



LOWER MINNESOTA RIVER WATERSHED DISTRICT

Executive Summary for Action

Lower Minnesota River Watershed District Board of Managers Meeting

Wednesday, February 17, 2021

Agenda Item

Item 6. H. - LMRWD Projects

Prepared By

Linda Loomis, Administrator

Summary

i. Eden Prairie Study Area #3

LMRWD advertised for proposals for the next phase of work to be completed on this project. Proposals were received from Bolton & Menk, Inc., Cardno, Inc., Inter-Fluve, Inc., Resilience Resources, LLC and Wenck Engineering. LMRWD staff reviewed all the proposals and decided that interviews were not needed. The proposal from Inter-Fluve was the preferred proposal. A Professional Services Agreement (PSA) with the chosen firm has been negotiated and approved by legal counsel.

The proposal has been incorporated into the PSA so the Board can see the proposal as part of that document. Inter-Fluve requested that the RFP become a part of the PSA too. The Board should make a motion to accept the proposal from Inter-Fluve and authorize execution of the PSA.

In addition, BWSR has approved the LMRWD request for grant funding for this project. A grant of \$127,732 was approved. A grant agreement is attached and execution should be authorized by the Board.

Attachments

Professional Services Agreement between the LMRWD and Inter-Fluve, Inc. dated February 18, 2021

FY 2021 State of Minnesota Board of Water and Soil Resources Watershed-Based Implementation Funding Grant Agreement

Recommended Action

Motion to accept proposal for professional services from Inter-Fluve, Inc. and authorize execution of Professional Services Agreement dated February 18, 2021

Motion to authorize execution of FY 2021 State of Minnesota Board of Water and Soil Resources Watershed-Based Implementation Funding Grant Agreement

Professional Services Agreement

THIS IS AN AGREEMENT effective as of February 18, 2021 (“Effective Date”) between
The Lower Minnesota River Watershed District (“Owner”) and
Inter-Fluve, Inc. (“Consultant”).

Owner requests that Consultant provide professional services related to the Area 3 Minnesota Riverbank Stabilization Project (Project). This Agreement sets forth the general terms and conditions which shall apply to the Consultant’s services and Scope of Services duly executed under this Agreement.

Owner and Consultant further agree as follows:

1.01 *Scope:*

- A. Consultant’s services (not deemed as general Consulting) are detailed in the attached proposal for services (Attachment 1 and Attachment 2). Attachment 1 indicates the specific services to be performed (Scope of Services), deliverables to be provided, schedule for completing services; and Attachment 2 indicates the fee for the services. The “Request for Proposal – Design Services for the Area 3 Minnesota Riverbank Stabilization Project” is detailed in Attachment 3.
- B. Consultant may be entitled to appropriate adjustment in Consultant’s compensation arising from:
 - a. Changes in the instructions or approvals given by Owner, untimely decisions by Owner, or enactment or revision of codes, laws or regulations, or official interpretations that cause an unreasonable amount of change to the Scope of Services or previously approved documents.
 - b. Significant changes in the Project including, but not limited to, size, quality, complexity, schedule, or budget, or procurement method.

2.01 *Changes to Scope of Services Procedure:*

- A. Owner and Consultant shall agree on any revised scope, time for performance, and basis of compensation.
- B. Consultant will commence performance of any revised Scope of Services upon receipt of executed amendment to this Agreement.

3.01 *Term:* This Agreement shall remain in effect for the greater of:

- A. The duration of any timeline set forth in Attachment 1 for completion of the Scope of Services; or
- B. Completion of the Scope of Services detailed in Attachment 1 or any amendment thereto.

4.01 *Times for Rendering Services:*

- A. The times for performing services or providing deliverables are as set forth in the Attachments.

- B. If, through no fault of Consultant, such periods of time or dates are changed, or the orderly and continuous progress of Consultant's services is impaired, or Consultant's services are delayed or suspended, then the time for completion of Consultant's services, and the rates and amounts of Consultant's compensation, shall be adjusted equitably.
- C. If Owner authorizes changes in the scope, extent, or character of the Project referenced in Attachment 1, then the time for completion of Consultant's services, and the rates and amounts of Consultant's compensation, shall be adjusted equitably. Such changes shall be reflected in amendments to Attachments 1 and 2.
- D. Owner shall make decisions and carry out its other responsibilities in a timely manner so as not to delay the Consultant's performance of its services.
- E. Paragraph 4.01.B, above includes delay as a result of Force Majeure. If completion of any portion of the Scope of Services for the Project is delayed by Force Majeure, the time of performance of the Consultant's Services or Work will be extended for a period equal to the delay and fee equitably adjusted. Neither party shall be liable to the other for failure to perform as a result of an event of Force Majeure. Force Majeure includes, without limitation, acts of God; acts of the public enemy; acts of war or terrorism; acts of federal, state, local, or foreign governments; natural disaster (whether declared or undeclared); epidemics; civil unrest; freight embargoes; litigation; or, court or agency order suspending work.

5.01 *Standard of Performance:*

- A. Consultant shall perform the professional consulting and related services under this Agreement as expeditiously as is consistent with such professional skill and care and the orderly progress of the project.
- B. Consultant shall perform the professional consulting and related services under this Agreement in a manner consistent with the professional obligations and ethical standards set forth in Minnesota Statutes Chapter 326 and Rules Part 1805 as applicable to Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience, and Interior Design.
- C. Subject to the standards of care set forth above, Consultant may use or rely upon design elements in information ordinarily or customarily furnished by others, including, but not limited to, specialty contractors, manufacturers, suppliers and publishers of technical standards.
- D. Consultant shall review laws, rules, regulations, ordinances, codes, and Owner-mandated standards policies, procedures and instructions provided to the Consultant in writing and that are in effect as of the date of this Agreement applicable to the Consultant's performance services under this Agreement subject to the standard of care set forth in Paragraph 5.01.A and to the extent compliance is consistent with professional practice requirements. Consultant shall respond in the design of the Project to requirements imposed by governmental authorities having jurisdiction over the Project. Changes to any laws, rules, regulations, ordinances, codes, Owner-mandated standards, policies procedures and instructions or requirements of governmental authorities after the effective date of this Agreement may be the basis for modifications to Owner's responsibilities, Consultant's Scope of Services, times of performance, or compensation. If, during Consultant's review of applicable laws, rules, regulations, ordinances and codes, and Owner-mandated standards, Consultant identifies any conflict between such laws, rules, regulations, ordinances and codes, and Owner-mandated standards, Consultant shall

notify Owner of the nature and impact of such conflict. Owner agrees to cooperate and work with Consultant in an effort to resolve any such conflict.

6.01 *Billing and Payment:*

- A. Invoices shall be submitted monthly by Consultant broken down by the task outline in Attachments 1 and 2, and not to exceed the amounts outlined in Attachment 2.
- B. Payment is due upon presentation, and shall be considered past due if not paid within 45 days of the invoice date. If payment is not received by Consultant within 45 days of the invoice date, Owner shall pay as interest an additional charge of one percent (1.0%) or the maximum allowable by law, whichever is lower, of the past due amount per month. Payment thereafter shall first be applied to accrued interest and then to the unpaid principal.
- C. If Owner objects to any portion of an invoice, Owner shall so notify Consultant in writing within 10 days of receipt of the invoice. Owner shall identify the specific cause of the disagreement and shall pay when due that portion of the invoice not in dispute. Interest as stated above shall be paid by Owner on all disputed invoiced amounts resolved in Consultant's favor and unpaid for more than 45 days after date of submission. Nothing herein shall prevent Owner from disputing an invoice, payment or item of work after payment is made.
- D. In the event legal action is necessary to enforce the payment provisions of this Agreement, the prevailing party shall be awarded its reasonable attorney fees, and costs and expenses incurred. If both parties receive judgment in any dollar amount, the court will determine the prevailing party, taking into consideration the merits of the claims asserted by each party, the amount of the judgment received by each party, and the relative equities between the parties.
- E. If Owner fails to make payments when due or otherwise is in breach of this Agreement, Consultant may suspend performance of services upon seven (7) days' notice to Owner. Consultant shall have no liability whatsoever to Owner for any costs or damages as a result of such suspension caused by any breach of this Agreement by Owner.

7.01 *Insurance:* During the term of this Agreement, Consultant shall maintain not less than the following insurance coverages

- A. Workers' Compensation Insurance – statutory amount
- B. Employer's Liability Insurance - \$100,000 each accident, \$500,000 disease policy limit, \$100,000 disease each employee
- C. Commercial General Liability Insurance - \$1,000,000 per occurrence / \$1,000,000 aggregate
- D. Automobile Liability Insurance - \$1,000,000 combined single limit
- E. Professional Liability Insurance - \$2,000,000 per claim / \$2,000,000 aggregate
- F. At any time, Owner may request that Consultant, at Owner's sole expense, provide additional insurance coverage or increased limits that are more protective than those maintained by Consultant.

8.01 *Owner's Responsibilities:*

- A. Owner shall make decisions and carry out its other responsibilities in a timely manner and shall bear all costs incident thereto so as not to unreasonably delay or interfere with the services of Consultant.
- B. Owner shall provide for Consultant's right to enter the property owned by Owner and/or others in order for Consultant to fulfill its services.
- C. Owner shall promptly report to Consultant any deficiencies or suspected deficiencies in Consultant's work or services of which Owner becomes aware so that Consultant may take measures to minimize the consequences of such deficiencies. Upon notice to Consultant and by mutual agreement between the parties, Consultant shall correct such deficiencies without additional compensation except to the extent such action is attributable to deficiencies in Owner-furnished information.

9.01 *Allocation of Risks; Limitation of Remedies:*

- A. It is intended by the parties to this Agreement that Consultant's services in connection with the Project shall not subject Consultant's individual employees, officers, or directors to any personal legal exposure for the risks associated with this Project. Therefore, Owner agrees that as Owner's sole and exclusive remedy, any claim, demand or suit arising out of Consultant's services in connection with the Project shall be directed and/or asserted only against Consultant and not against any of Consultant's individual employees, officers, or directors.
- B. Notwithstanding any other provision in this Agreement, neither Consultant nor Owner shall be liable to the other party for any special, incidental, indirect or consequential damages whatsoever arising out of, resulting from, or in any way related to the Project or performance of this Agreement.
- C. Consultant agrees to indemnify, and hold Owner and its managers, agents, and employees, harmless from and against any and all liability, claims, suits, loss, damages, costs, and expenses, including but not limited to, attorney's fees and court costs, including all costs of appeals to the extent arising out of or resulting from any negligent acts, errors, or omissions, or willful misconduct of Consultant in the performance of its services and duties hereunder. This indemnification obligation will not be limited in any way by any limitation on the amount or type of insurance carried by Consultant or by the amount or type of damages, compensation, or benefits payable by or for the Consultant or any of Consultant's sub-contractors or employees under Workers' Compensation Acts, Disability Benefit Acts, or other Employee Benefit Acts.

10.01 *Termination:*

- A. This Agreement may be terminated by either party upon 30 days' written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party.
- B. Payments Upon Termination.
 - a. In the event of any termination under the terms of this Agreement, Consultant will be entitled to invoice Owner for all services performed or furnished through the effective date of termination.
 - b. In the event of termination by Consultant for cause, in addition to invoicing for those items identified in paragraph 10.01.B.a above, Consultant shall be entitled to invoice Owner and shall be paid a reasonable amount for services and expenses directly attributable to termination, both before and after the effective date of termination, such as reassignment

of personnel, costs of terminating contracts with Consultant's consultants, and other related close-out costs.

11.01 *Third Party Beneficiaries:* All duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of the Owner and not for the benefit of any other party. No other party shall have any claim against Consultant because of this Agreement or the performance or nonperformance of services hereunder. Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either Owner or Consultant.

12.01 *Data, Information and Instruments of Service:*

- A. Consultant and Owner agree that all data and information, including without limitation, computer software, computer data bases, computer software documentation, specifications, designs, drawings, reports, and blueprints, generated in the performance of this Agreement and data and information which are specified to be delivered or which are, in fact, delivered pursuant to this Agreement are instruments of service and shall be and remain the sole property of the Consultant. However, consistent with the intent of this agreement, Consultant agrees that Owner may use such instruments in the construction and future maintenance of the Project. Consultant agrees that if it defaults on its obligations under this Agreement, Owner may provide such instruments to a successor consultant to use as a baseline for re-design or continuation of the project. If such instruments are so provided, Owner and successor consultant shall indemnify and hold Consultant harmless for errors or flaws in final design or construction. Any instruments so provided shall be identified as instruments of service and make clear that the instruments are intended for use only in connection with the specific project.
- B. Consultant shall deliver all data and information to Owner upon Owner's request and in any event upon the completion of all work hereunder or the termination or expiration hereof, whichever shall first occur, and shall be fully responsible for the care and protection thereof until such delivery. Except as otherwise provided in this Agreement, said data and information shall be delivered to Owner without additional cost to Owner.
- C. Final documents, deliverables or instruments, once delivered to Owner, shall be considered public information pursuant to Minnesota Statutes Chapter 13 (Data Practices Act). Notwithstanding operation of the Data Practices Act, Consultant shall not be liable for any misappropriation or misuse of such instruments. Any required disclosure or production of such instruments under the Data Practices Act shall include an admonishment that the instruments are the sole property of the Consultant and intended for use only in connection with the specific project.

14.01 *Compliance with Laws:*

- A. Consultant shall, in the performance of this Agreement, comply with all applicable state and federal compensation, labor and non-discrimination laws, agency rules or executive orders.
- B. Consultant shall include similar compliance provisions in any subcontract for services to be performed hereunder.

15.01 *Subcontractors:*

- A. Consultant shall identify to and inform Owner of any and all subcontractors providing services hereunder. Owner shall have the privilege of rejecting the Consultant's engagement of any

subcontractor.

- B. Consultant shall be fully responsible to Owner for all acts and omissions of the subcontractors, suppliers, and other individuals or entities performing or furnishing services hereunder just as Consultant is responsible for Consultant's own acts and omissions.
- C. Nothing in this Agreement shall create for the benefit of any such subcontractor, supplier, or other individual or entity any contractual relationship between Owner and any such subcontractor, supplier or other individual or entity, nor shall anything in this Agreement create any obligation on the part of owner to pay or to see to the payment of any moneys due any such subcontractor.
- D. Consultant shall be solely responsible for scheduling and coordinating the work of subcontractors, suppliers, and other individuals or entities performing or furnishing any services required by this Agreement under a direct or indirect contract with Consultant.
- E. All work performed for Consultant by a subcontractor or supplier will be pursuant to an appropriate agreement between the Consultant and the subcontractor or supplier which specifically binds the subcontractor or supplier to the applicable terms and conditions of this Agreement for the benefit of Owner.
- F. Consultant shall pay its subcontractors, if any, in accordance with the requirements of Statutes Section 471.425, requiring payment of subcontractors within ten days of receipt of payment from the Owner. Failure to comply with the requirements of Statutes Section 471.425 may subject the consultant to penalty of interest payment to the subcontractor at the rate of 1½ percent per month or any part of a month.

16.01 *Controlling Law:* This Agreement is to be governed by and interpreted in accordance with the laws of the State of Minnesota.

17.01 *Waiver:* The waiver by Owner of any breach or violation of any term, covenant, or condition of this Agreement or of any provision, ordinance, or law shall not be deemed to be a waiver of any other term, covenant, condition, ordinance, or law or of any subsequent breach or violation of the same or of any other term, covenant, condition, ordinance, or law. The subsequent payment of any monies or fee by Owner which may become due hereunder shall not be deemed to be a waiver of any preceding breach or violation by Contractor of any term, covenant, or condition of this Agreement or of any applicable law or ordinance.

18.01 *Entire, Integrated Agreement:* This document and all attachments listed paragraph 19.01, below, represent the entire and integrated agreement between Owner and the Consultant and supersede all prior negotiations, representations, and agreements, either written or oral, between the parties.

19.01 *Attachments Included:*

- A. Attachment 1: Inter-Fluve Technical Proposal, dated January 22, 2021
- B. Attachment 2: Inter-Fluve Cost Proposal, dated January 22, 2021
- C. Attachment 3: Request for Proposal – Design Services for the Area 3 Minnesota Riverbank Stabilization Project, dated December 17, 2020

20.01 *Severability:* If any term or provision of this Agreement is declared invalid or unenforceable by any court

of lawful jurisdiction, the remaining terms and provisions of the Agreement shall not be affected thereby and shall remain in full force and effect.

21.01 *Execution in Counterparts, Verified Electronic Signatures:* This Agreement may be executed in counterparts and by verifiable electronic signatures.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on Page 1.

Owner: Lower Minnesota River Watershed District, Chaska, MN

Consultant: Inter-Fluve, Inc.

