquatic resource inventory identified multiple jurisdictional wetland areas along these tributaries. The City of Hendersonville Water and Sewer Department is planning the Mud Creek Sewer Interceptor Project that will run through this property. The project is being designed with future restoration and stormwater potential in mind, and the City intends to pursue a sewer alignment that will have minimal impact on the site's viability for the purposes proposed in the grant. A future greenway trail is planned to run along the completed sewer alignment.

Site 3, unofficially called the Jackson Park Dog Park, is a 11.09 acre City-owned parcel adjacent to Henderson County's (County) Jackson Park. The primary project to be evaluated at this site would propose a partnership with the County to complete stream restoration of a section of Johnson Ditch that connects the two properties to enhance instream habitat, bank stability and floodplain connectivity. This site presents an excellent opportunity for public education and interaction with restoration efforts. This project also proposes the acquisition of three (3) adjacent properties to the Jackson Park Dog Park that total 24.88 acres.

Scope of Work for All Sites

The scope presents general tasks pertaining to project front-end planning and final deliverables as well as site-specific analyses.

Milestone A: Project Initiation

Task 1: Project Kickoff

- a. Identify and coordinate with project partners and stakeholders. To date, stakeholders identified may include City Parks & Rec, Hendersonville Water and Sewer, MountainTrue, Conserving Carolina, NCWRC, US Army Corps of Engineers, and USFWS.
- b. Create a detailed project schedule.
- c. Prepare a meeting agenda and summary of known project site histories to review with stakeholders.
- d. Conduct a project kickoff meeting with the City, project partners, and stakeholders:
 - i. Review project scope, geographic area of interest, and schedule,
 - ii. Solicit additional information about site history,
 - iii. Gather preliminary project input, ideas, goals, objectives, etc., and
 - iv. Prepare meeting minutes and follow-up actions.
- e. Conduct site walk to review conditions and goals with staff and the project team.
- f. Request a meeting with NCDMS to understand site history as pertains to their program – it is understood that the site was acquired but never carried forward as a restoration project site. NCDMS may have data for review relevant to project activities.

Task 1 deliverables will be:

- Kickoff meeting notes and finalize detailed project schedule.

Milestone B: Assessment

Task 2: Existing Data Review

The existing data review task will download/acquire and compile all known existing data sources and identify critical data gaps. All GIS data will be assembled in an ArcGIS online (AGOL) map to facilitate efficient collaboration between project members for the duration of the project.

- a. Compile and review existing GIS, modeling, and other environmental data relevant to project sites.
- b. Preliminary analysis of GIS identified constraints and opportunities with QL1 LiDAR, historical aerials, utility data and ROWs, flood zones, infrastructure, data from previous projects, current and projected landuse/landcover at the site and watershed scales.
- c. Create an ArcGIS online (AGOL) mapping tool to allow team members to interact with existing data and communicate about project ideas.

Task 2 deliverables with be:

- Compiled AGOL GIS map with all available GIS data

Task 3: Biological Assessment

The biological assessment task will evaluate City-owned parcels for the purpose of characterizing current issues/stressors and identifying opportunities for ecological uplift. Adjacent parcels will be evaluated in a cursory manner to determine the potential connectivity of design and management recommendations to adjacent parcels that may be acquisition targets. This task will also document regulatory permitting concerns and needs to help guide the future implementation phase.

1. Collect field data to validate data from Task 2.
2. Conduct a habitat assessment and identify community types, potential habitat for T&E species.
3. Complete an invasive vegetation species inventory.
4. Conduct landscape scale assessment of vegetative communities based on remote data (topo, veg cover).
5. Prescribe habitat restoration initiatives based on target community types and current conditions.

Task 3 deliverable will be:

- Biological Assessment Documentation and Maps

Task 4: Stream Geomorphic Assessment

The stream assessment task will assess approximately 6,900 LF of stream on City-owned properties. There are approximately 3,000 LF of additional streams on properties targeted for acquisition. This task will identify and map all streams within the projects study area and adjacent potential acquisition targets through remote sensing and ground truthing wherever possible.

1. City-owned properties will be field assessed to observe the existing condition of all streams, ditches, stormwater outfalls and conveyances, and any other visible drainage patterns.
2. Develop stream hydrologic and hydraulic geometry data using regional curve and reference reach data.
3. Identify areas of streambank erosion and develop conceptual restoration, enhancement or stabilization measures.
4. Map stream existing conditions noting erosion and stream alterations as well as morphology and trends in stability as evidenced from departure from stability and erosional and depositional patterns.
5. Develop reach breaks based on existing conditions, drainage area, and potential management recommendations.