By: _____

By:  _____

Print name: _____

Print name: Jonathon Kusa

Title: _____

Title: President & CEO

Date Signed: _____

Date Signed: February 11, 2021

Address for Owner's receipt of notices:

Address for Consultant's receipt of notices:

501 Portway Avenue, Suite 101
Hood River, OR 97031

Designated Representative:

Designated Representative:

Title: _____

Title: Jonathon Kusa

Phone Number: _____

Phone Number: 541-490-8230

E-Mail Address: _____

E-Mail Address: jkusa@interfluve.com

ATTACHMENT I

January 22, 2021

Linda Loomis, LMRWD Administrator
Lower Minnesota River Watershed District
admin@lowermnriverwd.org



Re: Proposal for Design Services - Area 3 Minnesota Riverbank Stabilization Project

Dear Linda and Selection Team,

Inter-Fluve, Inc. is pleased to submit our qualifications and approach for the Area 3 Riverbank Stabilization Project. We are excited to bring our river restoration expertise to bear on behalf of the Lower Minnesota River Watershed District. We work nationally and internationally on challenging river and stream projects, which often include bank stability analysis as a part of the evaluation and eventual solutions. The issues faced within this project reach are familiar to our team and lie squarely within our technical wheelhouse.

We have completed at least ten very similar projects in the Midwest over the last five years, and a much larger number of similar projects across the United States over the last 37 years. River restoration work is all we do, and our average annual workload includes approximately 140 riverine projects. We completed a very similar project on the Minnesota River in 2018 and regularly work on ravine and bluff erosion issues in the Minnesota River basin. We collaborate with the USACE, NOAA, USF&W, and Bureau of Reclamation to support work on our nation's river systems. We have recently completed several local studies for the USACE St. Paul District and have a good understanding of how to develop projects that pass muster with our federal regulatory partners. This is a critical element for a project impacting a navigable channel. If you are looking for niche expertise in river science and engineering, then Inter-Fluve is the firm for the job.

We are passionate about our craft and enjoy sharing our expertise with our clients. We regularly teach higher education courses on our craft at University of Minnesota, Portland State University, and Harvard Graduate School of Design. We are excited by the opportunity to work with your team to share our expertise and knowledge to address this project and help your team evaluate similar issues along the Minnesota River.

Regarding the Area 3 site, the data and analysis gathered to date provide a valuable insight into the stability issues associated with the site. However, there are several key considerations that have not yet been addressed, including the influence of ice and boat wake action, which we can resolve, and are discussed in more detail in our Understanding and Approach. That said, the data collected thus far provides a reasonably clear guidance of a recommended approach. We strongly contend that pending a re-assessment of the current slope stability, the key project issues at this site are associated with hydraulic influences on the bank toe, and that construction impacts to the bluff face can and should be avoided. There is currently no indication of geotechnical instability that would impact uphill properties. We believe that the design solution should resolve existing issues, not create more risk and disturbance. We have outlined our concerns with the previously proposed ideas in our response and believe we have solutions that address the risks and technical challenges with this site. We look forward to collaborating with you all to review the data and confirm our recommended approach, if awarded the contract. We appreciate the opportunity to answer your questions and the chance to work with you all.

Sincere Regards,

A handwritten signature in black ink, appearing to read "Jonathon Kusa".

Jonathon Kusa, PE, LEED AP
President and CEO
jkusa@interfluve.com
Cell: (541) 490-8230

A handwritten signature in blue ink, appearing to read "Maren Hancock".

Maren Hancock, PE
Project Manager
Water Resources Engineer, Regional Director
mhancock@interfluve.com
Cell: (651) 295-4656



As requested in the RFP, we include the following statement:

I hereby certify that I am a duly authorized representative of the company and that the information contained within this response to the Lower Minnesota River Watershed District's Request for Proposal is current, true, and correct to the best of my knowledge. I hereby authorize and request any person, agency, or firm to furnish any pertinent information requested by LMRWD deemed necessary to verify the statements made in this submittal.



Jonathon Kusa, PE

President and CEO

We acknowledge the receipt of Addendum 1.



Before and after photos of the Sand Creek Engineered Log Jams Bluff Stabilization in Jordan, MN (2016-2019).

1. Project Understanding & Approach

The primary goal of this project is to arrest continued bluff erosion in the project area to prevent impacts to private property, preserve the existing stormwater pond infrastructure, and reduce sediment loading to the Minnesota River. The data gathered to-date and the evaluation completed suggest that river migration and hydraulic scour are the dominant drivers of the erosion issue. Based on our experience with similar systems, the following variables should be investigated and considered as drivers for the failure, some of which have been evaluated already, others have not.

Geotechnical Slope Stability – The evaluation of various failure planes under saturated, unsaturated, and draw-down conditions based on the sub-surface soil types has been completed by several consultants as a part of the 2008 – 2020 assessments and monitoring. The ongoing inclinometer readings and geotechnical analysis indicate that the bluff failure is not due to a geotechnical or groundwater saturation issue. We would recommend that Barr Engineering repeat the slope failure analysis for Section 5 of the project area based on the ongoing changes to the bluff, but based on the previous analysis we would anticipate findings that indicate that the failure planes would not intersect private property.

River Migration – The analysis of aerial photographs completed by the previous consulting teams confirm the continued migration of the river down-valley and towards the left bank. This is a typical progression of meander bends and the work completed thus far validates that condition. No further analysis is recommended relative to river meander analysis.

Hydrologic Analysis – The analysis completed to-date appears to effectively capture the range of anticipated flows for the site. No further analysis is anticipated to be needed for this topic.

Hydraulic Scour – In addition to the river migration issues, we will examine depth integrated shear stress, bend scour, and maximum scour depth to prevent over design, so that stone isn't carried too far up the bank. This will be completed using the existing HEC-RAS model, updated with the 2020 bathymetry. We agree that a stone toe is likely warranted, but we believe a gradation of hard armoring to more vegetation solutions are typically warranted on river banks. Inter-Fluve has projects that are more than 24 years old that implemented bioengineering, geotextile fabric, and vegetative solutions in similarly situations. Our intent is to understand the hydraulic issues in enough depth to accurately design stable slopes. We do

not support overdesign of hard structures in rivers, to the detriment of the ecology and aesthetics of the system.

Ice Flow – In northern river systems, it is critical to evaluate potential ice impacts on shorelines. Ice scour can be a significant driver for bank erosion. Inter-Fluve will evaluate anticipated ice conditions and impacts along the project reach, which is on an outside bend of the river and likely subject to more significant ice impacts. Ice impacts and boat wake were the two predominant forces on the Sheridan Park project on the Mississippi River. Ice impacts were also evaluated on the Sand Creek projects. Inter-Fluve has include the ice impact analysis in our Task 2 scope .

Boat Wake – As a navigable channel, this reach of bank is impacted by large barge traffic, as well as other craft. Our recent experience on the Toronto Harbor included evaluation of this specific issue relative to bank stability. In this situation, the reflection and potential interference to create larger impacts is muted in this reach, due to the vegetation on the right bank. We would evaluate the potential wave impacts and mitigate the risks through the design elevations of various stabilization approaches. Boat wake analysis has been completed for Sheridan Park and the Don River, both referenced below. Inter-Fluve has include this analysis in our Task 2 scope.



Mississippi River, Sheridan Park Bank Stabilization, MN

Vegetation Stability – As noted in the design reports, there are extensive groundwater seeps throughout the project reach. While these are the bane of geotechnical engineers, the groundwater plays a critical role in establishing long-term vegetation stability on the site. As

noted in the 2010 site assessment “Vegetation has begun to re-establish within areas that are not actively sloughing.” That is a great sign that once re-established, riparian trees and shrubs could serve as an additional barrier to continued erosion of the upper slopes. The best solutions integrate the site conditions into the solution, rather than work against them.



Napa River HDV Bank Stabilization, CA

Gully Drainage – The studies and reports indicate that most of the overland flow has been redirected to the stormwater system. Based on the site photos provided by May 7, 2020 site visit, the existing drainage gullies do not appear to be at risk. Inter-Fluve has extensive gully stabilization experience and will include a brief review the gullies this spring in collaboration with Young Environmental. If further design or actions are warranted, Inter-Fluve is ready to work with LMRWD to address those issues as an additional scoped task.

Our due diligence approach outlined above will inform our selection and validation of stabilization methods such as barbs, bioengineered wood cribs, rock toes, and launchable toe applications. Our team has unmatched experience in integrating bioengineering into the traditional rock approaches for long term stability. Our assessment of the data and analysis points to a launchable rock toe with transition to a bioengineered upper bank solution, similar to the solution implemented this past Fall on the Napa River (See HDV project description).

We have a few concerns with the rock vane solution selected by the 2010 consulting team. First, we have seen similar solutions implemented by others result in more bank erosion in the areas they were intended to protect.

Second, the proposed solutions include extending vanes approximately 140 feet into the channel, measured from the left bank. The current thalweg, as identified in the cross-sections, is approximately 100 feet from the left bank in some sections. Not only do we believe the solution not viable for the identified erosion issues, the permitting hurdles with the USACE and Coast Guard to construct rock vanes into the thalweg of the navigable channel could be significant.

Our approach outline to this project reflects the dynamic nature of this site and the unknown construction timing associated with funding availability. Our approach can be summarized as follows;

1. Identify gaps and supplement or update data and analysis to confirm failure drivers and risks on the site.
2. Conduct limited drone survey during field assessment to support design plan development. Since funding for construction is not yet available, and the river will continue to impact and change the bank, saving detailed survey and final design until construction timing is known is prudent.
3. Complete 60% and 90% designs.
4. Optional Task – we recommend a pre-permitting meeting with the DNR and USACE following the 60% design phase to discuss project goals, designs, and outcomes. (Not in current scope)
5. Complete permit submittal matrix. (Permitting submittal by others, or via addendum.)

Once Construction timing is known and funding is secured:

6. Conduct supplemental field survey to data that is current for the time of construction.
7. Update hydraulic model.
8. Finalize 100% (Bid Ready) plans to reflect site conditions and refine material quantities.
9. Complete permit submittals (not in this scope).

We look forward to providing more scoping detail in a collaborative meeting with your team, following project award.

2. Project Management Plan

The success of Inter-Fluve's approach to dynamic and complex river system projects is founded on a practice that strives for frequent and consistent quality review. We have established a small group of Technical Principals whose role is to mentor new staff through project deliveries, as well as provide the quality control review of decisions and deliverables. Given the breadth of expertise applied in any single project, we typically request review by an ecologist, geomorphologist, engineer, and fish biologist on our complex projects.

Inter-Fluve's Maren Hancock will be the designated Project Manager. Maren has more than 8 years of experience managing multi-disciplinary engineering projects and providing water resources engineering services. She draws upon her experience across the Midwest and New England with both urban and rural river restoration, bluff toe stabilization design, natural channel design, floodplain management, and construction administration. Maren has worked on more than **65 restoration projects** alone and her leadership and organization is vital to these projects that have diverse technical challenges and unique stakeholder and communication needs. Maren is professionally trained in engineering Project Management through the PSMJ program.

The following graph provides an estimated project schedule based on the proposed project schedule identified in the RFP. You will note that we recommend that Task 5 not be executed, pending notification to proceed by LMRWD and/or construction funding being identified. We have not identified specific dates for meeting or tasks, as we anticipate that would be developed collaboratively with the LMRWD team.

Inter-Fluve manages unanticipated changes within project delivery through a collaborative and open communication process with our clients. We will be communicating regularly with the LMRWD staff and believe that fostering open communication channels from the outset will create a resilient project delivery team. Although our team's background provides guidance and expertise, part the challenge of any project are the unanticipated challenges and changes. The resiliency we build into of our technical solutions is reflected in the resiliency we foster within our project delivery team, which includes our client partners. In same vein, the open communication style we espouse is relevant to the resolution of issues. We are the not the consulting team that collects the data, retreats to our office, and then reappears with a solution. We relish frequent collaboration with our clients and partners. We believe that open dialogue provides the surest path to issue resolution and success.

A number of risks are associated with this type of work, including those technical areas identified in our project understanding. As frequent practitioners in this field, there are a number of other risks, some larger, some smaller, that we regularly see. Here are four of the most prevalent issues we see in the marketplace:

Risk: High water on projects any given year

Mitigation: During the design phase, we can often shift and compress task timelines to accommodate a survey delay if access is dangerous. During construction, accommodating schedule risk within the design and contract documents limits financial risks to LMRWD and other funding partners.

Risk: Changed site conditions

Mitigation: As noted previously, rivers are constantly changing, and this site is no different. The average bank change was computed to be 3 feet per year. Over a 500-foot bank section, that can result in a significant quantity change between a design plan being completed and the contractor mobilizing. Inter-Fluve addresses this issue through a flexible design process that accommodates delays in funding, as proposed in this submittal for Task 5. Also, our designs for these type of bank stabilization systems can be adjusted in the field and flexed to accommodate changes in site conditions.





Risk: Permitting delays

Mitigation: Early coordination with permitting agencies helps, but also recognizing the areas or issues on a project that specific agencies are most concerned about. Inter-Fluve also has the advantage of having decades of project examples to provide our regulatory partners the confidence that our solutions are viable, resilient, and appropriate.

Risk: Construction Cost Escalation and/or Surprise

Mitigation: As noted in the 2008 and 2010 design reports, the proposed construction solutions ranged in costs from \$300,000 to \$3,300,000. That order of magnitude range should give LMRWD staff pause and concern relative to the accuracy of either set of estimates. Inter-Fluve will not claim to always be within 3% of the Low Bid on competitive jobs with our Engineering Opinions of Probable Costs, market forces often create havoc in bidding environments, but our cost database and history of implementation gives our clients more confidence and clear guidance for fund raising and project cost projections.

Schedule

		2021						
		FEB	MAR	APR	MAY	JUN	JUL	AUG
	Task 1: Project Management							
	1.1 - Kickoff Meeting - Client							
	1.2 - Stakeholders Kickoff Meeting							
	1.3 - Design Review Meeting - 60%							
	1.4 - Design Review Meeting - 90%							
	1.5 - General Project Management							
	Task 2: Alternatives Review & Evaluation							
	2.1 - Existing Data Review & Gap Analysis							
	2.2 -Field Data Collection							
	2.3 - Alternatives Review							
	2.4 - Brief Tech Memo							
	2.5 - Workshop with LMRWD							
	Task 3: Preliminary (60%) Design							
	Task 4: Final (90%) Design							

Task 5: Bid Documentation (100% Design): Survey, design, engineering, and completion of 100% design tasks to be completed upon notification of construction funding.

Organizational Chart



LOWER MINNESOTA RIVER
WATERSHED DISTRICT

PROJECT MANAGEMENT

Maren Hancock, PE
*Water Resources Engineer,
Regional Director*

PRINCIPAL IN CHARGE

Jonathon Kusa, PE, LEED AP

DESIGN TEAM

**ENGINEERING
& HYDRAULIC
MODELING**
Nick Jordan, EIT
Engineer in Training

**GEOLOGY
GEOMORPHOLOGY**
Marty Melchior, CFP
*Principal Ecologist &
Fisheries Biologist*

**AQUATIC
ECOLOGY**
Emily Alcott, CE, PWS
*Principal Ecologist &
Fluvial Geomorphologist*

CAD
Garrett Shear
*CAD Technician &
Environmental Scientist*

Mike Brunfelt, RG
Principal Geomorphologist

Marty Melchior, CFP
*Principal Ecologist &
Fisheries Biologist*

Sean Morrison
Staff Geomorphologist

Garrett Shear
*CAD Technician &
Environmental Scientist*

3. Proposed project team

As a species, humans are highly adept at adapting to change and thriving in new environments; unfortunately, that has not resulted in an increased aptitude to understand naturally dynamic ecosystems like river systems. Our infrastructure and development designs often fail to account for short- and long-term geomorphic and biological processes that have the propensity to impact our homes, roads, and other fixed infrastructure systems. To manage those impacts, it is important to work with professionals that regularly tackle these types of issues and have a deeper foundational knowledge surrounding the variables associated with our dynamic river systems. Below are brief introductions to our key project team members. Two-page resumes for each person are located at the end of this proposal.

Maren Hancock, PE

SR. WATER RESOURCES ENGINEER

Role: Project Manager

Maren Hancock, PE will be the Project Manager for Inter-Fluve. Maren is a Water Resources Engineer and Regional Director in our St. Paul office. She maintains more than eight years of experience and brings a wealth of experience in designing and providing construction oversight for riverbank stabilization projects around the Midwest. For example, she was the project manager for our two most recent phases on the Sand Creek Bluff Toe Stabilization & Sediment Reduction in Jordan, MN; was assistant project manager for the Big Sioux Streambank Stabilization in Sioux Falls, SD; and is currently the Project Manager for the Kenilworth Channel Stabilization in Minneapolis, MN. Maren lives and works in St. Paul. This will allow her to efficiently manage the various projects and attend meetings as needed. She is detailed oriented and has shown incredible leadership within both our firm and the industry, yielding positive outcomes for client and project.

Jonathon Kusa, PE, LEED AP

WATER RESOURCES ENGINEER

Role: Principal-in-Charge

Jonathon will serve as Principal-in-Charge for the team. He is also a Minnesota resident and Professional Engineer, working closely with Maren in our Saint Paul office. His recent experience both locally and nationally on similar work will help guide the design team through analysis, design and permitting. Jonathon also enjoys staying engaged in local projects, so he plans to provide engaged engineering support throughout the project.

Marty Melchior, CFP

TECHNICAL PRINCIPAL, ECOLOGIST & FISHERIES BIOLOGIST

Role: Fisheries, Large Wood Design & Geomorphology

Marty will serve as a key Technical Principal for the project. With over 25 years of experience Marty has developed a well-rounded expertise in ecology and geomorphology. His acumen with large bluff stabilization is unparalleled. Marty has led and participated in a number of ravine and bluff erosion charrettes and meetings in Mankato and Jordan with MPCA, Counties, Utah State, NDSU and U of MN, Extension, MNDNR, and BWSR. Marty has designed and provided construction oversight for over 20 large river bluff erosion projects over the last decade and has pioneered the use of large wood in stabilization those projects. As noted in his resume, his experience completing similar projects both on the Minnesota River and throughout the Midwest provides guidance and quality assurance.



Menomonee Rive, Hart Park Bluff, WI

Emily Alcott, CE, PWS

TECHNICAL PRINCIPAL, ECOLOGIST & GEOMORPHOLOGIST

Role: Ecology & Vegetation

Emily will serve as our QA/QC lead for ecological and vegetative stabilization issues. She is currently assisting with the channel re-naturalization in the Chain of Lakes and regularly works across the United States and Canada with our design teams.

Mike Brunfelt, RG

TECHNICAL PRINCIPAL, GEOMORPHOLOGIST & GEOLOGIST

Role: Geologist

Mike is a Registered Geologist and regularly evaluates issues for our projects. He is a native of Plymouth, MN and regularly supports work throughout the region. His geological expertise will provide support of our evaluations and collaboration with our geotechnical partners.

Nick Jordan, EIT

STAFF ENGINEER

Role: Engineer-in-Training

Nick has three years of experience with a background in geotechnical engineering and river science. Nick provides engineering support to projects throughout the Midwest and East Coast. Nick supports everything from survey, through final design, and construction oversight.

Sean Morrison

STAFF GEOMORPHOLOGIST

Role: Geomorphologist & Drone Survey

Sean utilizes his skills in geomorphology to interpret form and process, historic investigation and mapping with aerial photographs, hydrological analyses, field survey and site stability assessment. Sean will focus on geomorphology, data collection, and permitting assessment for the project. Sean had three years of experience.

Garret Shear

CAD TECHNICIAN & ENVIRONMENTAL SCIENTIST

Role: CAD & Ecology

Garrett has over 8 years of experience as a CAD Drafter for civil and environmental engineering firms. Garrett has been a part of design teams for approximately a dozen bluff erosion projects over the course of his career. He will be a CAD Drafter for this project and assist Emily with Ecology.

All team members have sufficient capacity to support delivery of the project given the proposed schedule.

Inter-Fluve proposes collaborating with Barr Engineering geotechnical engineers and Young Environmental staff, given their history and previous analysis of the project site. We do not propose utilizing any sub-consultants given that approach.



North Fish Creek, WI



Little Miami River Bioengineered Bank Stabilization, OH

4. Project Examples

The following projects all included our day-to-day Project Manager, Maren Hancock

Don River Mouth Naturalization & Port Lands Flood Protection

Toronto, Canada (2015-Present)

Reference: Shannon Baker, Project Director, Parks and Public Realm, Waterfront Toronto +1 (416) 306-8697 sbaker@waterfronttoronto.ca

The Lower Don Lands is a 308-acre area that is located at downtown Toronto's waterfront. The area has a long history of industrial use, manipulation of the Don River, and urban flooding. Waterfront Toronto is transforming the largely underutilized industrial area into new sustainable parks and communities. Inter-Fluve was contracted by Michael Van Valkenburgh Associates and Waterfront Toronto to complete the due diligence, project planning, construction documents, and construction observation associated with the ecological restoration elements of the \$1B revitalization project.

Inter-Fluve's role in the project includes fluvial geomorphic assessment of analog river mouth systems in the Greater Toronto Area to assess ecological function relative to floodplain storage, wave and ice impacts, hydraulic influences, habitat needs, and climate change resiliency. Coordinating with project landscape architects, hydrologists, and geotechnical and civil engineers, Inter-Fluve led the development of channel designs, plant species assemblages, in-stream habitat, and wetland habitat features for fish, amphibians, reptiles, birds, and wildlife. The designs address urban river hydrology, widely fluctuating water levels, ice impacts, boat wake, invasive species, urban land use, and flooding concerns. This project's design approach is typical for large river systems and are similar to the Minnesota River Area 3 issues. Jonathon Kusa is the Project Manager. Maren has been providing design support and QA/QC.

Kenilworth Channel Stabilization

Minneapolis, MN (2020-Present)

Reference: Daniel Elias, Design Project Manager, Minneapolis Park and Recreation Board, 612-499-3011 mobile, delias@minneapolisparcs.org

Inter-Fluve was contracted by Minneapolis Parks & Recreation Board for the design of shoreline stabilization

treatment along 700 ft of Kenilworth Channel. The project will naturalize and stabilize the shoreline and add valuable habitat to the area. The ecologically-based bank solution to repairing the dilapidated channel walls will be designed with consideration for resiliency, public safety and aquatic and habitat benefit. The project included review of wave action, ice extent, boat use impacts, and the design of rock toe stabilized banks with vegetated lifts. The assessment of risks along a vertical gradient up the bank, will allow for a naturalized appearance to recreational users, while providing long term structural stability (rock) at the toe.

Minnehaha Creek, Arden Park Restoration

Edina, MN (2016-2019)

Reference: Laura Domyancich, Planner – Project Manager, Minnehaha Creek Watershed District, (651) 323-3303 mobile, LDomyancich@minnehahacreek.org

The Minnehaha Creek Watershed District and the City of Edina contracted with Inter-Fluve to analyze and design a restoration plan for Arden Park, an 18-acre park located in Edina, Minnesota. The project included significant public outreach effort to capture community goals and sentiment relative to the existing park and dam. The final design involved removal of a dam to restore fish passage and natural stream function, and restoration and re-meandering of 2000 feet of creek.

The project also enhances wildlife habitat and natural vegetation, improves water quality by treating over 100 acres of untreated urban runoff, and provides improved and increased recreation access for fishing, kayakers, paddle boarders and tubers. Construction was completed in 2020. Applicability to the Area 3 project include: The project required design of a number of bank stabilizations, includes many with rock toe elements. The management of water on the site, given it was primarily constructed over the high-water year of 2019, was an excellent assessment of our specifications and designs relative to water-elevation related delay claims and issues.

Sand Creek Engineered Log Jams Bluff Stabilization (4 projects)

Jordan, MN (2016-2019)

Reference: Ryan Holzer, Scott County, Water Resources Scientist - Phone: 952-496-8882

In 2012, Inter-Fluve conducted a watershed scale geomorphic assessment of Sand Creek and its tributaries. Sand Creek is an agricultural area stream that flows across a flat plateau and then drops significantly through the bluff area of the old River Warren terrace before winding through the Minnesota River floodplain. Inter-Fluve identified sediment source areas and recommended that the County focus funding on bluff and ravine erosion to more efficiently address sediment reduction goals. Since 2016, Inter-Fluve has designed two ravine stabilization projects, and four bluff toe stabilization projects. The bluff stabilization involved engineered log jams (ELJ) and a log crib structure. Design involved both HEC-RAS and Flow 2D modeling of proposed solutions. Construction of the

most recent stabilization was completed in January 2019 and involved complex management of channel ice and in-situ dewatering. The Sand Creek projects included a number of similar design considerations including analysis of hydraulic forces at the bluff toe, ice impacts, and planned winter construction. These may be very similar to the challenges of the Area 3 project. Inter-Fluve regularly reviews our design approaches and re-assesses our construction documents to improve risk mitigation efforts, especially for winter construction.

It should be noted that Sand Creek Bluffs and the Porter Creek Bluffs (not referenced due to space limitations) projects were part of the Lower Minnesota River effort to reduce sediment loads and the result of a broader study completed by Inter-Fluve, to identify critical eroding bluffs that were the highest sediment contributors to the river system. Inter-Fluve's assessment and design efforts have contributed to the overall sediment reduction effort within the Minnesota River basin.

The following projects completed by the proposed team members, but not by our project manager

Minnesota River Bank Stabilization

LeSeuer, MN (2018)

Reference: Private client –Contact not available

In 2012, Inter-Fluve was contracted by a private client to study the geomorphic history of a reach of the Minnesota River to determine the rate at which the river has been migrating toward its natural gas pipelines. Inter-Fluve geomorphologists conducted a field assessment to document topographic and vegetative evidence of river movement, surface geologic features, river bed and bank materials, sand bar formation, and erosion. A desktop meander migration study was completed. Rates and directions of historic bank migration were determined. Based on this information, the pipeline owner estimated an appropriate timeframe for constructing a bank stabilization project to protect its pipeline. Inter-Fluve completed the preliminary through final design and permitting for the bank stabilization project, and it was constructed during summer 2014. One of the primary project challenges resolved by Inter-Fluve included the proposed inclusion of inappropriate design requirements (which would have destabilized the project site) by a State agency reviewer. This challenge may be similar to the Minnesota River Area 3 Project and we almost always recommend bringing in agency review partners early to facilitate permitting.

HdV Winery Bank Stabilization

Napa, CA (2018-2020)

Reference: Rick Hyde – Hyde de Villaine Wines– Email and Phone available upon request

The Napa River runs 55 miles from Mt. St. Helena to San Pablo Bay and is a dynamic system shaped by rain-driven flood events in the winter season. Following a major flood event Inter-Fluve was contracted by a boutique winery to restore a failing riverbank threatening winery infrastructure and ESA-listed fish habitat conditions along a tidally influenced section of the Napa River. Inter-Fluve worked closely with the client and local regulatory agencies including the Napa County (Flood Control), CDFW and NMFS to design a multi-objective solution including riverbank and riparian restoration, erosion control, and infrastructure protection. Designs were finalized, permit authorizations were secured and construction finished in the late fall of 2020.

Sheridan Park – Mississippi Riverfront Bank Stabilization

Minneapolis, MN (2009)

Reference: Minneapolis Park Board – Project Manager Departed, Agency reference available upon request

Inter-Fluve developed concept and final designs for restoration of 1,000 feet of eroding streambank at Sheridan Park along the Mississippi River. This section of river is backwater from the St. Anthony Falls lock and dam system, and so the major causes of erosion at the park were boat wakes and ice. One of the major challenges was that the Minneapolis Park Board did not want to lose any of the monument cottonwood trees that were beginning to fall into the river. Past bioengineering efforts by other firms had failed and Inter-Fluve was called in to assist in designing for, and resolving, the site complexities.

Preliminary analysis determined that the cause of erosion was not fluvial, and therefore extensive toe excavation was not required. Small diameter rock was installed at the toe of the slope to allow for sedimentation and wildlife passage over time. The upper slope was graded and bioswales were installed to prevent rill erosion. Salvaged large block limestone was placed under cottonwoods to buttress the trees, and the exposed roots were repacked with soil and gravel to improve stability and prevent further cantilevering. This design solution may be similar to the approach used for the Minnesota River Area 3 project.

Little Miami River

Cincinnati, OH (1997)

Reference: No current reference

Inter-Fluve conducted a feasibility study, prepared final plans and specifications, and supervised construction for bank stabilization along the Little Miami River, a National and State Wild and Scenic River. The site included a 1,200 foot long reach of eroding bank and levee, in some places 30 feet in height, which separates the river from a man-made lake and marina facilities. The area was subject to complex geotechnical conditions, including rapid drawdowns related to fluctuating river stages.

The selected alternative included a bioengineered slope utilizing a stone foundation, internal geogrids, geocell layers, fabric-encapsulated soil lifts, and native vegetation. There have been no further erosion issues reported or reconstruction required since project completion.

Rogue River Bank Stabilization

Grants Pass, OR (1998)

Reference: No current reference

The City of Grants Pass Water Treatment Facility is located directly above a high bank of the Rogue River that, following a major flood in 1996, was being undermined. This development threatened the city's only water supply for a population of nearly 35,000. Riverbank stabilization alternatives focused on protecting the existing water treatment plant and preventing future erosion of the bank. Additional consideration was given to preventing erosion upstream and/or downstream of the site, as well as avoiding gravel and sand deposition that could restrict flows to the plant's intake structure.

Following the initial site evaluation in 1998 and development of a detailed hydraulic model, four alternatives were proposed: 1) No action, 2) A traditional concrete retaining wall structure, 3) A bin wall structure, and 4) A bioengineered structure. Evaluation criteria for the alternatives included constructability, cost, habitat enhancement potential, probability of success (stability), aesthetics, ease of permitting, and maintenance requirements. A bioengineered structure in the form of a stacked geocell wall was selected as the preferred alternative. Using Section 14 Emergency funding the USACE collaborated with the City and Inter-Fluve to construct a nearly 500 feet long, 50 feet high bioengineered structure to protect the treatment facility.

The project earned the 2001 Design Excellence Award from the Society of American Military Engineers.



Winter Construction on the Minnesota River.



REGIONAL DIRECTOR & WATER RESOURCES ENGINEER

Maren Hancock, PE

Maren is a water resources engineer with more than eight years of experience managing multidisciplinary teams to meet clients' diverse needs. Maren's recent projects have included riparian zone and stream restoration; aquatic and shoreline habitat restoration; flood hazard mitigation; resiliency design; and watershed management. Maren has experience working on projects throughout the country in both ultra-urban and rural settings. Maren is currently leading the construction observation effort for the restoration and enhancement of a 17-acre urban park along the Minnehaha Creek corridor in Minnesota and managing three restoration projects for MMSD in Milwaukee. Maren's leadership is vital to these projects which include diverse restoration challenges along with stakeholder and public relation communication needs.

EXPERTISE

- River Bank and Bluff Toe Stabilization
- Dam Removal Evaluation and Design
- Urban Shoreline & Stream Restoration Design
- Watershed Management Planning & Design
- Flood Management Planning
- Riparian Habitat Restoration
- Climate & Coastal Resiliency
- Construction Oversight

EDUCATION

- MS, Environmental Engineering & Science, *honors*, John Hopkins University, 2015
- BS, Environmental Engineering, *cum laude* Tufts University, 2012

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

- Professional Engineer: MN, WI, RI, SD, IL
- American Society of Civil Engineers (ASCE)
- Society for Military Engineers (SAME)

SELECTED PROJECT EXPERIENCE

Sand Creek Bluff Toe Stabilization & Sediment Reduction Jordan, MN (2015-2019)

Over the past decade, Inter-Fluve has worked with Scott County on the assessment of bluff and ravine erosion in the Sand Creek watershed. The design work included site survey, 2D hydraulic modeling, design drawings, specifications, and engineering cost estimates for concepts through final design. The projects designed and constructed to date have included four bluff toe stabilization sites and two ravine stabilization sites. Maren was the project manager for the two most recent projects.

Lyons Park Creek Bank Erosion Milwaukee, WI (2016-present)

The Milwaukee Metropolitan Sewerage District (MMSD) jurisdictional waterway known as Lyons Park Creek (LPC) flows from south to north as a tributary of the Kinnickinnic River. LPC flows through a series of open channels and storm sewer enclosures. As a sub to GRAEF, completed creek restoration design which included bluff toe stabilization, remeandering, and habitat enhancement. The project is currently out to bid for construction. The project will be constructed this spring. Maren is the Engineer of Record.

Big Sioux Streambank Stabilization Sioux Falls, SD (2017-2019)

Over the past century, the Big Sioux River between the City of Baltic and the City of Sioux Falls has experienced large-scale meander migration. The City of Sioux Falls and South Dakota Department of Natural Resources enlisted Inter-Fluve to investigate the erosion problem and provide design for bank stabilization and restoration treatments. Inter-Fluve completed the field assessment of 18 designated sites of interest which were subsequently used to prioritize sites for further design and implementation. Inter-Fluve worked on final design development for three of those bank stabilization sites. Maren was Assistant Project Manager.

Kenilworth Channel Stabilization Minneapolis, MN (2020-Present)

Inter-Fluve was contracted by Minneapolis Parks & Recreation Board for the design of shoreline stabilization treatment along 700 ft of Kenilworth Channel. The project will naturalize and stabilize the shoreline and add valuable habitat to the area. The ecologically-based bank solution to repairing the dilapidated channel walls will be designed with consideration for resiliency, public safety and aquatic and habitat benefit. Maren is Project Manager.

Maren Hancock, PE

Arden Park Restoration Edina, MN (2016-2019)

Contracted by Minnehaha Creek Watershed District, Inter-Fluve was the leading the restoration of the 17-acre park, which included a dam removal, creek re-alignment, habitat and vegetative restoration, new recreational amenities (trails, bridges, boardwalks, park shelter building, playground, water access points, etc.) . Maren was assistant project manager for the design phase and was the project manager for construction oversight.