Task 4 deliverables will be:

- Stream Geomorphic Assessment Documentation and Maps

Task 5: Floodplain and Wetland Hydrologic Assessment

Under this task, fieldwork will be conducted to understand the locations of potential stream-floodplain reconnection, wetland restoration and/or SCM siting. Constraints and limiting factors will be evaluated through field and design analysis in AutoCAD. At locations where potential treatment options are viable, hydrologic modeling analysis will be

used to provide data for evaluating geometry, sizing, and function of streambank, levy or floodplain as well as for SCMs whose purpose is treatment and/or conveyance.

Field work will:

1. Conduct an abbreviated soils exploration to locate limits and depths of hydric soils in areas that, based on historic and recent aerial photographs and topographic analysis, may be suitable for wetland restoration or enhancement.
2. Develop rough mapping of jurisdictional wetland areas and wetland restoration potential areas.

Mud Creek and is characterized by wide floodplains, ditches and various urban stormwater inputs in this corridor. To understand the rainfall-runoff relationships within the project area, and at specific points of interest, hydrologic models or equations will be developed at a preliminary design level of detail to fit the development of targeted data needs. The approach will identify points of input (stormwater outfalls, drainage channels, etc.) where treatment is anticipated or where stable natural conveyances are to be proposed. At these locations, peak flows for low and high magnitude design storms will be developed for use in hydraulic modeling (HEC-RAS, manning's equation) to evaluate stage-discharge relationships in channels and floodplain inundation frequency. Where applicable, hydrologic data may also be used to size proposed SCM treatment and conveyance projects identified.

Modeling efforts will:

1. Review existing hydrologic and hydraulic data – FEMA hydraulic models, prior studies, City stormwater mapping, empirical data (USGS gages, USGS regression equations, regional curves).
2. Use existing conditions land use and cover data to develop hydrologic information at outfall points of interest.
3. Using empirical data and USGS gage data (located on Mud Creek approximately 8,650 LF downstream of site 3) to extent practicable.
4. Assess hydrologic alterations (levies, ditches, fill, structures, channelization), evaluate variation from historic conditions and reference reaches/conditions.

Task 5 deliverables will be:

- Hydrologic Documentation and Description of Use for Design.

Milestone C: Analysis

Task 6: Hydraulic modeling

In order to understand the behavior of the sites under flood conditions, identified opportunities that exhibit greater complexity will be analyzed using existing models or models developed for the project. The low gradient and modified nature of existing streams and myriad ditches greatly increases the complexity of floodplain flow patterns and hydraulic controls on the project properties and adjacent areas. In some cases, these factors may require evaluation to understand how high flow conditions affect existing and proposed conditions. The most viable proposed activities will be evaluated for their level of risk, future maintenance needs, hydrologic trespass considerations, etc. Flooding regimes and treatment potential in existing or proposed management areas will be analyzed. There is an interest to explore the viability of the anabranching stormwater wetland design, an innovative approach funded under a prior NCLWF project. This is an example of a management area (proposed SCM) that would require preliminary modeling to evaluate siting viability and the factors mentioned above. Under this task, project efforts will include the following:

1. Evaluate existing hydraulic/flood models, including:
 - a. Review of older models for consistency with QL1 Lidar and field conditions.
 - b. Incorporate data from Task 5.
 - c. Evaluate and map flooding, including:
 1. Known issues/complaints, and
 2. Where possible with existing models, evaluate level of service for roads and evaluate flood frequency associated with riverine flooding of urbanized areas, structures, etc.
2. Evaluate floodplain inundation frequency, channel sizing, levies, breached areas.

3. Evaluate measures to improve stream-to-floodplain connectivity along both Mud Creek, Johnson Drainage Ditch, and other tributaries with a specific focus on levee breaching or removal.

Task 6 deliverables will be:

- Hydraulic Documentation of Design Considerations

Task 7: Property and Easement Acquisition Evaluation

It is anticipated that many of the projects identified will not naturally terminate or maximize treatment potential within City-owned parcels that are the focus of this evaluation. In such cases, the potential for property or easement acquisition will be identified, along with the purpose and limits of the necessary acquisition to fulfill future project objectives. The level of need will also be identified (e.g. Project A may only work if Property 1 is acquired, or an easement obtained). This task will:

1. Identify projects or project buffering that would be enhanced through acquisition or easements.
2. Describe the purpose and level of need for acquisition or easements.
3. Report the per acreage cost of acquisition or easement targets and identify the critical areas on proposed target parcels to facilitate future project needs.
4. Map targeted parcels overlaying layers relevant to future development.

Task 7 deliverables will be:

- Map, list and prioritization of properties targeted for acquisition or easements.