Trout Brook, Afton Alps Habitat Restoration Saint Paul, MN (2014-2020)

Inter-Fluve is working with owners and project partners including Great River Greening, MN DNR and South Washington Watershed District to restore the natural function of Trout Brook, adjacent to the Afton Alps ski area. The restores trout habitat within the Metro area with high visibility to numerous site visitors. Maren assisted with project coordination and construction oversight.

Don River Mouth Naturalization Toronto, ON (2015-Present)

Inter-Fluve is part of a multidisciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto's waterfront. Maren is assisting with design development.

Minnehaha Creek Parkway Regional Trail Master Plan Minneapolis, MN (2018-2020)

Inter-Fluve was contracted as part of a team by the Minneapolis Park and Recreation Board to provide hydrologic and geomorphologic engineering services to aid the Minnehaha Creek Parkway Regional Trail Master Plan. The Trail Master Plan is part of a larger restoration effort Inter-Fluve has been involved with since 2003. Maren was Project Manager and provided engineering and natural resource expertise to the multi-entity planning team.

Mississippi Gorge Regional Park Master Plan Minneapolis, MN (2018-2019)

As part of a team, MPRB contracted Inter-Fluve to restore 132-acres flanking both banks of the Mississippi River to create an ecologically rich regional park on the Mississippi River that serves the general public and is environmentally aware. Maren was the Project Manager and provided engineering and natural resource expertise to the multi-entity planning team.

CSAH 50 (Crow River) Bank Stabilization Hennepein County, MN (2019-present)

Inter-Fluve was contracted by Hennepin County to assess and provide permanent stabilization designs for approximately 1,700LF of the Crow River bank supporting the CSAH 50 roadway. The project includes assessment through final design and construction. Maren is the Project Manager.

Clive Greenbelt Stream Corridor Assessment Clive, IA (2019)

The City of Clive contracted Inter-Fluve to complete an 11.6-mile geomorphic assessment to characterize the channel, riparian, and infrastructure conditions, sediment transport capacity, channel stability, past project conditions and to prioritize potential restoration projects. Maren was Project Manager.

Jackson Park and 43rd Street Ditch Milwaukee, WI (2019-Present)

As part of a team, Inter-Fluve was contracted by the Milwaukee Metropolitan Sewerage District to complete a park revitalization and restoration design for Jackson Park. Inter-Fluve is responsible for renaturalization and restoration design of the concrete-lined Kinnickinnic River within the park, as well as recreational access to the river. Maren is project manager and engineer of record.

Turkey Mountain Tulsa, OK (2019)

Inter-Fluve was contracted by Michael Van Valkenburgh Associates (MVVA) to complete an initial site walk and geomorphic assessment to inform Master Planning efforts at Turkey Mountain. Inter-Fluve visited the impoundments, Mooser Creek, and other key parts of the area to provide recommendations relative to onsite water resources and restoration potential. Maren was the Project Manager.

Mirror Pond Bank & Trail Improvements Bend, OR (2013-Present)

Following the 2013 Visioning Plan for Mirror Pond and downtown Bend, Inter-Fluve was part a team contracted by Bend Park & Recreation District exploring different options for reshaping the banks, and extending the Deschutes River Trail while also looking to improve habitat and water quality around the iconic Mirror Pond. This project includes significant coordination with the District, a public advisory committee, stakeholders and the public. Maren assisted with design development.



PRINCIPAL WATER RESOURCES ENGINEER
CEO & PRESIDENT

Jonathon J. Kusa, PE, LEED AP

Jonathon is a professional engineer with over 22 years of experience. He provides leadership to 50 engineers, scientists and technicians across the country. His diverse experience in water resources engineering translates into unique solutions to surface water management challenges. Jonathon has a well-rounded technical background in erosion control, transportation, wastewater, site development, river restoration, and hydrologic and hydraulic modeling. Jonathon is also an excellent communicator facilitating public involvement meetings on water resources and transportation projects, lecturing at Harvard University and regularly presenting at conferences and workshops throughout the country.

EXPERTISE

Stormwater Management
Erosion Control
Hydrologic & Hydraulic Modeling
Bioengineered Stream Stabilization
Project Management
Public Outreach
Construction Oversight

EDUCATION

MS, Civil Engineering - Water Resources & Environmental Systems
NC State University, 1999
BA, Public Policy Analysis - Environmental Science & Geology
University of North Carolina, 1996

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

Professional Engineer:
MI, MN, NY, IA, SD, OR, WA, WI, CA
LEED Accredited Professional, 2009

SELECTED PROJECT EXPERIENCE

Minnesota River Bank Stabilization LeSeuer, MN (2012-2014)

In 2012, Inter-Fluve was contracted by a private client to study the geomorphic history of a reach of the Minnesota River to determine the rate at which the river has been migrating toward its pipeline. Inter-Fluve conducted a field assessment and desktop meander migration study. Based on this information, the pipeline owner estimated an appropriate timeframe for constructing a bank stabilization project to protect its pipeline. Inter-Fluve completed the final design and permitting for the bank stabilization project, and it was constructed during summer 2014.

Sand Creek Bluff Toe Stabilization & Sediment Reduction Jordan, MN (2015-2019)

Over the past decade, Inter-Fluve has worked with Scott County on the assessment of bluff and ravine erosion in the Sand Creek watershed. The design work included site survey, 2D hydraulic modeling, design drawings, specifications, and engineering cost estimates for concepts through final design. The project also includes permitting (SWPPP, No Rise Documentation) and construction support. Jonathon assisted with construction oversight and provided QA/QC.

Big Sioux Streambank Stabilization Sioux Falls, SD (2017-2019)

Over the past century, the Big Sioux River between the City of Baltic and the City of Sioux Falls has experienced large-scale meander migration. The City of Sioux Falls and South Dakota Department of Natural Resources enlisted Inter-Fluve to investigate the erosion problem and provide design for bank stabilization and restoration treatments. Inter-Fluve completed the field assessment of 18 sites and further prioritized design and implementation. Inter-Fluve worked on final design development for three of those bank stabilization sites. Jonathon was project manager for past phases and led design.

Porter and Picha Creek Channel Restoration Shakopee, MN (2009-2011)

Porter and Picha Creek was initially identified during a 125-mile-long watershed-level assessment. Inter-Fluve was contracted by Scott County to perform a channel restoration project on Picha Creek and nearby Porter Creek. Picha Creek's restoration involved creating a cobble-and-gravel riffle pool channel, and using adjacent sand and sandy loam soils as channel fill restoring 3,000 feet of stream channel. Porter Creek's restoration was a low-cost

Jonathon J. Kusa, PE, LEED AP

combination of passive and active restoration, whereby the lower bank is stabilized and the upper bank is allowed to heal passively. Log cribs were installed to prevent rotational failure, stabilize toe seepage areas, create in-stream fish habitat, and create a living bioengineered slope. Jonathon was employed at HR Green and provided engineering support of hydrology and hydraulics and Environmental Documentation as project manager.

Quarry Hill Ravine & Streambank Stabilization Rochester, MN (2006-2010)

Jonathon led a multidisciplinary team, blending the skills of three consultants, three city managers, and one non-profit organization; managing over 70,000 annual park visitors; utilizing four separate funding sources; and mitigating two FEMA disaster-level storm events during construction. The team designed bioengineered stormwater management solutions to solve ravine erosion and water quality problems; designs included over 6,500 linear feet of stream, three stormwater basins, and a clay-lined pond reconstruction. The team implemented the stormwater solutions in conjunction with a new sanitary sewer and pond reconstruction to minimize construction conflicts within the project area and efficiently utilize public funds.

Dry Creek Habitat Enhancement Healdsburg, CA (2008-Present)

This \$60M Coho and steelhead habitat enhancement of a 14-mile reach of Dry Creek includes feasibility, and assessment through construction phases of priority projects. Jonathon is contributing to the engineering design, cost estimating, performing QA/QC, and is the Engineer of Record for the recent phases of the project.

Mississippi River, Sheridan Park Bank Stabilization Minneapolis, MN (2008-2009)

Contracted by the MPRB, Jonathon led (at HR Green and then Inter-Fluve) a \$1.5M project to stabilize a 1,000 ft section of the Mississippi River and monument cottonwood trees. Jonathon was the Project Manager for the project for HR Green.

Arden Park Restoration Edina, MN (2016-2019)

Contracted by Minnehaha Creek Watershed District, Inter-Fluve is leading the restoration of the 17-acre park, which includes a dam removal, creek re-alignment, habitat and vegetative restoration, new recreational amenities (trails, bridges, boardwalks, park shelter building, playground, water access points, etc.) and stormwater treatment wetlands. Jonathon was project manager for past phases and has led engineering design and QA/QC.

CSAH 50 (Crow River) Bank Stabilization Hennepein County, MN (2019-present)

Inter-Fluve was contracted by Hennepin County to assess and provide permanent stabilization designs for approximately 1,700LF of the Crow River bank supporting the CSAH 50 roadway. The project includes assessment through final design and construction. Jonathon performed QA/QC and provided design support.

Trout Brook Nature Sanctuary St Paul, MN (2010-2014)

The Capitol Region Watershed District (CRWD) selected Inter-Fluve and HR Green to conduct a feasibility study and develop concept plans for the re-creation of 3,000 feet of stream after decades of confinement within a storm sewer. The day-lighted reach of Trout Brook is a key element of a proposed nature sanctuary at the City of St. Paul's Trillium site. The study included assessing water sources, their quantity and quality; identifying workable stream and pipe alignments across and through the underground infrastructure of an urban environment; addressing the existence of contaminated soils on the site; and designing a channel and floodplain. Completed while with HR Green. Jonathon led the diverse team for this \$4M project.

Don River Mouth Naturalization Toronto, Canada (2016-Present)

Inter-Fluve is part of a multi-disciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto's waterfront. It will be the centerpiece of new mixed-use neighborhoods, parks and greenspaces and also provide the flood protection necessary to develop the larger Port lands. Jonathon is the Project Manager and engineer of record for the habitat components of the project. He has participated and facilitated site visits, stakeholder and client meetings, and contributed to the concept and final design.

Napa River, Winery Bank Stabilization Napa, CA (2018-2020)

Inter-Fluve was contracted by a winery to restore a failing riverbank threatening infrastructure and ESA-listed fish habitat conditions along a tidally influenced section of the Napa River. Regulatory agencies included Napa County, Inter-Fluve worked closely with the client and local regulatory agencies including the Napa County (Flood Control), CDFW and NMFS to design a multi-objective solution including riverbank and riparian restoration, erosion control, and infrastructure protection. Designs were finalized, permit authorizations were secured and construction finished up in the late Fall of 2020.



PRINCIPAL RESTORATION ECOLOGIST

Marty Melchior, CFP

Marty has 25 years of experience in fish habitat restoration, natural channel design, dam removal, fluvial geomorphic assessment, engineered wood design, bioengineering, and biotic assessment. Marty has participated in state and federal workshops on geomorphology and dam removal committees within the Federal Subcommittee on Sedimentation. Marty is a regular instructor for river restoration curricula and teaches large wood applications for the US Forest Service. Marty has been an invited participant to workshops and meetings related to sediment inputs into the lower Minnesota River, and facilitated the Scott County Ravine and Bluff workshop. Marty is originally from Shakopee, MN.

EXPERTISE

- Natural Channel Design
- Dam Removal
- Geomorphic Assessment
- Urban River Restoration
- Cranberry Bog Restoration
- Project Management
- Bioengineered River Bank Stabilization
- Fish Population Analysis
- Stream Ecology
- Construction Oversight

EDUCATION

- MS, Fisheries
University of Minnesota, 1998
- BS, Molecular Biology
North Dakota State University,
1989

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

- Wisconsin Small Dam Committee
- Certified Fisheries Professional
American Fisheries Society

SELECTED PROJECT EXPERIENCE

Minnesota River Bank Stabilization LeSeuer, MN (2014)

In 2012, Inter-Fluve was contracted by a private client to study the geomorphic history of a reach of the Minnesota River to determine the rate at which the river has been migrating toward its pipeline. Inter-Fluve conducted a field assessment and desktop meander migration study. Based on this information, the pipeline owner estimated an appropriate timeframe for constructing a bank stabilization project to protect its pipeline. Inter-Fluve completed the final design and permitting for the bank stabilization project, and it was constructed during summer 2014.

Sand Creek Bluff Toe Stabilization & Sediment Reduction Jordan, MN (2015-2019)

Over the past decade, Inter-Fluve has worked with Scott County on the assessment of bluff and ravine erosion in the Sand Creek watershed. The design work included site survey, 2D hydraulic modeling, design drawings, specifications, and engineering cost estimates for concepts through final design. The projects to date have included three bluff sites varying in height from 40 to 100 feet. Designs included engineered log jam solutions for deflection and toe stabilization. The projects have withstood major floods and ice flows and

performed as designed. Marty provided project management assistance, design, construction supervision and QA/QC.

Big Sioux Streambank Stabilization Sioux Falls, SD (2017-2019)

The City of Sioux Falls and South Dakota Department of Natural Resources enlisted Inter-Fluve to investigate the erosion problem and provide design for bank stabilization and restoration treatments. Inter-Fluve completed the field assessment of 18 designated sites of interest which were subsequently used to prioritize sites for further design and implementation. Inter-Fluve worked on final design development for three of those bank stabilization sites. Marty contributed to design and QA/QC.

Honey Creek Bank Stabilization Milwaukee, WI (2014-2017)

Honey Creek was eroding a 200-foot section of bank immediately upstream of the West Honey Creek Parkway Bridge in Milwaukee, Wisconsin. The bank had retreated roughly 20 feet since 2005, and further erosion threatened the adjacent bridge abutment and roadway. The Milwaukee County Parks Department contracted Inter-Fluve to provide a design that stabilized Honey Creek's bed and banks in the affected section. Marty was project manager and lead designer.

Marty Melchior, CFP

North Fish Creek Bank Toe Stabilization Ashland, WI (2015-2018)

Excessive sediment supply from the North Fish Creek watershed contributed to degraded aquatic habitat in the stream and downstream bay. Much of the sediment was attributed to erosion of high sandy bluffs along the middle and upper reaches of North Fish Creek. Northland College and the Chequamegon Bay Area Partnership contracted Inter-Fluve to develop project designs to stabilize one of the major bluffs. Marty assisted with construction observation design and construction observation. Marty is currently designing a second 100ft tall x 400 ft bluff erosion site following channel avulsion on North Fish.

Menomonee River Bioengineered Streambank Stabilization at Hoyt Park Milwaukee, WI (1999-2001)

Inter-Fluve provided geomorphic field assessment, evaluation, and preparation of a bank stabilization design plan on a segment of the Menomonee River that forms an urban parkway “greenbelt” in Milwaukee. Major lateral bank migration and subsequent loss of park land was triggered by historic channel confinement and encroachment on the floodplain. A complexity of design issues had to address flood conveyance, proximity to infrastructure such as bridges, and active sewer and water main lines. Marty provided construction oversight and monitoring for the project.

Sheridan Memorial Park Bank Stabilization Minneapolis, MN (2008-2009)

This project involved streambank stabilization at a bank failure site upstream of a highway bridge replacement project. Project components included large wood habitat structure installation and stream bank stabilization on 1800 feet of the Mississippi River in downtown Minneapolis. This project resolves current safety issues associated with the failing streambank. Specific tasks included grading design, hydraulic modeling analyses, and construction oversight. The project featured creative stonework to save several large cottonwood trees from cantilever failure. Marty was the project manager, geomorphology design lead, and conducted oversight.

Hart Park Bluff Stabilization Milwaukee, WI (2005-2007)

Hart Park is located on the Menominee River, a high energy urban river that runs through Milwaukee. Residential buildings and an operating state hospital were at risk as the channel was eroding the toe of the 120-ft high bank. The bank was stabilized using geo-cell reinforced fabric lifts along with a rock toe. Marty provided project management,

design, and construction oversight for the project.

CSAH 50 (Crow River) Bank Stabilization Hennepein County, MN (2019-present)

Inter-Fluve was contracted by Hennepin County to assess and provide permanent stabilization designs for approximately 1,700LF of the Crow River bank supporting the CSAH 50 roadway. The project includes assessment through final design and construction. Marty performed QA/QC and provided design support.

Porter Creek Bluff Erosion Stabilization & Habitat Restoration New Prague, MN (2010-2011)

Contracted by Scott County, Marty and his team developed low-cost engineered log jam designs for two demonstration sites on Porter Creek, a tributary to Sand Creek. Porter Creek runs through farm fields and pastures west of Jordan, MN. In select areas, this low gradient, highly meandering stream abuts against older terraces composed of sand and clay, resulting in large, eroding bluffs. We offered Scott County several options for stabilization, including engineered logjam and floodplain bench treatment. This method was chosen as a low-cost combination of passive and active restoration, whereby the lower bank is stabilized and the upper bank is allowed to heal passively. Log cribs were installed to prevent rotational failure, stabilize toe seepage areas, create in-stream fish habitat, and create a living bioengineered slope. Since construction in 2011, this reach of stream has been subject to numerous high-water events, including an 8-inch rainfall in June 2013. The project serves as a demonstration of alternative bluff erosion options that can be used in a variety of soil types.

Picha Creek Reclamation Jordan, MN (2011)

Picha Creek is a small drainage in the southwest metro area that experienced profound incision and erosion due to agricultural runoff. The channel bed had dropped 12 feet over 3,000 feet and was beginning to widen substantially. The design raised the incised channel bed with porous substrate to provide groundwater recharge during storms. The project featured grade controlling riffles, pools and riffles, fish habitat and stonework used to protect a large diameter cottonwood. Construction was completed in spring 2011, and the stream has withstood two 100-year flood events in the past two years. Scott County retained Marty’s team to design and manage this project.



PRINCIPAL GEOMORPHOLOGIST

Mike Brunfelt, RG

Mike has 32 years of professional experience studying and restoring rivers and wetlands across North America. He has walked and examined hundreds of miles of rivers and floodplains in diverse climatic and geologic settings, with the goal of understanding river histories, processes and project solutions. His extensive design and construction experience working in all phases of project development and implementation equates to strong leadership when managing both design teams and construction. His experience, knowledge and ability to collaborate across all disciplines provides a foundation and perspective to problem solving and project management that is rare in the industry.

EXPERTISE

Registered & Licensed Geologist
Applied Fluvial Geomorphology
Stream Channel Design
Large Wood in World Rivers
Design Construction
Construction Oversight
Project Management
Drone Flight Data Collection

EDUCATION

MS, Physical Geography
Oregon State University, 1990
BS, Earth Science
Montana State University, 1988

PROFESSIONAL REGISTRATIONS & AFFILIATIONS

Registered & Licensed Geologist
OR (RG), WA (LG)
FAA Licensed UAV Pilot
River Restoration Northwest

SELECTED PROJECT EXPERIENCE

Sand Creek Bluff Toe Stabilization & Sediment Reduction Jordan, MN (2015-2017)

Over the past decade, Inter-Fluve worked with Scott County on the assessment of bluff and ravine erosion in the Sand Creek watershed. The design work included site survey, 2D hydraulic modeling, design drawings, specifications, and engineering cost estimates for concepts through final design. The project also included permitting (SWPPP, No Rise Documentation) and construction support. Mike contributed to construction oversight.

Marengo River Bluff Toe Stabilization Grand View, WI (2015-2017)

Channel migration into a bluff along the Marengo River jeopardized the stability of the adjacent road and introduced sediment to the Marengo River channel. The toe of the channel bank continued to erode despite efforts to place large rock along the bank. Inter-Fluve was contracted by the Bad River Watershed Association to investigate the geomorphic processes causing the bluff failure and to develop a stabilization design that will also enhance instream and riparian habitat. Mike assisted with construction observation.

Suncook River Restoration Epsom, NH (2011-Present)

Following the 2006 Mother's Day flooding, Inter-Fluve was contracted by New Hampshire DES to assess the mile-long Suncook River avulsion causing widespread erosion and deposition and to develop designs for protecting road crossings and infrastructure as part of this \$3.6M project. Mike assisted with the field analysis and conceptual designs.

Clarks Creek Sediment Reduction Project WA (2011-2012)

The Puyallup Tribe of Indians contracted Brown and Caldwell to find alternatives to reduce sediment, nutrients and bacteria loading within Clarks Creek and its tributaries for the benefit of salmonid production. Inter-Fluve was sub-contracted by Brown and Caldwell to assist in the study as it relates to geomorphic processes, sediment source areas, sediment depositional areas and alternatives to control or reduce sediment in the Clarks Creek watershed. Mike is the project manager for Inter-Fluve. He will be conducting the geomorphic assessment and sediment transport analysis for the project as well as authoring the sediment source summary and action plan.

Mike Brunfelt, LG

Sucker River Habitat Enhancement St Louis, MN (2009-2011)

This small-scale habitat enhancement project is intended to improve brook trout and stream habitat conditions on the Big Sucker River, a 40 square mile watershed that empties into Lake Superior. The stream supports naturally reproducing brook and brown trout, with anadromous brown, rainbow, coho and Chinook salmon. We conducted an engineering site investigation, developed construction-level design plans, and performed construction oversight. Major design components included the installation of large wood, boulder cascades, and rock veins – which enhanced habitat for fish and other wildlife by providing habitat and cover for juvenile and adult fish. Mike performed construction oversight and design.

Clackamas River, River Island Restoration Clackamas, OR (2000-2016)

Following the 26-mile assessment, Inter-Fluve has been contracted by multiple Clackamas River Stakeholders to prioritize and complete the highest-ranking projects to restore natural channel processes, fish and wildlife habitat, riparian and upland forests, and water quality and to improve recreation access. Projects include River Island, a \$5M 200-acre natural park. Metro, a regional government body, contracted Inter-Fluve to restore an abandoned gravel mine. In 1996 a large flood event caused the mainstem Clackamas to breach a levee and flow through an active gravel mining operation. The goal of the project is to restore natural channel processes and support multiple values including fish and wildlife habitat, riparian and upland forests, water quality and recreation. Inter-Fluve is also developing a site conservation plan. Because of its location within the Portland Metro Area, stakeholder and public outreach and communication are emphasized. Mike led the assessment and contributed to design through construction oversight.

Carmel River Reroute & San Clemente Dam Removal Carmel, CA (2007-2016)

This project alleviated critical dam safety concerns and restored passage for ESA-listed steelhead by removing the 106-ft tall dam constructed in 1921 on the Carmel River. From 2007-08, Inter-Fluve served as the primary technical advisor to the Coastal Conservancy in their evaluation of options for removing San Clemente Dam. In both the design and advisory roles, Inter-Fluve was key in transforming the project design into one that results in full-scale valley bottom restoration achieving a high degree of ecological integrity. This role required extensive collaboration with project stakeholders, resource agencies, and technical review team. Our team assisted in concept development

and evaluation of steelhead migration windows for this \$84M project. Mike led the geomorphic reconnaissance and assisted with design.

Don Mouth Naturalization & Port Land Flood Protection

Toronto, Canada (2016-Present)

Inter-Fluve is part of a multi-disciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto's waterfront. It will be the centerpiece of new mixed-use neighborhoods, parks and greenspaces and also provide the flood protection necessary to develop the larger Port lands. Mike assisted with design and provided QA/QC - tech memo, data and design review.

Upper Columbia Reach Assessments

Upper Columbia Basin, WA (2010-Present)

Inter-Fluve has conducted eight Reach Assessment and Habitat Restoration Strategies totaling over 100 miles, for the Yakama Nation in the Upper Columbia Basin. These assessments provide the technical foundation leading to the selection, design, and implementation of numerous successful on-the-ground restoration actions for ESA-listed salmon and steelhead. Mike has acted as project manager and geomorphologist for multiple reach assessments.

Eel River Wetland Restoration

Plymouth, MA (2007-2010)

The \$1.9M Eel River project included restoring a 60-acre cranberry bog to pre-agriculture hydrology by removing a historic dam, developing 8,000 ft of new channel, and planting 17,000 Atlantic White Cedars. The project focused on holistic designs needed to provide uplift to the entire ecosystem including restoring critical fish and wildlife habitat and native plant re-vegetation. Eel River was awarded the 2010 Coastal America Award. Mike completed survey, geomorphic assessment and aided in the design.

Howland Fish Bypass Channel

Howland, ME (2014-2016)

As the last of the four key pieces of the Penobscot River restoration effort to be implemented, this project resulted in construction of a major bypass channel around the Howland Dam. The 100-foot wide bypass channel is required to provide stability and function over a broad range in design flows spanning from 250 cfs to nearly 12,000 cfs in the bypass channel alone. Mike worked on preliminary concepts.



PRINCIPAL ECOLOGIST & FLUVIAL GEOMORPHOLOGIST

Emily Alcott, CE, PWS

Emily has over 13 years of professional experience evaluating and restoring rivers and wetlands across North America. Emily has walked and examined hundreds of miles of rivers and floodplains in a range of biogeomorphic settings including the Pacific Northwest, the Rocky Mountains, the Great Lakes, and New England. She has applied skills in designing and overseeing the construction of stream channels and large wood structures, as well developing planting plans and delineating wetlands. As a project manager, Emily has led several complex projects where stakeholder public outreach and communication are essential. Emily is a Professional Wetland Scientist and a Certified Ecologist, and has recently taught courses at Harvard University.

EXPERTISE

Applied Fluvial Geomorphology
Large Wood Structure Design
Stream Channel Design
Planting Plan Design
Wetland Delineation
Construction Oversight
Project Management

EDUCATION

MESc, Yale School of Forestry & Environmental Studies, 2010
BS, Biology
William Smith College, NY, 2007

PROFESSIONAL CERTIFICATIONS & AFFILIATIONS

Professional Wetland Scientist
Society of Wetland Scientists
Certified Ecologist
Ecological Society of America
American Geophysical Union
River Restoration Northwest

SELECTED PROJECT EXPERIENCE

St. Joe River Bank Stabilization St. Maries, ID (2016-Present)

The St. Joe River Bank Stabilization Project is located along the St. Joe River roughly 4.5 river miles downstream of St. Maries, Idaho on a Wildlife Mitigation property owned and managed by the Coeur d'Alene Tribe (CDAT). Inter-Fluve was contracted to perform site survey, develop permit-level designs, and complete project permitting. Boat wake-induced erosion and historical land use have led to property loss and degradation of the riparian community in the project area. The goal of this project is to protect backwater wetlands and minimize erosion processes by rehabilitating the area's riparian ecosystem. The project area is classified as critical habitat for threatened Columbia River bull trout. Emily is project manager.

Upper Columbia Basin Reach Assessments & Project Prioritization Okanogan, Chelan & Douglas Counties, WA (2010-2016)

Inter-Fluve was contracted by Yakama Nation to complete Reach Assessments for the Twisp, Chewuch, Wenatchee, Peshastin and Methow Rivers. This work encompassed over 100-miles of fishery habitat, geomorphic, geologic, hydrologic and hydraulic analysis in addition to the identification of project opportunities that would enhance/restore habitat for endangered upper Columbia spring

chinook and steelhead. Emily has performed multiple site assessments, project identification, and design efforts.

Don River Mouth Naturalization Toronto, Canada (2016-Present)

Inter-Fluve is part of a multi-disciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto's waterfront. It will be the centerpiece of new mixed-use neighborhoods, parks and greenspaces and also provide the flood protection necessary to develop the larger Port lands. Emily contributed to ecological design and fluvial geomorphology evaluation.

Kenilworth Channel Stabilization Minneapolis, MN (2020-Present)

Inter-Fluve was contracted by Minneapolis Parks & Recreation Board for the design of shoreline stabilization treatment along 700 ft of Kenilworth Channel. The project will naturalize and stabilize the shoreline and add valuable habitat to the area. The ecologically-based bank solution to repairing the dilapidated channel walls will be designed with consideration for resiliency, public safety and aquatic and habitat benefit. Emily is providing plant selection guidance and QA/QC for the project.

Emily Alcott, CE, PWS

Nason Lower White Pine Wetlands Merritt, WA (2013-2016)

Inter-Fluve performed a wetland delineation and functional assessment for the Lower White Pine reach (subreach 2 & 3) of Nason Creek. The proposed habitat enhancement measures included large wood cover placements and construction of a backwater alcove. The project was constructed in 2016 and included Inter-Fluve staff onsite ensuring construction permit requirements (e.g. erosion control measures). Emily led the wetland delineation.

Wenatchee River, Meacham Flats Wetlands Plain, WA (2012-2017)

Inter-Fluve delineated wetlands and waters, and performed a functions and values assessment of wetland habitat in support of a fish habitat enhancement project at the Meacham Flats project area. Initial habitat enhancement concepts were developed in 2012 but put on hold due to alternative Yakama Nation Fisheries work area priorities and landowner negotiations. Inter-Fluve completed final designs and construction documents and oversaw construction in 2017 and will be monitoring the project through 2020. Emily contributed to the wetland impacts memo, and led the wetland delineation.

Chewuch River – RM 13-15.5 Wetlands Assessment Winthrop, WA (2013-2014)

Inter-Fluve delineated wetlands and waters, and performed a functions and -values assessment of wetland habitat in support of a fish habitat enhancement project at the Chewuch RM 13-15.5 project area. Project elements included Chewuch RM 13-15.5 project constructed backwater habitat over 270 feet of new channel and created new log jam habitat at nine other sites along the approximately 1.5 mile of mainstem Chewuch River channel. All disturbed surfaces were replanted with native upland or wetland plants. Emily contributed to the wetland assessment and led the wetland delineation.

Chewuch River – RM 15.5 -17 Wetlands Assessment Winthrop, WA (2010-2015)

Inter-Fluve delineated wetlands and waters, and performed a functions and -values assessment of wetland habitat in support of a fish habitat enhancement project at the Chewuch RM 13-15.5 project area. Project elements included Chewuch RM 13-15.5 project constructed backwater habitat over 270 feet of new channel and created new log jam habitat at nine other sites along the approximately 1.5 mile of mainstem Chewuch River channel. All disturbed surfaces were replanted with native upland or wetland plants. Emily contributed to the wetland assessment.

Chewuch River Right Side Channel & Wetlands Winthrop, WA (2015)

Inter-Fluve worked with the Yakama Nation in the design and construction of a new 3,600-foot perennial side channel formed into the floodplain. Inter-Fluve delineated wetlands and waters, and performed a functions and values assessment of wetland habitat in support of a fish habitat enhancement project. . Emily performed the wetlands delineation and functions and values assessment.

Kootenai River Reconnect Bonners Ferry, ID (2010-Present)

The Kootenai Tribe of Idaho has been leading an effort to quantify the loss of ecosystem function in the lower Kootenai River floodplain due to operation of Libby Dam. Inter-Fluve was contracted to identify opportunities to restore wetland function in the lower Kootenai River floodplain. As part of this effort, Inter-Fluve assessed the potential for floodplain wetland reconnection along 55 miles of the Kootenai River mainstem. The Kootenai Tribe contracted Inter-Fluve to Emily is Project Manager.

Dry Creek Habitat Enhancement Healdsburg, CA (2008-Present)

This \$60M Coho and steelhead habitat enhancement of a 14-mile reach of Dry Creek includes feasibility, and assessment through construction phases of priority projects. Emily modeled how construction of alternatives would impact channel and off-channel features.

Fourmile Resilient Crossing Handbook Coal Creek, CO (2017)

The Fourmile Watershed Coalition hired Inter-Fluve to creating a culvert and crossings handbook demonstrating resilient design and construction practices. Inter-Fluve coordinated with four watershed groups: Coal Creek, St. Vrain, and la Pourde River coalitions, including the client, to identify multiple county regulations to be included, stakeholder communication and needs, and conceptual designs, to build a comprehensive handbook appropriate for a landowner audience. In response to the 2013 Colorado flooding, Emily is leading a team to develop a Best Practices Resilient Crossings Handbook for landowners, designers and regulators.

Eugene Riverfront Park Design Eugene, OR (2018-Present)

The City of Eugene contracted Inter-Fluve as part of a team of firms to design Eugene's first urban riverfront park on approximately three acres of the 17-acre former Eugene Water and Electric Board site on the Willamette River, near downtown Eugene.



STAFF ENGINEER

Nick Jordan, EIT

Nick is an engineer-in-training with four years of professional experience measuring, assessing, and designing in fluvial and coastal systems, including hydraulic modeling, large wood design, and geomorphic assessment. His experience includes 1D and 2D hydraulic modeling in HEC-RAS, 3D hydrodynamic modeling in FLOW-3D, and hydrologic analysis with a range of statistical and deterministic methods. Nick also has extensive experience in field work and data collection in riverine and coastal systems, including data logger deployment, GPS/total station survey, geomorphic assessment, pebble counts, flow measurements, sediment probing and sampling, and water quality sampling. Nick relies on these foundational skills as a designer for a wide variety of projects that involve natural channel design, engineered large wood structure and habitat design, fish passage design, and bioengineering stabilization.

EXPERTISE

- Hydraulic Modeling
- Fluvial and Coastal Geomorphology
- Fish Passage Design
- Engineered Large Wood Design
- Stream Channel Design
- Field Data Collection
- Dam Removal Planning & Design
- Construction Oversight

SOFTWARE

HEC-RAS, AutoCAD Civil 3D, ArcGIS, QGIS, HECGeo-RAS, FLOW-3D, Matlab

PROFESSIONAL LICENSES

Engineer-in-training

EDUCATION

MS Civil and Environmental Engineering University of Wisconsin-Madison, 2017

B.S. Geological Engineering & Geology University of Wisconsin-Madison, 2014

SELECTED PROJECT EXPERIENCE

Megunticook River and Montgomery Dam Removal Feasibility Studies Camden, ME (2018-Present)

Six dams exist on the Megunticook River, which discharges to Camden Harbor. The dams create fish passage barriers and are in various states of vulnerability, each posing a variety of management, ecological, structural, and ownership challenges. Inter-Fluve was first contracted by the Town of Camden to conduct a feasibility study to evaluate options for Montgomery Dam and to develop a comprehensive plan to address fish passage, watershed connectivity barriers, flooding hazards, vulnerable infrastructure, and degraded stream and wetland habitat for the entire Megunticook River watershed.