Task 8: Restoration Concept Development

For identified project opportunities, concept development will entail Level 1 design for all viable concepts. Level 2 design will be completed for one of the 3 City-owned sites. The Level 2 design is likely to involve multiple concepts, along with conceptual incorporation and layout of other site amenities (trails, educational facilities, etc.)

1. An overview corridor sheet or plan will be developed to show sites and large-scale planning concepts such as invasive species and riparian corridor management.
2. A large-scale overview will be completed for each site and adjacent areas showing existing and proposed conditions, including Level 1 concepts. The overview will identify (map or describe) restoration activities and primary projects (components) by site, including contiguous properties with potential for level of hydrologic continuity.
3. For identified projects, a Level 1 fact sheet will be developed to include project information (description, regulatory considerations, constraints, significant cost factors and order of magnitude cost ranges, and representative existing and proposed images or graphics). Projects for which Level 1 fact sheets will be developed include viable stream restoration and stream-floodplain connectivity projects, stormwater management and treatment options, and wetland restoration or creation opportunities.
4. Work with stakeholders to prioritize the identified projects on City parcels, as well as acquisition or easement targets in the corridor.
5. Conduct additional preliminary design work for one of the sites in order to develop a 30% design plan set, and more detailed cost estimates, permitting considerations, and schedule requirements.

Task 8 deliverables will be:

- Level 1 design concepts and cost-estimate.
- Project ranking.
- Level 2 design concept planset, cost-estimate, and supporting information described above.

Milestone D: Reporting

Task 9: Final Report Preparation and Presentation

1. Complete a final report documenting all assessment data, project opportunities, prioritized properties for acquisition, and Level 1 and 2 design concepts and cost-estimates.

2. Conduct a final meeting to present design concepts to project team and stakeholders to build and continue support for the implementation phase.

Task 10: Public Education

During the course of the project, the City will conduct the following outreach activities:

1. On-site public educational events
2. Website promotion and education
3. Public-facing AGOL interactive map

EXHIBIT C

Hourly Fee Schedule for the Work

Wildlands Rate Table - 2022 Mud Creek Planning Grant NCLWF Project*		
Senior Engineer II / Senior Project Manager	\$175.00	Jake McLean, PE, CFM
Senior Scientist	\$140.00	Scott Gregory, GISP, PLS, Ian Eckardt, PWS
Engineer I / Designer II	\$135.00	Jacob Wiseman, PE, CFM, Jesse Kelley
Designer / EIT	\$125.00	Aaron Reeser
Scientist I-III / Designer I	\$110.00	Jordan Hessler, Mimi Caddell, Jane Margaret Bell, Jess Waller
PE: Professional Engineer CFM: Certified Floodplain Manager GISP: GIS Professional PWS: Professional Wetland Scientist		
*Rates have been discounted from Standard 2022 Hourly Rates		

Professional Services to Support Mud Creek Stream, Wetland, and Stormwater Planning Project

Description	BUDGET RANGE
Milestone A: Project Initiation	
Task 1: Project Kickoff	\$1,870
Milestone B: Assessment	
Task 2: Existing Data Review	\$2,470
Task 3: Biological Site Assessment	\$3,540
Task 4: Stream Geomorphic Assessment	\$7,520
Task 5: Floodplain and Wetland Hydrologic Assessment	\$11,090
Milestone C: Analysis	
Task 6: Hydraulic Analysis	\$6,835
Task 7: Acquisition Properties Evaluation	\$3,225
Task 8: Level 1 & 2 Design Concepts & Cost-Estimate Development	\$10,840
Milestone D: Reporting	
Task 9: Final Report Preparation and Presentation	\$2,230
Task 10: Public Education	City to perform
TOTAL:	\$49,620

The total fee for the completion of all Work contained in the Scope of Services for the Professional Services to Support Mud Creek Stream, Wetland, and Stormwater Planning Project shall not exceed \$49,620.00, including all reimbursable expenses, which shall be billed at the Firm's actual costs.

EXHIBIT D

FIRM'S HOURLY RATES FOR ADDITIONAL SERVICES

Additional Services to be performed in accordance with the Firm's Fee Schedule attached hereto and incorporated herein by reference. Allowable reimbursable expenses will be paid at the Firm's actual costs. Allowable reimbursable expenses associated with the provision of additional services will be determined by the Firm and the City at the time the additional services are requested by the City.

Wildlands Rate Table - 2022 Mud Creek Planning Grant NCLWF Project*		
Senior Engineer II / Senior Project Manager	\$175.00	Jake McLean, PE, CFM
Senior Scientist	\$140.00	Scott Gregory, GISP, PLS, Ian Eckardt, PWS
Engineer I / Designer II	\$135.00	Jacob Wiseman, PE, CFM, Jesse Kelley
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