Kenilworth Channel Stabilization Minneapolis, MN (2020-Present)

Inter-Fluve was contracted by Minneapolis Parks & Recreation Board for the design of shoreline stabilization treatment along 700 ft of Kenilworth Channel. The project will naturalize and stabilize the shoreline and add valuable habitat to the area. The ecologically-based bank solution to repairing the dilapidated channel walls will be designed with consideration for resiliency, public safety and aquatic and habitat benefit.

Colonial Park Ravine Stabilization and Wetland Enhancement Racine, WI (2017-Present)

Channel incision along a ravine within the City of Racine's Colonial Park delivers sediment to an existing alluvial fan and wetland along the Rock River floodplain, impacting park amenities, water quality, and potential spawning habitat. RootPikeWIN, a local watershed group, aims to enhance floodplain wetland habitat and stabilize the ravine. Inter-Fluve was hired to lead the design effort for treating banks and controlling grade along the ravine, as well as providing hydrologic connectivity between the wetland and adjacent river. Nick assisted with the engineering and ecological design of the project.

Don River Mouth Naturalization Toronto, Canada (2016-Present)

Inter-Fluve is part of a multi-disciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto's waterfront. Nick is assisting with design development.

Nick Jordan, EIT

Dowagiac Stream Restoration Cassopolis, MI (2012-Present)

The Pokagon Band of the Potawatomi Tribe contracted Inter-Fluve to develop restoration designs for re-meandering nearly two miles of Michigan's Dowagiac River. The river was straightened and leveed in the early 1900s. Project goals included re-establishing the meandering planform to invigorate trout habitat and wetland function, and increase recreational use for fishing and canoeing. Nick is assisting with design and project management.

Lyons Park Creek Bank Erosion Milwaukee, WI (2019-Present)

Inter-Fluve is assisting MMSD to stabilize eroding bluffs and banks and provide ecological uplift to Lyons Park Creek, a headwaters tributary to the Kinnickinnic River in Milwaukee. Inter-Fluve performed geomorphic assessment and design engineering services for the project, which will arrest severe bluff and bank erosion and stabilize the bed of a laterally migrating 450-foot reach of Lyons Park Creek. To date, Inter-Fluve has delivered final design documents and is currently assisting with bid period services, and will provide construction period services to the District in Winter 2021. Nick is serving as project manager and staff engineer on the project, and is responsible for geomorphic design, hydraulic engineering, coordination, and budget.

Kinnickinnic River Restoration (Jackson Park) Milwaukee, WI (2018-Present)

Inter-Fluve is currently a part of a large multidisciplinary team working with MMSD to provide preliminary engineering services for the rehabilitation of the Kinnickinnic River in Jackson Park, Milwaukee. Inter-Fluve's scope of work has included geomorphic investigation, sediment transport modeling, hydrologic and hydraulic analysis of existing and concept-level design conditions, and development of alternatives for the reach of the Kinnickinnic River between 43rd St. and Forest Home Avenue and the 43rd St. Ditch north of Jackson Park. Inter-Fluve has developed concept design alternatives which are intended to provide ecological uplift, sediment transport continuity, and passive recreational park use to reaches currently lined with concrete. Nick has served as staff engineer for the project, performing geomorphic design, hydrologic and hydraulic analysis, and design drafting for the design alternatives.

Kinnickinnic River, Pulaski Park Milwaukee, WI (2016-Present)

The Milwaukee Metropolitan Sewerage District (MMSD) is working to reduce flood impacts, increase safety and naturalize the Kinnickinnic River, located in Wisconsin's

most urban watershed. Following preliminary engineering of Reach 2 of the river, MMSD requested Inter-Fluve's services to develop final designs for the one subreach within a public park. Nick assisted with construction oversight of the project.

Rapid Creek and Spearfish Creek Habitat Restoration Black Hills, SD (2017-Present)

Inter-Fluve is contracted with the South Dakota Department of Fish, Game, and Parks to restore two impacted blue-ribbon trout streams in the Black Hills of South Dakota. The streams are located downstream of dams and other interruptions to sediment and wood, and lack suitable cover for trout. Nick is providing design of large wood structures, bank stabilization, and in-stream habitat features.

Kinnickinnic River, 43rd & Jackson Park Milwaukee, WI (2017-Ongoing)

Inter-Fluve is part of a team contracted by MMSD to help renaturalize the concrete lined stream channel to reduce flood risk, improve public safety, and improve stream and riparian habitat. Nick is responsible for channel and bioengineering design for the project.

Wilson Park Creek Reconstruction Milwaukee, WI (2018-Ongoing)

Inter-Fluve is part of a team contracted by MMSD to help reconstruct approximately 2,300 feet of non-concrete lined stream channel to reduce flood risk, improve public safety, and improve stream and riparian habitat. Nick is contributing to channel design, hydraulic modeling, and field assessment.

Pucker Street Dam Removal Niles, MI (2014-Present)

Inter-Fluve provided design, permitting, and construction observation services for the removal of the dam located just downstream of the Pucker Street Bridge on the Dowagiac River. The dam is 100 feet long and 38 feet high and was constructed in 1928. It was decommissioned as a power generator in 1995. The removal will provide safe recreation, boat passage, as well as fish passage for trout, steelhead, and salmon. The project is scheduled to be completed in 2021.



STAFF GEOMORPHOLOGIST

Sean Morrison

Sean's interests stem from a desire to use geologic principles to assess ancient and modern landscapes allowing for the stewardship of natural, functional and resilient ecosystems. As a geomorphologist, Sean interprets landscape form and process to inform all aspects of project development from initial site assessment and survey through project design and into construction and post-construction monitoring. He has expertise in RTK-GPS and total station surveying, GIS mapping, CAD drafting, geomorphic analysis, historic air photo analysis and is a FAA licensed drone pilot. He has worked on a range of projects from geomorphic assessments of urban watersheds, bank and bluff-toe stabilization, dam removal design and construction, and landscape scale GIS analysis for potential project identification.

EXPERTISE

Applied Geomorphic
Restoration Techniques

Restoration Design

GPS and GIS Mapping and
Analysis Geomorphic and
Habitat Assessment

Topographic Surveying

EDUCATION

MS, Earth Resources (Water)
University of Waterloo, Canada,
2017

BA, Geography, *Cum Laude*
University of Wisconsin - Eau
Claire, 2015

COMPUTER APPLICATIONS

ArcGIS, QGIS, AutoCAD Civil
3D Web Mapping (leaflet,
ArcGIS online)

Trimble GPS Pathfinder

FIELD & LABORATORY

Geomorphic and hydrologic
evaluation

Restoration project planning
and implementation

Topographic survey - total
station and RTK GPS

SELECTED PROJECT EXPERIENCE

Big Sioux Streambank Stabilization Sioux Falls, SD (2017-2019)

Over the past century, the Big Sioux River between the City of Baltic and the City of Sioux Falls has experienced large-scale meander migration. The City of Sioux Falls and South Dakota Department of Natural Resources enlisted Inter-Fluve to investigate the erosion problem and provide design for bank stabilization and restoration treatments. Inter-Fluve completed the field assessment of 18 designated sites of interest which were subsequently used to prioritize sites for further design and implementation. Sean is assisting in data collection, CAD and GIS support.

Sand Creek Bluff Toe Stabilization & Sediment Reduction Jordan, MN (2015-2019)

Over the past decade, Inter-Fluve has worked with Scott County on the assessment of bluff and ravine erosion in the Sand Creek watershed. The design work included site survey, 2D hydraulic modeling, design drawings, specifications, and engineering cost estimates for concepts through final design. The project also includes permitting (SWPPP, No Rise Documentation) and construction support. Sean contributed to the technical memorandum and velocity maps.

Kenilworth Channel Stabilization Minneapolis, MN (2020-Present)

Inter-Fluve was contracted by Minneapolis Parks & Recreation Board for the design of shoreline stabilization treatment along 700 ft of Kenilworth Channel. The project will naturalize and stabilize the shoreline and add valuable habitat to the area. The ecologically-based bank solution will be designed with consideration for resiliency, public safety and aquatic and habitat benefit.

Thornberry Creek Fluvial Geomorphic Assessment Hobart, WI (2018-Present)

Inter-Fluve was contracted by the Oneida Tribe to explore habitat factors that limit native brook trout spawning in the Thornberry Creek Watershed. Our work includes field survey and the completion of a habitat assessment report.

Mississippi Gorge Regional Park Master Plan Minneapolis, MN (2018-2019)

As part of a team, Minneapolis Parks & Recreation Board contracted Inter-Fluve to restore 132-acres along both the east and west banks of the Mississippi River to create an ecologically rich regional park that serves the general public and is environmentally aware. Sean assisted with data collection, meeting prep and poster development.

Sean Morrison

Arden Park Restoration Edina, MN (2016-2019)

Contracted by Minnehaha Creek Watershed District, Inter-Fluve is leading the restoration of the 17-acre park, which includes a dam removal, creek re-alignment, habitat and vegetative restoration, new recreational amenities (trails, bridges, boardwalks, park shelter building, playground, water access points, etc.) and stormwater treatment wetlands. Sean assisted with writing the sediment report, survey and modeling.

Susquehanna River Assessment & Design for Regional Initiative Flood Management Tioga County, NY (2018-2020)

Flooding from Hurricane Irene and Tropical Storm Lee was catastrophic for the Tioga and Broome Communities. Inter-Fluve was contracted by Tioga County Soil and Water Conservation District to conduct a geomorphic assessment and create a comprehensive list of prioritized projects, including culvert replacements, in six target watersheds for these communities to understand and address flooding issues in the Upper Susquehanna River. Conceptual designs were developed for six projects. . Sean assisted with field assessment, survey and report writing.

Don River Mouth Naturalization Toronto, Canada (2016-Present)

Inter-Fluve is part of a multi-disciplinary team contracted by MVVA and Waterfront Toronto to assist with the \$1B revitalization project re-routing the mouth of the river and restoring it as a major feature of Toronto's waterfront. It will be the centerpiece of new mixed-use neighborhoods, parks and greenspaces and also provide the flood protection necessary to develop the larger Port lands. Sean is assisting with data collection, project organization, and conducted a historic meander analysis of reference reaches.

Pine River Geomorphic Assessment Newkirk Township, MI (2017-Present)

Inter-Fluve was contracted by Conservation Resource Alliance to complete a geomorphic assessment of the Pine River and complete designs for restoration. Due to the legacy of logging, the river lacks instream habitat and hydraulic complexity. Sean assisted with data collection and GIS mapping.

Chehalis Basin Aquatic Species Restoration Plan Newaukum, WA (2018-Present)

Inter-Fluve was contracted by the Washington State Recreation and Conservation Office to produce reach-scale restoration designs for two sub-basins to the Chehalis River. These designs will advance goals of the Aquatic Species Restoration Plan, support habitat function and populations of aquatic and semi-aquatic species. Sean contributed to the habitat assessment field work and report writing.

Dowagiac Stream Restoration Cassopolis, MI (2012-Present)

The Pokagon Band of the Potawatomi Tribe contracted Inter-Fluve to develop restoration designs for re-meandering nearly two miles of Michigan's Dowagiac River. The river was straightened and leveed in the early 1900s. Project goals included re-establishing the meandering planform to invigorate trout habitat and wetland function, and increase recreational use for fishing and canoeing. Construction is expected in 2021. Sean assisted with modeling and data analysis.

CSAH 50 (Crow River) Bank Stabilization Hennepein County, MN (2019-present)

Inter-Fluve was contracted by Hennepin County to assess and provide permanent stabilization designs for approximately 1,700LF of the Crow River bank supporting the CSAH 50 roadway. The project includes assessment through final design and construction.

Vermillion River Watershed Restoration Castle Rock Township, MN (2018-Present)

Inter-Fluve was contracted by VRWJPO to complete a geomorphic assessment and rank priority projects for 13.5 miles of Vermillion River and its tributaries. Sean assisted with data collection ,field survey, data processing, analysis and reporting.

Lower Osage River Habitat Assessment Ozark, MO (2018-Present)

Inter-Fluve was contracted by Ameren Corporation to complete the first phase of the Lower Osage River habitat assessment and project prioritization as a part of the Lower Osage River Protection and Enhancement Program. The purpose of the project is to improve aquatic habitat, protect and enhance aquatic resources, and benefit federally endangered species.



Garrett Shear

Garrett has over eight years of experience as a CAD Drafter and Environmental Scientist for civil and environmental engineering firms. His background includes drafting for projects involving dam removal, stream bank stabilization, channel re-meandering, roadways, underground utilities and site grading. Garrett is also proficient in field work such as wetland delineation, habitat assessment, geomorphic assessment, invasive species surveying, topographic surveying, and construction observation. Garrett is currently leading CAD drawing development for the CSAH 50 streambank stabilization along the South Fork of the Crow River.

EXPERTISE

Computer Aided Drafting & Design

AutoCAD Civil 3D

GIS

RELEVANT PROFESSIONAL TRAINING & CERTIFICATIONS

MN DNR Fundamentals of Stream

Restoration: Applied Geomorphology & Ecology

Waders in the Water: Wetland Restoration Level 1 (Through Trout Headwaters Inc.)

ACA level II River Kayak Instructor

IMAGINiT AutoCAD Civil 3D

UW-La Crosse Plant ID

UW-La Crosse Wetland Delineation: Beginner & Advanced

UW-La Crosse Hydric Soils

UW-Grasses, Sedges & Rushes

EDUCATION

BS, Reclamation, Environment & Conservation, Emphasis in

SELECTED PROJECT EXPERIENCE

Sand Creek Bluff Toe Stabilization & Sediment Reduction Jordan, MN (2015-2019)

Over the past decade, Inter-Fluve has worked with Scott County on the assessment of bluff and ravine erosion in the Sand Creek watershed. The design work included site survey, 2D hydraulic modeling, design drawings, specifications, and engineering cost estimates for concepts through final design. The project also includes permitting (SWPPP, No Rise Documentation) and construction support. Garrett is developing CAD drawings.

Milwaukee River, Kletzsch Park Dam Glendale, WI (2017-Present)

The 8-ft high Kletzsch Park Dam is located on the Milwaukee River. Inter-Fluve was contracted by Milwaukee County DAS to develop concept designs for a fish passage structure and surrounding improvements including a handicap accessible overlook, rehabilitation of the eroding streambank, improved public access for viewing and recreational opportunities. Garrett is developing CAD drawings.

Colonial Park Ravine Stabilization and Wetland Enhancement Racine, WI (2017-Present)

Channel incision along a ravine within the City of Racine's Colonial Park delivers sediment to an existing alluvial fan and wetland along the Rock River floodplain, impacting park amenities, water quality, and potential spawning habitat. RootPikeWIN, a local watershed group, aims to enhance floodplain wetland habitat and stabilize the ravine. Inter-Fluve was hired to lead the design effort for treating banks and controlling grade along the ravine, as well as providing hydrologic connectivity between the wetland and adjacent river. Garrett assisted with the survey.

Duck Creek Delta Green Bay, WI (2017-Present)

Inter-Fluve was contracted by Ducks Unlimited in partnership with U of Wisconsin, USFWS, and Wisconsin DNR to apply experimental treatment to restore native vegetation near the mouth of Duck Creek in the Green Bay area of Lake Michigan. Our team designed treatment that applied large river log jams and the construction of large wood based wave barriers to create stable wave attenuation and provide complex fish habitat. Garrett is developing CAD drawings.

Garrett Shear

Stoughton Dam Sediment Sampling Stoughton, WI (2019-Present)

City of Stoughton Parks and Recreation Department is exploring the possibility of dam removal as part of a whitewater park project and contracted Inter-Fluve to complete sediment sampling services to evaluate potential sediment contamination near the Stoughton Dam. The work involved will developing a Sampling and Analysis Plan (SAP), performing the sediment sampling, and including a report that provides information about the sediment, cost estimates to remediate, and potential grant funding sources that will guide City Council to make a decision to move forward with a possible dam removal.

Minnehaha Creek Restoration Minneapolis, MN (2003-Present)

Over the last 15 years, Minnehaha Creek Watershed District has led the restoration of the Creek's corridor totaling over \$6.7M in restoration. Inter-Fluve has completed priority projects including wetland restoration, stormwater enhancement, recreation accesses and amenities, water quality improvements, dam removal, and connecting the river to the urban center. Garrett is developing CAD drawings.

Chehalis Basin Aquatic Species Restoration Plan Newaukum, WA (2018-Present)

Inter-Fluve was contracted by the Washington State Recreation and Conservation Office to produce reach-scale restoration designs for two sub-basins to the Chehalis River: Newaukum River and Chehalis River South Fork. These designs will advance goals of the Aquatic Species Restoration Plan, support habitat function and populations of aquatic and semi-aquatic species - while also creating flood and climate-resilient systems that support the human needs in the Basin. Garrett assisted with the survey and wetland delineations.

Catherine Creek, Hall Ranch Design La Grande, OR (2016-Present)

Inter-Fluve is partnering with Rio and working with BPA and other key stakeholders to develop a valley-wide restoration plan and design for a 2+ mile segment of Catherine Creek, in the Grande Ronde Basin. The project proposes to restore floodplain function and connectivity through re-routing highway 203, reactivating historical floodplain and channel alignments, addition of structural features, and revegetation. channel realignment, historical channel reactivation, and removal or re-design of human features that limit floodplain processes. Garrett assisted with the survey and wetland delineation.

Papermill Dam Removal West Reading, PA (2012-2018)

In 2012, Inter-Fluve completed preliminary plans for the removal of Papermill Dam on Cacoosing Creek. The plan included protection of a gas pipeline and fish habitat restoration. Inter-Fluve was again contracted by American Rivers in 2018 to complete final designs for removal. Garrett is developing CAD drawings.

Pine River Geomorphic Assessment Newkirk Township, MI (2017-Present)

Inter-Fluve was contracted by Conservation Resource Alliance to complete a geomorphic assessment of the Pine River and complete designs for restoration. Due to the legacy of logging, the river lacks instream habitat and hydraulic complexity. Garrett is developing CAD drawings.

Entiat River Stormy A Restoration Entiat, WA (2017-2019)

Contracted by the Yakama Nation, Inter-Fluve designed and constructed the Entiat Stormy A Habitat Enhancement Project to provide river and floodplain habitat for listed Chinook Salmon and steelhead. The project reach runs along approximately 1.9 miles of winding low-gradient river through properties owned by the US Forest Service and Chelan Douglas Land Trust. It involved restoring large wood habitat and creating two new perennial side channels, placing large wood in the channels. Garrett developed CAD drawings.

Pucker Street Dam Removal Niles, MI (2014-Present)

Inter-Fluve provided design, permitting, and construction observation services for the removal of the dam located just downstream of the Pucker Street Bridge on the Dowagiac River. The dam is 100 feet long and 38 feet high and was constructed in 1928. It was decommissioned as a power generator in 1995. The removal will provide safe recreation, boat passage, as well as fish passage for trout, steelhead, and salmon. The project is scheduled to be completed in 2021. Garrett is developing CAD drawings.

Dowagiac Stream Restoration Cassopolis, MI (2012-Present)

The Pokagon Band of the Potawatomi Tribe contracted Inter-Fluve to develop restoration designs for re-meandering nearly two miles of Michigan's Dowagiac River. The river was straightened and leveed in the early 1900s. Project goals included re-establishing the meandering planform to invigorate trout habitat and wetland function, and increase recreational use for fishing and canoeing. Construction is expected in 2021.

ATTACHMENT 2

PROJECT PROPOSAL

Arden Park - Minnehaha River, MN

Inter-Fluve led a 17-acre restoration of Arden Park, which included a dam removal, creek re-alignment, habitat and vegetative restoration, new recreational amenities (trails, bridges, boardwalks, park shelter building, playground, water access points, etc.) and stormwater treatment wetlands.

Budget for:

Design Services Area 3 Minnesota Riverbank Stabilization Project

JANUARY 22, 2021



ATTACHMENT 3



LOWER MINNESOTA RIVER
WATERSHED DISTRICT

REQUEST FOR PROPOSAL

Design Services

Area 3 Minnesota Riverbank Stabilization Project

Eden Prairie, Minnesota

Release Date:	December 17, 2020
Mandatory Pre-Proposal Meeting:	January 6, 2021
Questions Due:	January 8, 2021, at 4 p.m.
Final Addenda Issued:	January 13, 2021
Proposals Due:	January 22, 2021, at 2 p.m.
Shortlisted Teams Notified:	January 29, 2021
Tentative Interview Date:	February 4, 2021
Tentative Contract Award:	February 17, 2021

Submit to: Linda Loomis, LMRWD Administrator
Lower Minnesota River Watershed District
admin@lowermnriverwd.org

1 GENERAL INFORMATION

1.1 Request

This request for proposal (RFP) is intended to solicit responses from qualified consultants or teams (Consultant) for services related to the stabilization of approximately 1,500 feet of riverbank along the Minnesota River in Eden Prairie, Minnesota (Attachment 1). The selected consultant will enter into a professional services agreement with the Lower Minnesota River Watershed District (LMRWD) for the preparation of design and construction documents for the Area 3 Minnesota Riverbank Stabilization Project.

1.2 Project Background

Area 3 is located along the north bank of the Minnesota River, south of the Riverview Road cul-de-sac and intersection with Mooer Lane in Eden Prairie, Minnesota (City). In 2008, the City and the LMRWD commissioned a study to determine the causes of the instability and identify alternatives for permanent stabilization of the slopes (Attachment 2). The City and LMRWD conducted a second study in 2010 to collect additional information to evaluate the proposed and potential new ideas or designs (Attachment 3). The probable cause of the slope instability and erosion were determined to be natural processes from groundwater seepage and the river meander that have been accelerated by changes in climate and hydrology. The consensus was

that, if left unchecked, the bluff erosion would likely continue because of the river meander. The 2010 study also evaluated the slope stability of the bluff as there are residents and municipal structure at the top of the bluff. It was determined that there was an acceptable factor of safety.

Three alternatives were proposed because of the 2010 study. The final recommended option (Alternative 3) was construction of rock vanes within the river to deflect flows from the eroded banks, grading and shaping of the eroded slope, and live stake plantings.

Concurrent with the development of the 2010 study, and because of the perceived slope stability concerns, the LMRWD installed inclinometers to monitor bluff movement in 2010. To date, the inclinometers have not shown any indication of movement of the hillside (Attachment 4).

In 2019, the LMRWD convened a group of professionals involved in the 2010 study, including the LMRWD engineer, to reevaluate the 2010 proposed designs and inclinometer data. Although there has not been documented movement of the slope, the natural erosion processes coupled with historic water levels on the Minnesota River are threatening the City's stormwater pond at the downstream end of the study reach. Over the course of 2020, additional data have been collected, including a field reconnaissance visit, bathymetric survey, updated hydrology, and installation of a vibrating wire to record water levels in the embankment (Attachments 5 and 6).

2 SCOPE OF SERVICES

The selected consultant will be responsible for providing comprehensive professional services and state of Minnesota licensed and registered professionals in disciplines warranted by the project. The selected consultant will lead the scope of services, outlined in the following, in close collaboration with the LMRWD's oversight team.

Task 1. Project Management

The selected consultant will manage the project scope, submittals, schedule, and budget and will provide periodic communications with the LMRWD via email and phone.

Project coordination meetings will be necessary to update the LMRWD and partners. This is a collaborative project and providing regular updates to the LMRWD and partners will be necessary. The following meetings are assumed:

- **Kickoff meeting:** LMRWD and selected consultant will meet virtually to discuss project scope and schedule.
- **Stakeholders kickoff meeting:** LMRWD will lead a kickoff meeting with the selected consultant and identified stakeholders.
- **Design review meetings:** The selected consultant will present the project design and provide an update at the end of the 60 percent and 90 percent tasks to LMRWD staff and project partners before the comment period for each task begins.

Deliverables: For consultant-led meetings, the selected consultant will be responsible for providing LMRWD and stakeholders with an agenda at least one week in advance, and the selected consultant will provide summaries following all meetings to all participants. Unless otherwise specified, assume all meetings will be held virtually.

Task 2. Alternatives Review and Validation

The selected consultant will be responsible for facilitating a meeting or workshop that presents the alternatives considered, criteria used, additional alternatives considered, and provide LMRWD with a recommended path forward.

Deliverables: The selected consultant will be responsible for providing LMRWD and stakeholders with an agenda at least one week in advance of the workshop and the subsequent workshop summary documentation.

Task 3. Preliminary Design (60 percent)

Using the feedback from the LMRWD and stakeholders, the selected consultant will develop a 60 percent submittal package for LMRWD and partner review. The selected consultant will present the refined design to the LMRWD and stakeholders at the 60 percent design review meeting. The selected consultant shall assume two weeks for the LMRWD and stakeholder review period.

Deliverables will include the following:

- Project design memorandum, including design calculations (in native model files and PDF)
- Identification of necessary permits/approvals/reviews in a permit matrix and required application submittal needs and timeline (MS Excel and PDF)
- Identification of any potential utility conflicts (PDF)
- Construction plan set, including at a minimum the following: a title sheet, general layout (including existing utilities and proposed removals), grading plan with existing and proposed contours, tabulations, staging plans, stormwater pollution prevention plan, erosion and sediment control plan, cross-sections, and typical details (GIS, CAD, and PDF)
- Comment tracking log (PDF)

Task 4. Final Design (90 percent)

Using the feedback from the LMRWD and stakeholders, the selected consultant will revise the 60 percent design package and develop a 90 percent submittal package for LMRWD and partner review. The selected consultant will present the final designs to the LMRWD and stakeholders at the 90 percent design review meeting. Assume two weeks for the review period.

Deliverables will include the following:

- Revised design calculations (if applicable)
- Final permit matrix and estimated timeline for approvals (MS Excel and PDF)
- Revised construction plan set (GIS, CAD, and PDF)
- Draft specifications (PDF)
- Draft engineers estimate (PDF)
- Updated comment log tracking the revisions made since the 60 percent review (electronic)

Task 5. Bid Documents (100 percent)

Using the feedback from the LMRWD and stakeholders in Task 4, the selected consultant will revise the 90 percent design package and develop the final 100 percent submittal package for bid.

Deliverables will include the following:

- Final construction drawings (GIS, CAD, and PDF)
- Final specifications (PDF)
- Final engineers estimate (PDF)
- Closed comment log (electronic)

3 PROPOSED PROJECT SCHEDULE

The LMRWD will pursue the following schedule related to this RFP and the engagement of a Consultant.

Release RFP	December 17, 2020
Mandatory Pre-Proposal Meeting	January 6, 2021, at 1 p.m.
Last Day for Questions	January 8, 2021, at 4 p.m.
Responses to Questions Posted	January 13, 2021
Proposals Due	January 22, 2021, at 2 p.m.
Consultant Team Interviews (if needed)	February 4, 2021 (tentative)
LMRWD Board Approval of Consultant Contract	February 17, 2021 (tentative)
Final Submittals	August 31, 2021 (tentative)
Construction	TBD

3.1 Pre-Proposal Meeting

A mandatory pre-proposal meeting will be held virtually on January 6, 2021, at 1 p.m. Attendance at the pre-proposal meeting is MANDATORY. LMRWD staff will be available to provide an overview of the project and answer questions. A summary will be provided to all attendees within five business days of the meeting.

There are several ways for participants to join the pre-proposal meeting, specified below. If you have any technical concerns, contact admin@lowermnriverwd.org immediately for assistance.

- **Join from the meeting link:**

<https://lowerminnesotariverwatersheddistrict.my.webex.com/lowerminnesotariverwatersheddistrict.my/j.php?MTID=m23badc54e4b28a65d47a73a696db6228>

- **Join by meeting number:**

Meeting number (access code): 126 854 5476

Meeting password: EyBfDppd257 (39233773 from phones and video systems)

- **Tap to join from a mobile device (attendees only):**
+1-408-418-9388,,1268545476#39233773# United States Toll. Some mobile devices may ask attendees to enter a numeric meeting password.
- **Join by phone:**
+1-408-418-9388 United States Toll
- **Join by video system, application or Skype for business**
Dial 1268545476@webex.com

4 PROPOSAL GUIDELINES

To be considered fully responsive and therefore eligible for award, proposals must contain the following (proposals must not exceed thirteen total pages, excluding appendices):

1. Cover letter (2 pages)
 - a. The responder shall provide and agree to the following statement, executed by an individual with authority to represent fully the activities and interests of the responder:
I hereby certify that I am a duly authorized representative of the company and that the information contained within this response to the Lower Minnesota River Watershed District's Request for Proposal is current, true, and correct to the best of my knowledge. I hereby authorize and request any person, agency, or firm to furnish any pertinent information requested by LMRWD deemed necessary to verify the statements made in this submittal.
(Signature) (Title) (Date)
2. Project understanding and approach (2 pages)
 - a. Describe the consultant's understanding of the need and intent of this project.
 - b. Identify challenges or opportunities that should be considered.
3. Project management plan (2 pages)
 - a. Identify quality management processes to be incorporated into the project that will ensure the quality and completeness of deliverables.
 - b. Provide the proposed project schedule with estimated timelines for deliverables.
 - c. Describe how unanticipated changes will be handled and methods for resolving issues; identify which risks might be encountered in this process and how the consultant will mitigate those risks.
 - d. Include an organization chart of key personnel involved in the project.
4. Proposed project team (2 pages)
 - a. Identify the day-to-day project manager for the project team and explain how they were chosen and why this individual is best suited for the project; the project manager must be registered as a professional civil engineer in Minnesota.
 - b. Identify the key personnel and task leaders/service areas of expertise needed for a successful project. Explain why the key personnel have been selected for the team

- and what their role will be, and confirm they have sufficient capacity to perform this role.
- c. Two-page résumés for key personnel may be provided in an optional appendix that will not count toward the page limits.
 - d. Clearly identify any sub-consultants proposed as part of the team.
 - e. Please note that the consultant assumes responsibilities related to onboarding, gaps of information, delays of the project, or other similar issues resulting from any changes in the proposed project personnel.
5. Constructed project examples similar in scope to the project, including references and year built (3 pages)
- a. Provide a brief narrative of each project, including references and contact information.
 - b. The day-to-day project manager must have worked on the identified projects; identify their role on each project and how their performance contributed to the project's success.
 - c. Identify any lessons learned from each project and how those lessons will inform the future work on this project.
6. Cost proposal (2 pages)
- a. Send as a separate email and attachment with the subject line “Proposal for Area 3 Minnesota Riverbank Stabilization Project—COST PROPOSAL.”
 - b. Provide a detailed total cost, incorporating a breakdown of all tasks, the hourly rates for all personnel identified in the project approach, and any reimbursable expenses and assumptions used in determining the overall project cost.
 - c. If desired, the consultant may provide an optional separate cover(s) for the technical and cost proposals that will not count toward the page limit.

5 PROPOSAL SUBMISSION

This RFP is open to all qualified firms and individuals. Any communications related to this request shall be directed VIA EMAIL ONLY to:

admin@lowermnriverwd.org

Any communications and/or inquiries by a bidder during this RFP process must be submitted by 4 p.m. on January 8, 2021. No other staff is authorized to respond to questions or requests for clarification of this Request for Proposal. Failure to follow this instruction may be cause for disqualification. Questions or requests for clarification must be received by the date indicated in the Preliminary Project Schedule. Responses will be provided to all known proposers via email by the date indicated in the Preliminary Project Schedule and will be posted to the LMRWD website.

Proposals must be received by **January 22, 2021, at 2 p.m.** Consultants are to submit their proposals to Linda Loomis, LMRWD administrator, at admin@lowermnriverwd.org.

Submit **one electronic copy** of each of the technical proposal and cost proposal in PDF format in separate emails, per the preceding. The email submittals must clearly state in the subject line that the communication contains: “Proposal for Area 3 Minnesota Riverbank Stabilization Project—

TECHNICAL PROPOSAL” and “Proposal for Area 3 Minnesota Riverbank Stabilization Project—COST PROPOSAL.”

Proposals shall have a maximum page count of thirteen, as indicated in the proposal guidelines. No text shall be smaller than eleven-point font. Proposals may become public data upon submission.

It is not the LMRWD’s responsibility to acknowledge receipt of any proposals as a result of the RFP process. It is the Proposer’s responsibility to assure that the proposals are received in a timely manner and are responsive to any RFP Addenda provided.

6 PROPOSAL EVALUATION

Responses to this RFP will be reviewed by a combination of the following representatives:

- LMRWD (administrator and possible manager[s])
- Young Environmental Consulting Group, LLC
- City of Eden Prairie
- Hennepin County

Responses shall be reviewed using the following criteria:

Adherence to the requested format	No consideration will be given to submittals failing to follow the format.
Written quality, clarity, and directness of the response	15 percent
Qualifications and experience of the day-to-day project manager	15 percent
Qualifications and past performance of other key personnel	15 percent
Demonstrated project understanding including risks	20 percent
Demonstration of thoughtfulness, creativity, innovation, and expertise in professional practice	20 percent
Project cost	15 percent

Any determination relative to the selection of a consultant made by LMRWD shall be considered final. Responses will be reviewed and evaluated by the evaluation panel using the criteria specified in this section. The LMRWD, after reviewing all responses, may determine the need to interview one or more responders to assess the abilities and capacity of the consultant.

7 INTERVIEWS (IF NEEDED)

Should it be determined after a detailed review of responses that interviews are necessary to determine the best qualified consultant, the LMRWD will organize interviews as follows:

- The consultants selected for an interview will be notified no fewer than five calendar days prior to the date scheduled for the interview.
- The consultant’s participation in the interview will be limited to the project manager and three other members of the project team.

- The interview format will be provided to those selected for interviews at the time of notification.

The consultant selected for an interview shall consider information contained in the proposal received responding to this RFP to be read and understood, with no need to repeat or review that information during an interview. Additional information regarding interviews may be provided to the prospective consultant or consultant teams at any time until the start of the interview.

8 ATTACHMENTS

- Attachment 1—Area 3 Project Location
- Attachment 2—*Erosion Stabilization Study: Study Area 3 Final Report*, October 2008
- Attachment 3—*Minnesota River Bank and Bluff Stabilization, Eden Prairie, Minnesota*, February 2010
- Attachment 4—Inclinometer Readings (2011 to 2020)
- Attachment 5—2016 Minnesota River Erosion Monitoring
- Attachment 6—January 2020 City Meeting Summary Memorandum to LMRWD Board
- Attachment 7—May 2020 Site Visit Summary Memorandum for LMRWD Board
- Attachment 8—October 2020 Project Update Memorandum to LMRWD Board
- Attachment 9—2020 Bathymetric Survey Data
- Attachment 10—U.S. Army Corps of Engineers' Lower Minnesota River HEC-RAS model

9 ADDITIONAL INFORMATION

9.1 About LMRWD

The LMRWD was principally established as a legal entity for providing local participation to the USACE in constructing a navigation channel within the Minnesota River. With this purpose in mind, a nine-foot channel was developed in cooperation with the USACE. Today, the LMRWD remains actively involved in the maintenance of the channel. The statutes and rules affecting watershed districts and watershed management organizations have changed since the inception of the LMRWD. These changes have broadened the role that watershed districts play in water resource management.

The LMRWD's general goals fall under the categories of water quality, flood control, erosion and sediment control, stream restoration, wetland management, groundwater, public ditches, and public involvement and information. The LMRWD works with our communities to protect, improve, and educate about our valuable water resources that are important habitats for our native plant and fish species as well as providing recreational opportunities and commercial barge navigation. The Area 3 Minnesota Riverbank Stabilization Project meets the general goals and mission by collaborating with the City and Hennepin County to improve the water quality of the Minnesota River, protect the nine-foot navigation channel, and restore the riverbank.

9.2 LMRWD Rights

The LMRWD may reject any or all proposals or parts of proposals, accept part or all of proposals, or create a project of lesser or greater scope than described in this RFP or the respondent's reply based on the financial components submitted. The LMRWD also reserves the right to cancel the contract without penalty if circumstances arise that prevent the Board from completing the project.

9.3 Restricted Communications

From the date of issuance of the RFP until the LMRWD takes final action, the responder must not discuss the proposal or any part thereof with any employee, agent, or representative of the LMRWD except as expressly requested by the LMRWD Administrator in writing and as stipulated in this RFP. Violation of this restriction will result in rejection of the Responder's proposal.

9.4 Data Practices

The LMRWD data practices policy may be accessed here:

http://lowermnriverwd.org/download_file/1710/0

**FY 2021 STATE OF MINNESOTA
 BOARD OF WATER and SOIL RESOURCES
 WATERSHED-BASED IMPLEMENTATION FUNDING
 GRANT AGREEMENT**

Vendor:	0000201935
PO#:	3000013129

This Grant Agreement is between the State of Minnesota, acting through its Board of Water and Soil Resources (Board) and **Lower Minnesota River WD, 10901 Riverview Road Eden Prairie Minnesota 55347** (Grantee).

<i>This grant is for the following Grant Programs :</i>		
C21-2074	2021 Metro WBIF – Lower MN North – LMRWD – Area #3 Ravine Bank Stabilization	\$127,732

Total Grant Awarded: \$127,732

Recitals

1. The Laws of Minnesota 2019, 1st Special Session, Chapter 2, Article 2, Section 7(a), appropriated Clean Water Funds (CWF) to the Board for the FY 2020-2021 Watershed-based Implementation Funding.
2. The Board adopted the FY 2020-2021 Clean Water Fund Watershed-based Implementation Funding Program Policy and authorized the Watershed-based Implementation Funding Program through Board Order #19-54.
3. The Board adopted Board Order #19-54 to allocate funds for the FY 2020-2021 Watershed-based Implementation Funding Program.
4. The Grantee has submitted a BWSR approved work plan for this Program which is incorporated into this Grant Agreement by reference.
5. The Grantee represents that it is duly qualified and agrees to perform all services described in this Grant Agreement to the satisfaction of the State.
6. As a condition of the grant, Grantee agrees to minimize administration costs.

Authorized Representative

The State’s Authorized Representative is Marcey Westrick, Clean Water Coordinator, BWSR, 520 Lafayette Road North, Saint Paul, MN 55155, 651-284-4153, or his/her successor, and has the responsibility to monitor the Grantee’s performance and the authority to accept the services and performance provided under this Grant Agreement.

The Grantee’s Authorized Representative is:

TITLE	Linda Loomis, Administrator
ADDRESS	112 East 5th Street, Suite #102
CITY	Chaska, MN 55318
TELEPHONE NUMBER	763-545-4659

If the Grantee’s Authorized Representative changes at any time during this Grant Agreement, the Grantee must immediately notify the Board.

Grant Agreement

1. **Terms of the Grant Agreement.**
 - 1.1. **Effective date:** The date the Board obtains all required signatures under Minn. Stat. § 16B.98, Subd. 5. **The State will notify the Grantee when this Grant Agreement has been executed. The Grantee must not begin work under this Grant Agreement until it is executed.**
 - 1.2. **Expiration date: December 31, 2023**, or until all obligations have been satisfactorily fulfilled, whichever comes first.
 - 1.3. **Survival of Terms:** The following clauses survive the expiration date or cancellation of this Grant Agreement: 7. Liability; 8. State Audits; 9. Government Data Practices; 11. Publicity and Endorsement; 12. Governing Law, Jurisdiction, and Venue; 14. Data Disclosure; and 19. Intellectual Property Rights.

2. **Grantee's Duties.**

The Grantee will comply with required grants management policies and procedures set forth through Minn. Stat § 16B.97, Subd. 4(a)(1). The Grantee is responsible for the specific duties for the Program as follows:

- 2.1. **Implementation:** The Grantee will implement their work plan, which is incorporated into this Grant Agreement by reference.
- 2.2. **Reporting:** All data and information provided in a Grantee's report shall be considered public.
 - 2.2.1. The Grantee will submit an annual progress report to the Board by February 1 of each year on the status of Program implementation by the Grantee. Information provided must conform to the requirements and formats set by the Board. All individual grants over \$500,000 will also require a reporting expenditure by June 30 of each year.
 - 2.2.2. The Grantee will prominently display on its website the Clean Water Legacy Logo and a link to the Legislative Coordinating Commission website.
 - 2.2.3. Final Progress Report: The Grantee will submit a final progress report to the Board by February 1, 2024 or within 30 days of completion of the project, whichever occurs sooner. Information provided must conform to the requirements and formats set by the Board.
- 2.3. **Match:** The Grantee will ensure any local match requirement will be provided as stated in Grantee's approved work plan.

3. **Time.**

The Grantee must comply with all the time requirements described in this Grant Agreement. In the performance of this Grant Agreement, time is of the essence.

4. **Terms of Payment.**

- 4.1. Grant funds will be distributed in three installments: 1) The first payment of 50% will be distributed after the execution of the Grant Agreement. 2) The second payment of 40% will be distributed after the first payment of 50% has been expended and reporting requirements have been met. An eLINK Interim Financial Report that summarizes expenditures of the first 50% must be signed by the Grantee and approved by BWSR. Selected grantees may be required at this point to submit documentation of the expenditures reported on the Interim Financial Report for verification. 3) The third payment of 10% will be distributed after the grant has been fully expended and reporting requirements are met. The final, 10% payment must be requested within 30 days of the expiration date of the Grant Agreement. An eLINK Final Financial Report that summarizes final expenditures for the grant must be signed by the Grantee and approved by BWSR.
- 4.2. All costs must be incurred within the grant period.
- 4.3. All incurred costs must be paid before the amount of unspent funds is determined. Unspent grant funds must be returned within 30 days of the expiration date of the Grant Agreement.
- 4.4. The obligation of the State under this Grant Agreement will not exceed the amount listed above.
- 4.5. This grant includes an advance payment of 50 % of the grant's total amount. Advance payments allow the grantee to have adequate operating capital for start-up costs, ensure their financial commitment to landowners and contractors, and to better schedule work into the future.

5. **Conditions of Payment.**

- 5.1. All services provided by the Grantee under this Grant Agreement must be performed to the State's satisfaction, as set forth in this Grant Agreement and in the BWSR approved work plan for this program. Compliance will be determined at the sole discretion of the State's Authorized Representative and in accordance with all applicable federal, State, and local laws, policies, ordinances, rules, FY 2020-2021 Clean Water Fund Watershed-based Implementation Funding Program Policy, and regulations. The Grantee will not receive payment for work found by the State to be unsatisfactory or performed in violation of federal, State or local law.
- 5.2. Minnesota Statutes §103C.401 (2018) establishes BWSR's obligation to assure Program compliance. If the noncompliance is severe, or if work under the Grant Agreement is found by BWSR to be unsatisfactory or performed in violation of federal, State, or local law, BWSR has the authority to require the repayment of grant funds or withhold payment on grants from other programs.

6. **Assignment, Amendments, and Waiver**

- 6.1. **Assignment.** The Grantee may neither assign nor transfer any rights or obligations under this Grant Agreement without the prior consent of the State and a fully executed Assignment Agreement, executed and approved by the same parties who executed and approved this Grant Agreement, or their successors in office.
- 6.2. **Amendments.** Any amendments to this Grant Agreement must be in writing and will not be effective until it has been approved and executed by the same parties who approved and executed the original Grant Agreement, or their successors

in office. Amendments must be executed prior to the expiration of the original Grant Agreement or any amendments thereto.

6.3. **Waiver.** If the State fails to enforce any provision of this Grant Agreement, that failure does not waive the provision or its right to enforce it.

7. **Liability.**

The Grantee must indemnify, save, and hold the State, its agents, and employees harmless from any claims or causes of action, including attorney's fees incurred by the State, arising from the performance of this Grant Agreement by the Grantee or the Grantee's agents or employees. This clause will not be construed to bar any legal remedies the Grantee may have for the State's failure to fulfill its obligations under this Grant Agreement.

8. **State Audits.**

Under Minn. Stat. § 16B.98, Subd. 8, the Grantee's books, records, documents, and accounting procedures and practices of the Grantee or other party relevant to this Grant Agreement or transaction are subject to examination by the Board and/or the State Auditor or Legislative Auditor, as appropriate, for a minimum of six years from the end of this Grant Agreement, receipt and approval of all final reports, or the required period of time to satisfy all State and program retention requirements, whichever is later.

8.1. The books, records, documents, accounting procedures and practices of the Grantee and its designated local units of government and contractors relevant to this grant, may be examined at any time by the Board or Board's designee and are subject to verification. The Grantee or delegated local unit of government will maintain records relating to the receipt and expenditure of grant funds.

9. **Government Data Practices.**

The Grantee and State must comply with the Minnesota Government Data Practices Act, Minn. Stat. Ch. 13, as it applies to all data provided by the State under this Grant Agreement, and as it applies to all data created, collected, received, stored, used, maintained, or disseminated by the Grantee under this Grant Agreement. The civil remedies of Minn. Stat. § 13.08 apply to the release of the data referred to in this clause by either the Grantee or the State.

10. **Workers' Compensation.**

The Grantee certifies that it is in compliance with Minn. Stat. § 176.181, Subd. 2, pertaining to workers' compensation insurance coverage. The Grantee's employees and agents will not be considered State employees. Any claims that may arise under the Minnesota Workers' Compensation Act on behalf of these employees and any claims made by any third party as a consequence of any act or omission on the part of these employees are in no way the State's obligation or responsibility.

11. **Publicity and Endorsement.**

11.1. **Publicity.** Any publicity regarding the subject matter of this Grant Agreement must identify the Board as the sponsoring agency. For purposes of this provision, publicity includes notices, informational pamphlets, press releases, research, reports, signs, and similar public notices prepared by or for the Grantee individually or jointly with others, or any subcontractors, with respect to the program, publications, or services provided resulting from this Grant Agreement.

11.2. **Endorsement.** The Grantee must not claim that the State endorses its products or services

12. **Governing Law, Jurisdiction, and Venue.**

Minnesota law, without regard to its choice-of-law provisions, governs this Grant Agreement. Venue for all legal proceedings out of this Grant Agreement, or its breach, must be in the appropriate State or federal court with competent jurisdiction in Ramsey County, Minnesota.

13. **Termination.**

13.1. The State may cancel this Grant Agreement at any time, with or without cause, upon 30 days' written notice to the Grantee. Upon termination, the Grantee will be entitled to payment, determined on a pro rata basis, for services satisfactorily performed.

13.2. In the event of a lawsuit, an appropriation from a Clean Water Fund is canceled to the extent that a court determines that the appropriation unconstitutionally substitutes for a traditional source of funding.

13.3. The State may immediately terminate this Grant Agreement if the State finds that there has been a failure to comply with the provisions of this Grant Agreement, that reasonable progress has not been made or that the purposes for which the funds were granted have not been or will not be fulfilled. The State may take action to protect the interests of the State of Minnesota, including the refusal to disburse additional funds and requiring the return of all or part of the funds already disbursed.

14. Data Disclosure.

Under Minn. Stat. § 270C.65, Subd. 3, and other applicable law, the Grantee consents to disclosure of its social security number, federal employer tax identification number, and/or Minnesota tax identification number, already provided to the State, to federal and State tax agencies and State personnel involved in the payment of State obligations. These identification numbers may be used in the enforcement of federal and State tax laws which could result in action requiring the Grantee to file State tax returns and pay delinquent State tax liabilities, if any.

15. Prevailing Wage.

It is the responsibility of the Grantee or contractor to pay prevailing wage for projects that include construction work of \$25,000 or more, prevailing wage rules apply per Minn. Stat. §§ 177.41 through 177.44. All laborers and mechanics employed by grant recipients and subcontractors funded in whole or in part with these State funds shall be paid wages at a rate not less than those prevailing on projects of a character similar in the locality. Bid requests must state the project is subject to prevailing wage.

16. Municipal Contracting Law.

Per Minn. Stat. § 471.345, grantees that are municipalities as defined in Subd. 1 of this statute must follow the Uniform Municipal Contracting Law. Supporting documentation of the bidding process utilized to contract services must be included in the Grantee's financial records, including support documentation justifying a single/sole source bid, if applicable.

17. Constitutional Compliance.

It is the responsibility of the Grantee to comply with requirements of the Minnesota Constitution regarding the use of Clean Water Funds to supplement traditional sources of funding.

18. Signage.

It is the responsibility of the Grantee to comply with requirements for project signage as provided in Minnesota Laws 2010, Chapter 361, Article 3, Section 5(b) for Clean Water Fund projects.

19. Intellectual Property Rights.

The State owns all rights, title, and interest in all of the intellectual property rights, including copyrights, patents, trade secrets, trademarks, and service marks in the Works and Documents *created and paid for under this grant*. Works means all inventions, improvements, discoveries, (whether or not patentable), databases, computer programs, reports, notes, studies, photographs, negatives, designs, drawings, specifications, materials, tapes, and disks conceived, reduced to practice, created or originated by the Grantee, its employees, agents, and subcontractors, either individually or jointly with others in the performance of this grant. Work includes "Documents." Documents are the originals of any databases, computer programs, reports, notes, studies, photographs, negatives, designs, drawings, specifications, materials, tapes, disks, or other materials, whether in tangible or electronic forms, prepared by the Grantee, its employees, agents or subcontractors, in the performance of this grant. The Documents will be the exclusive property of the State and all such Documents must be immediately returned to the State by the Grantee upon completion or cancellation of this grant at the State's request. To the extent possible, those Works eligible for copyright protection under the United State Copyright Act will be deemed to be "works made for hire." The Grantee assigns all right, title, and interest it may have in the Works and the Documents to the State. The Grantee must, at the request of the State, execute all papers and perform all other acts necessary to transfer or record the State's ownership interest in the Works and Documents.

IN WITNESS WHEREOF, the parties have caused this Grant Agreement to be duly executed intending to be bound thereby.

Approved:

Lower Minnesota River WD

Board of Water and Soil Resources

By: Jesse J. Hartmann
(print)

By: _____

(signature)

Title: President

Title: _____

Date: _____

Date: _____